1. Legal Ad

    Documents:

        PB LEGAL AD 9-25-18.PDF

2. Agenda

    Documents:

        PB AGENDA 9-25-18.PDF

3. 400 W. Commercial Street

    Documents:

        W. COMMERCIAL ST. - 400 (REPORT).PDF
        W. COMMERCIAL ST. - 400 (REPORT ATTACHMENTS).PDF
        W. COMMERCIAL ST. - 400 (APPLICANTS SUBMITTAL).PDF
        W. COMMERCIAL ST. - 400 (PLANS).PDF

    3.I. Design Review Memo

        Documents:

            WPDZ_400WCOMM DESIGN REVIEW_PRELIM.PDF

4. Hotel Inclusionary Zoning

    Documents:

        HOTEL LINKAGE TO HOUSING COMMITTEE 6-27-18.PDF
        HOTEL LINKAGE TO HOUSING COMMITTEE 9-6-18.PDF

5. 86 Newbury Street

    Documents:

        NEWBURY ST. - 86 (REPORT).PDF
        NEWBURY ST. - 86 (REPORT ATTACHMENTS).PDF
        NEWBURY ST. - 86 (PLANS).PDF
        NEWBURY ST. - 86 (APPLICANTS SUBMITTAL).PDF
        NEWBURY ST. - 86 (PUBLIC COMMENT).PDF

6. 300 Allen Avenue

    Documents:

        ALLEN AVE. - 300 (REPORT ATTACHMENTS).PDF
        ALLEN AVE. - 300 (REPORT).PDF
        ALLEN AVE. - 300 (APPLICANTS SUBMITTAL).PDF
        ALLEN AVE. - 300 (PUBLIC COMMENT).PDF
        ALLEN AVE. - 300 (PLANS).PDF

    6.I. Additional Public Comment

Documents:

PC CHRISTOPHER ELLINGWOOD 9-24-18.PDF

7. 19 Libby Street

Documents:

LIBBY ST. - 19 (REPORT).PDF
LIBBY ST. - 19 (REPORT ATTACHMENTS).PDF
LIBBY ST. - 19 (APPLICANTS SUBMITTAL).PDF
LIBBY ST. - 19 (PLANS).PDF

8. 100 Sewall Street

Documents:

SEWALL ST. - 100 (REPORT).PDF
SEWALL ST. - 100 (REPORT ATTACHMENTS).PDF
SEWALL ST. - 100 (APPLICANTS SUBMITTAL).PDF
SEWALL ST. - 100 (PLANS).PDF

8.I. Public Comment

Documents:

PC1 CHRISTIAN MILNEIL 9-22-18.PDF

LEGAL ADVERTISEMENT - PORTLAND PLANNING BOARD

The Portland Planning Board will hold a meeting on Tuesday, September 25, 2018, Council Chambers, 2nd Floor, City Hall, 389 Congress Street. Public comments will be taken for each item on the agenda during the estimated allotted time and written comments should be submitted to planningboard@portlandmaine.gov

Workshop – 4:30 p.m.

i. Level III Site Plan; 400 West Commercial Street; Phin Sprague, representing Canal Landing, LLC., Applicant. (4:30 - 5:30 p.m. estimated time) The Board will hold a workshop to consider the development of Phase IV (Building E) at Canal Landing. The proposal is for an 80 x 150 (12,000 sf) maintenance building (marine repair services) to be located on the 5.99 acre shorefront property near the new travel lift basin. The proposed building height is 72 ft, thus it is subject to conditional use standards of the WPDZ. The application is also subject to review under Portland's site plan and shoreland zoning standards.

ii. Hotel Linkage Fee, Ordinance Amendments, City of Portland, Applicant. (5:30 - 6:30 p.m. estimated time) Review and discussion of a proposed ordinance addressing new hotel developments and affordable housing demand.

Public Hearing – 7:00 p.m.

i. Level III Site Plan, 86 Newbury Street, 86 Newbury Street, LLC., Applicant. (7:00 – 7:45 p.m. estimated time) The Board will hold a public hearing to consider a proposal for the redevelopment of the Shipyard Brewery site at 86 Newbury Street, which is bounded by Newbury, Mountfort, Fore and Hancock Streets. The existing brewery building will be renovated and a new four to six story building is proposed with a gross floor area of 174,000 sf. The proposed uses include 89,387 sf of office space, 44,983 of technical fulfillment pharmacy, 9,590 of brewery, 2,500 sf of tasting room, four retail spaces, and a 105 room hotel and structured parking for 348 vehicles. Ten residential dwelling units within three buildings, and including 12 parking spaces, are also proposed. The project is located in the India Street Form Based Code and subject to review under Portland's subdivision, site plan, and housing replacement review standards.

ii. Level III Site Plan; 300 Allen Avenue; Peter Bouchard, representing Estelle Estates, LLC., Applicant. (7:45 - 8:30 p.m. estimated time) The Board will hold a public hearing focused on the site and building design for a mixed-use project which includes a 3,600 sf office building fronting on Allen Avenue. The project includes the demolition of one home and the construction of 12 two-bedroom residential units contained in three duplexes and two three-unit buildings (total square footage of 16,520 sf). The site is zoned Residence Professional (RP) and Residential R-5. The project is subject to review under Portland's conditional use standards for parking in a residential zone, conditional use standards for inclusionary zoning, and both subdivision and site plan standards.

iii. Level III Site Plan and Subdivision; 19 Libby Street; Reed School, LLC., Applicant. (8:30 – 9:15 p.m. estimated time) The Board will hold a public hearing on the proposed conversion of 13,908 sf of Reed School into eight (8) residential units. All of the units will be one bedroom units and parking is provided on-site with access from Libby Street and Homestead Avenue. The site is in the R-3 zone and subject to review under Portland's subdivision and site plan standards.

iv. Level III Site Plan and Site Location of Development Act; 100 Sewall Street (Thompson's Point Connector); Langdon Street Real Estate, Applicant. (9:15 p.m. estimated time) The Board will hold a public hearing on a proposal to expand the surface parking lot. The proposed 8.8 acre site currently has 3.46 acres of impervious surface, and the proposal is to expand the parking lot by 2.8 acres to create approximately 300 additional vehicle parking spaces. The site is located in the B-5 zone and the Resource Protection Zone. The project is subject to review under Portland's site plan ordinance and under the City's delegated review for Site Location Development.

SEAN DUNDON, CHAIR – PORTLAND PLANNING BOARD

CITY OF PORTLAND, MAINE

PLANNING BOARD

Sean Dundon, Chair
Brandon Mazer, Vice Chair
David Eaton
David Silk
Austin Smith
Maggie Stanley
Lisa Whited

AGENDA
PORTLAND PLANNING BOARD MEETING

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ii. Hotel Inclusionary Zoning, Ordinance Amendments, City of Portland, Applicant. (5:30 - 6:30 p.m. estimated time) Review and discussion of a proposed ordinance addressing new hotel developments and affordable housing demand.

PUBLIC HEARING – 7:00 p.m.

1. ROLL CALL AND DECLARATION OF QUORUM
2. COMMUNICATIONS AND REPORTS
3. REPORT OF ATTENDANCE AT THE FOLLOWING MEETINGS:
September 11, 2018: Mazer, Eaton, Smith, Stanley and Whited present; Dundon and Silk absent.
September 20, 2018: Mazer, Eaton, Smith, Stanley and Whited present; Dundon and Silk absent.

4. REPORT OF DECISIONS AT THE MEETING HELD ON SEPTEMBER 11, 2018:

i.. Level III Site Plan; Parking Garage; 190 and 222 St. John Street; Maine Medical Center, Applicant. Stanley moved and Whited seconded a motion to waive the bicycle parking requirement to allow a total of 40 spaces on site. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to waive the driveway width standard to allow a 30' wide drive to the garage at D Street. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to waive the aisle width standard to allow 23' 9.5" and 27' 4" within the garage and adjacent surface parking. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to waive the lighting standard to allow in the north parking area an average illumination level of 1.9

footcandles and an average and maximum illumination levels on the top of the garage to be 2.4 and 6.4 footcandles, respectively. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to approve the site plan application with 16 conditions of approval. Vote: 5-0, Dundon and Silk absent.

ii. Level III Subdivision/Site Plan and IZ Conditional Use Applications; 56 Hampshire Street; New Height Group LLC, Applicant. Stanley moved and Whited seconded a motion to waive the minimum driveway width to allow 16 feet. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to waive the aisle width standard to allow less than 24' as shown on the Site Plan C-3.0 Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to waive the parking stall standard to vary from the 9 X 18 as shown on the Site Plan C-3.0 Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to approve the Inclusionary Zoning Conditional Use with five (5) conditions of approval. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to approve the subdivision plan with five (5) conditions of approval. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to approve the site plan with nine (9) conditions of approval. Vote: 5-0, Dundon and Silk absent.

iii. Zoning Map Amendment to Residential R-3; Hope Avenue; Peter Bouchard, representing Estelle Estates, LLC., Applicant. Stanley moved and Whited seconded a motion to find the proposed map amendment consistent with comprehensive plan and to recommend adoption to the City Council. Vote: 5-0, Dundon and Silk absent.

iv. Level II Site Plan and Conditional Use Application; 1185 Forest Avenue; B & D ME Realty, LLC., Applicant. Stanley moved and Whited seconded a motion to approve the site plan with seven (7) conditions of approval. Vote: 5-0, Dundon and Silk absent. Stanley moved and Whited seconded a motion to approve the conditional use application. Vote: 5-0, Dundon and Silk absent.

5. NEW BUSINESS

i. Level III Site Plan, 86 Newbury Street, 86 Newbury Street, LLC., Applicant. (7:00 – 7:45 p.m. estimated time) The Board will hold a public hearing to consider a proposal for the redevelopment of the Shipyard Brewery site at 86 Newbury Street, which is bounded by Newbury, Mountfort, Fore and Hancock Streets. The existing brewery building will be renovated and a new four to six story building is proposed with a gross floor area of 174,000 sf. The proposed uses include 89,387 sf of office space, 44,983 of technical fulfillment pharmacy, 9,590 of brewery, 2,500 sf of tasting room, four retail spaces, and a 105 room hotel and structured parking for 348 vehicles. Ten residential dwelling units within three buildings, and including 12 parking spaces, are also proposed. The project is located in the India Street Form Based Code and subject to review under Portland's subdivision, site plan, and housing replacement review standards.

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Memorandum
Planning and Urban Development Department
Planning Division

To: Sean Dundon, Chair and Members of the Portland Planning Board
From: Matthew Grooms, Planner
Date: September 20, 2018
Re: Canal Landing Ph. IV Development, Canal Landing, LLC
Project #: PL-000216-2018 CBL: 060-F-003
Meeting Date: September 25, 2018

I. INTRODUCTION

Canal Landing, LLC has submitted a Level III site plan and conditional use application for a new 12,000 square foot maintenance building to be constructed at 400 West Commercial Street in the WPDZ Waterfront Port Development zone. The proposed use is a permitted use within the zone, however, given that the height of the proposed building will extend to 72' feet above average grade, the project triggers a conditional use review in accordance with Section 14-320(a). The proposed development is described as phase IV, as three prior approvals were granted by the Planning Board for developments at this site relating to boat maintenance, storage and repair, as well as office and retail. This development is subject to site plan, conditional use and shoreland review.

Figure 1: Development site and proposed building location

The Workshop was noticed to 52 neighbors and interested parties, and the public notice appeared in the Portland Press-Herald on September 14th and 17th, 2018. The Planning Division has not received any public comments as of the completion of this Report.

Applicant: Canal Landing, LLC, Phin Sprague
Consultants: Stephen Bushey, P.E., Stantec Consulting Services INC.

Required reviews and requested waivers

Applicant's Proposal	Applicable Standards
Construction of new 12,000 square foot marine maintenance building with height of 72'	14-523 Site plan Required Approval and Applicability Level III Site Plan and 14-526 Site Plan Standards
Waivers	**Applicable Standards**
Peer review has determined that the applicant must apply for a waiver of the Maine DEP Chapter 500 Flooding Standard, which is a requirement of Section 5 of the City's Technical Manual. The expectation is that this request will be submitted prior to the public hearing.	Technical Manual Section 5(IV), Submission Requirements, which requires that Level III site plans comply with the Maine DEP Chapter 500 Flooding Standard.

II. PROJECT DATA

SUBJECT	DATA
Existing Zoning	Waterfront Port Development Zone (WPDZ)
Existing Use	Undeveloped/Boat Storage
Proposed Use	Marine Repair/Maintenance
Parcel Size	17.77 acres
Existing building footprint	0 SF
Proposed building footprint	12,000 SF
Existing floor area	0 SF
Proposed floor area	12,000 SF
Impervious Surface Area --Existing --Proposed --Net Change	 50,000 sq ft 65,000 SF 15,000 SF
Total Disturbed Area	12.7 acres
Parking Spaces -Existing -Proposed -Net change	 0 0 0

III. BACKGROUND AND EXISTING CONDITIONS

The development site is located north of the Fore River, south of West Commercial Street, west of the International Marine Terminal and east of Cassidy Point. Directly across West Commercial Street is primarily vacant land, with the Star Match commercial building being located further east. Further to the north lies the West End Neighborhood, with Danforth Street and Salem Street overlooking this site.

This site has 2,160 linear feet of frontage along West Commercial Street. Historically, this area was utilized as a rail yard, though the majority of these rail lines have since been removed. MDOT installed the existing line, which bisects the site running east-west in 2014 to serve the recently developed International Marine Terminal. The development area is relatively flat with the highest points along the property's West Commercial Street frontage at approximately 16' feet to 18' feet in elevation, sloping down to the Fore River. The site's lowest area, located along the bank of the Fore River, is between 9' and 10' feet in elevation. The flood hazard elevation in this area is 10' feet. The high annual tide line for the Fore River is 7.4' feet and the mean low water line is approximately -4' feet.

This property is located within the Waterfront Port Development Zone (WPDZ). This area of Portland's waterfront is intended for marine industrial uses and is an integral component of the city's working waterfront. At present, the site is undeveloped and sporadically used for boat and material storage. 'New Yard', which represents the portion of the western waterfront being utilized for boat storage and repair, has been under development since 2012, as identified in the timeline below.

TIMELINE

December 8, 2012 – Planning Board approves a boat yard and service yard on a 22-acre site just west of the Casco Bridge (currently occupied by the IMT). The approved site plan included a 42,000 SF boat repair building and regrading of approximately 7 acres of the site for boat storage and circulation. Additional site improvements included two boat ramps, a travel lift basin, floating docks, stormwater improvements, utility work, lighting and site landscaping.

August 27, 2013 – The applicant requested and received Planning Board approval for an amendment to the previous site plan allowing a phased development.

October 22, 2013 – The Planning Board approved a revised site plan, which shifted the two buildings shown in Phase I to the far westerly end of the site. This change avoided buildings being located on land that would later be acquired for IMT expansion. The first building was labeled as Phase 1b "proposed tension fabric building" with a footprint of 19,200 SF.

July 8, 2014 – The Planning Board approved an expansion of the IMT facility. The IMT site plan included approximately 17 acres previously controlled by New Yard. New Yard's remaining land, totaling 5 acre, contained their newly constructed 19,200 SF tension fabric building.

August 12, 2014 – The Planning Board approved a 27,600 SF addition to the existing building, intended for boat maintenance and repair.

January 12, 2016 – The Planning Board approved a new proposal by New Yard for construction of two new buildings intended for use as marine retail space and administrative offices. Additional site improvements included site regrading, installation of a pervious gravel surface across approximately 12 acres of newly acquired property for boat display and storage, and construction of a 2,400 SF shell building at the southwestern corner of the site, to be used by Wayneflete Academy for storage of small personal watercraft. Conditions of approval included the installation of street trees, contributions of $65,000 and $25,000 for construction of a dedicated left turn lane and improvements to West Commercial Street as identified in the West Commercial Street Master Plan respectively.

September 6, 2017 – The City Council approved a text amendment to the WPDZ which permits taller structures across the zone while delineating more stringent dimensional standards for building lengh and lot coverage. The amendment also established basic design standards, a view corridor provision, and strengthened conditional use standards to promote marine activity.

January 23, 2018 – The Planning Board reapproved Canal Landing Phase III, which is described in greater detail under the timeline date, January 12, 2016. Approval of this site plan application lapsed, and the applicant was required to go back before the Board for approval.

February 27, 2018 – The Planning Authority approved a Level II site plan for construction of a concrete travel lift basin, to be located towards the easterly portion of the applicant's site. The travel lift transports vessels from the water to land, and is used to maneuver vessels around the site.

Figure 2: Image showing phases of development. Red indicates Ph. I & II, Blue indicates Ph. III, Purple indicates travel lift location, and green indicates Ph. IV.

IV. PROPOSED DEVELOPMENT

The applicant's proposal is to construct a new marine maintenance and repair building, totaling 12,000 square feet in gross floor area, that would be located towards the Fore River on the southerly side of the Maine DOT Rail corridor, approximately 187' feet from the West Commercial Street right-of-way (at its closest point) and approximately 160' feet from the highest annual tide line (HAT). The site is accessible via two separate railroad crossings, with the primary access point being located approximately 732' feet to the west of the proposed building, and the secondary access point being located approximately 35' feet to the northeast. No driveways are proposed, and vehicles accessing the site would be required to traverse the 'pervious manmade surface' material approved as part of Canal Landing Phase III and graded with the understanding the vehicles would be driving across this surface. This material according to the applicant is suitable for vehicle use.

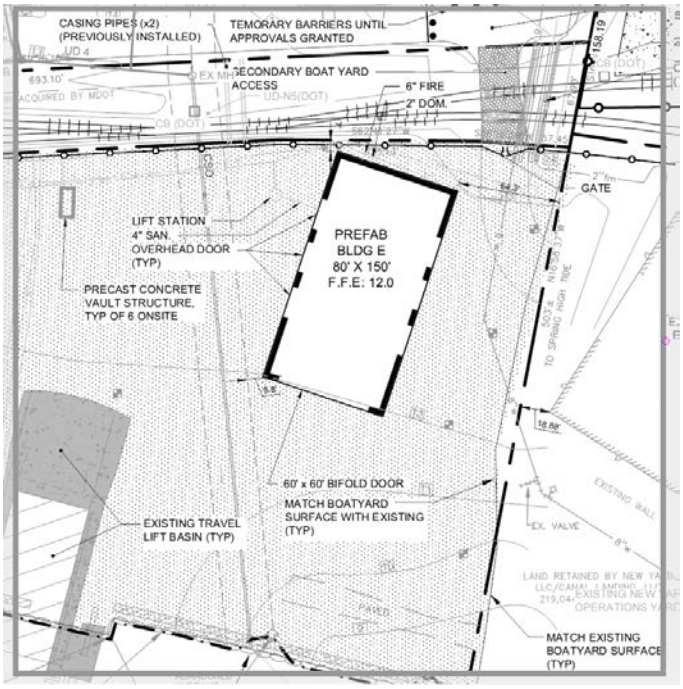

Figure 3: Proposed development plan for Ph. IV

Around the exterior of the building, no significant site improvements are proposed, which would include off-street parking, landscaping or lighting. The staff has asked that the applicant provide details regarding building lighting, and are also asking that some vegetation be provided, particularly to the north of the building between the building and Maine DOT right-of-way, as this space is not easily traversable. The building will feature some new utility connections in the form of sanitary sewer, water and electric.

V. NEIGHBORHOOD MEETING AND PUBLIC COMMENT

As of the writing of this memo, the Planning Division has not received written public comment regarding this proposal. The required neighborhood meeting has not yet been held and will be a requirement before the public hearing.

VI. STAFF REVIEW

A. ZONING

The zoning review contains the following sections; Waterfront Port Development Zone Review, Shoreland Zone Review and the Conditional Use Review.

i. Waterfront Port Development Zone Review

The project is located in the Waterfront Port Development Zone. The proposed uses, marine repair and maintenance are permitted uses within this zone. Under Section 14-319, Permitted Uses, it states that the proposed use, marine repair services, may exceed the maximum by-right height of 55 feet, though by doing so, it triggers a conditional use review. Height-based conditional uses within this area of the WPDZ, defined as, "east of a line projected due south from the centerline intersections of West Commercial Street and the easterly most Cassidy Point Drive and west of Casco Bay Bridge, on lots 5 contiguous acres or larger" are limited to a maximum height of 75 feet, as listed under Section 14-320.2. The highest point of the proposed building according to the applicant is 72 feet.

As a conditional use, this project is required to demonstrate compliance with both the zone-specific conditional use standards, Section 14-320(a), which are intended to ensure water access for water-dependent and marine-related uses, as well as the general conditional use standards as listed under Section 14-474(c)(2). The WPDZ also includes a provision for protecting access to the water for water dependent uses under Section 14-318.5, "No Adverse Impact on Marine Uses". The standards for that section are listed below.

Sec. 14-318.5

(a) The proposed non-water dependent use will displace an existing water-dependent use;

(b) The proposed use will reduce existing commercial vessel berthing space;

(c) The proposed nonwatery-dependent use, structure or activities, including but not limited to access, circulation, parking, dumpsters, exterior storage or loading facilities, and other structures, will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other uses to the water by water-dependent uses; or

(d) The siting of a proposed nonwatery-dependent use will substantially reduce or inhibit existing public access to marine or tidal waters.

The proposed use, which is considered both a water-dependent and marine-related use, does not impede access to the water by other such users and is further not subject to these particular standards based upon its classification.

Dimensional Standards Review

Lots located between Cassidy Point and the Casco Bay Bridge are permitted a lot coverage of up to 50%, a building height of 75 feet or less with building run of 300 feet or less (as measured parallel with West Commercial Street) for conditional uses. The proposed development falls within these limitations, with a lot coverage of 11.2%, proposed building height of 72 feet and building length of 80 feet. The staff are requesting that an updated building elevation be provided that includes the grade at all four corners of the building, to establish an average grade. The height of the building can then be confirmed.

Performance Standards Review

In compliance with Section 14-320.3. Performance Standards, the applicant has submitted an impact mitigation narrative summarizing how the project intends to meet the applicable performance standards.

(a) Outdoor Storage of Materials: Proposed storage of vessels will be entirely contained within designated areas requiring security access. The surface material, which is a porous manmade surface permitted by Maine DEP for stormwater quality control, serves to treat runoff contaminants.
Staff Finding: This applicant's proposal complies with this standard. The applicant has further indicated that they will be fully compliant with the Maine DEP Brightwork Manual, which sets state-wide standards related to storage of marine equipment.

(b) Noise: It is not anticipated that noise levels will exceed 55 decibels between 7:00 p.m. and 7:00 a.m.
Staff Finding: This applicant's proposal complies with this standard and there shall be minimal work occurring during evening and nighttime hours.

(c) Vibration: It is not anticipated that this phase of the development will result in significant vibration impacts.
Staff Finding: This applicant's proposal complies with this standard

(d) Federal and State Environmental Regulations: Proposed boat repair and maintenance activities will be performed in accordance with State and Federal regulations, so actions such as sand blasting and related boat work are managed and controlled to minimize emissions.
Staff Finding: This applicant's proposal complies with this standard.

(e) Discharges into Harbor Areas: Proposed discharge into the Fore River will occur either through the existing City drainage system (CSO), or through new drainage outfalls falling under Permit By Rule authorization from Maine DEP. The applicant is currently working with the Portland Water District to finalize the easement language for this CSO, which was made a condition of approval for the Level II project for the travel lift.
Staff Finding: This applicant's proposal complies with this standard, with the understanding that the CSO easement will be finalized.

(f) Storage of Vehicles: This development does not involve the storage of vehicles, and boats are exempt from this requirement, as boat storage is a permitted use.
Staff Finding: This applicant's proposal complies with this standard.

(g) Landfill of Docking and Berthing Areas: Proposed development does not involve landfill of docking or berthing areas.
Staff Finding: This applicant's proposal complies with this standard

(h) Off-Street Parking: The proposed use requires a minimum of twelve (12) off-street parking spaces. While not striped the applicant has indicated that there is extensive space on-site for parking, and that the proposed development should be considered as an expansion of services and not capacity, and as a result, no additional employees are anticipated.
Staff Finding: The site itself possesses adequate parking for employees of the facility (which are not intended to increase as a result of this project), and is not accessible to members of the public, the staff find that there is sufficient off-street parking and that no new parking is required.

(i) Off-Street Loading: The proposed building will feature multiple overhead doors and ample maneuvering space for loading and unloading activities via the travel-lift.
Staff Finding: This applicant's proposal complies with this standard

(j) Shoreland and Flood Plain Management Regulations: Proposed activities are located outside of the shore land zone, and the city's zoning administrator has reviewed the project for compliance with the Shoreland Zone. Review comments can be found below under the Shoreland Zone review section.
Staff Finding: The staff have provided initial feedback and have requested additional information.

(k) Lighting: Based upon the application material, it is not clear whether or not new lighting is being proposed. The applicant indicates that existing lighting, on-site and on adjacent sites, provides adequate levels of illumination.
Staff Finding: The staff are requesting additional information regarding site lighting, including location of lighting and relevant details that demonstrate compliance with Section 12 of the City's Technical Manual.

(l) Signs: No signs are proposed as part of this application.
Staff Finding: The applicant's proposal complies with this standard.

(m) Storage of Pollutants and Oily Wastes: According to the applicant, the proposal will be fully compliant with Maine DEP's Brightwork Manual, which establishes benchmarks and best practices for managing waste and pollution at boatyards and Marinas.

Staff Finding: The applicant's proposal complies with this standard

(n) Compatibility of non-marine uses with marine uses: The proposed use is considered a water-dependent use and does not trigger this standard.
Staff Finding: The applicant's proposal complies with this standard

(o) Design and Visual Character: The Board shall consider compliance of the proposed structure with the following criteria:
   a. In building design, including placement and screening of mechanical equipment, take into consideration long views to minimize negative visual impact and provide visual interest, and architecturally integrate exposed industrial systems and equipment where practical.
   b. Organize massing to emphasize certain parts of the building such as entries, corners, or different uses.
   c. Treat all facades, including the roof, with equal level of detail, and articulation.
   d. Vary and articulate building facades to add scale and avoid large monotonous walls. Treatments such as texture, color, material changes, or shadow lines or murals must be used to add visual interest and avoid dull, flat, repetitive facades.
   e. Use a scaling or articulation element such as stepback, canopy, or fenestration, as required for any street-facing façade within fifty (50) feet of West Commercial Street.

Staff Finding: The staff received a basic set of building elevations which can be seen below and have not had the opportunity to review in detail. A more formal analysis will be available at the workshop on September 25th. According to the applicant, the building design is very similar to the existing red building constructed under Phase 2 of this development, an image of which can be seen below.

Figure 4: In terms of design, the proposed building will be very similar to the building above, albeit taller and less wide (as the broad gable roof was used to bring the overall height of the building into compliance under the previous ordinance)

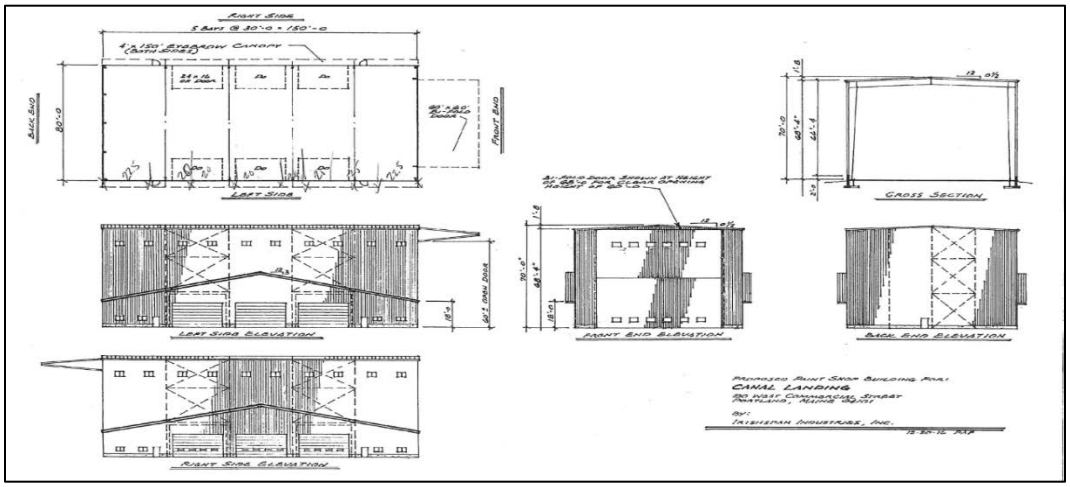

Figure 5: Proposed elevations for Paint Building

ii. Shoreland Zone Review

The Zoning Administrator, Ann Machado, has reviewed the application for Canal Landing Ph. IV and has provided the following comments (Attachment 3), largely requesting additional information on key topic areas and a narrative response outlining compliance:

Flood Plain:

The only real reference to the flood plain is in the Project Description as shown on Figure 7. This is from the Maine office of GIS. This is not the correct map to use for identifying the flood zone under our floodplain ordinance (Divison26.5). Portland is part of the National Flood Insurance Program and therefore the flood zone is based on the Flood Insurance Rate Maps (FIRMS) put out by FEMA. The area of development is located on Community Panel 230051 0016 B. Part of the property is located in the Flood Zone A2 (EL 10) and part is located in Zone C. The A2 Flood Zone line needs to be clearly located on the site plan. If any part of the proposed structure is located in the A2 Flood Zone, the applicant will need to submit the permits for Development in the Flood zone and either a flood elevation certificate or a Flood Proofing Certificate.

Shoreland Zone: Division 26

The extent of the Shoreland Zone needs to be clearly identified on the site plan.

The property is located in the Waterfront Port Development Zone (WPDZ).

Section 14-449(a)(1)(b) exempts any structure in the WPDZ zone from having to be set back 75′ from the highest annual tide.

Section 14-449(c)(2) exempts the development in the WPDZ zone from the clearing or removal of vegetation standards in this section

Section 14-449(d) addresses erosion and sedimentation control. Make sure that the criteria has been addressed.

Section 14-449(m) addresses Stormwater Runoff. Make sure that the criteria has been addressed.

Section 14-449(o) addresses General Site Plan Features in the Shoreland Zone. Make sure that this criteria has been addressed.

Does the location of the building require any approval from DEP under NRPA?

Lauren Swett, P.E. with Woodard and Curran, has reviewed the proposal for compliance with city site plan standards related to Sec. 14-499(d) and Sec. 14-499(m), and has found the information provided to be insufficient, providing the following comments (Attachment 1):

- A stormwater management report has previously been submitted for the overall site. This should be provided and updated based on the current project.

- No site details are provided. At a minimum, plans should include details associated with utility work, surface restoration, and erosion and sedimentation control.

In regards to Sec. 14-499(o), the Planning Board shall approve a site plan located within the shoreland zone if it finds that the following standards, in addition to the standards set forth in 14-526, are met.

(a) The proposal will maintain safe and healthy conditions;

(b) The proposal will not result in water pollution, erosion, or sedimentation to surface waters

(c) This proposal will adequately provide for disposal of all wastewater

(d) The proposal will not have an adverse impact on spawning grounds, fish, aquatic life, bird or other wildlife habitat;

(e) The proposal will conserve shore cover and visual, as well as actual, points of access to inland and coastal waters;

(f) The proposal will protect archaeological and historic resources

(g) The proposal will not adversely affect existing commercial fishing or maritime activities;

(h) The proposal will avoid problems associated with floodplain development and use;

(i) The proposal is in conformance with the standards set forth this section.

City staff are requesting that the applicant provide a detailed narrative description of how the project is compliant with each of these points. A discussion of these requirements will be provided in the public hearing report.

iii. Height-Based Conditional Use Review in the WPDZ

"Marine Repair" uses are identified as a permitted use eligible for a height bonus under the conditional use standards, Section 14-320.2. An analysis of dimensional requirement compliance can be found above.

The conditional use standards for the WPDZ are listed below:

Section 14-320. Conditional Uses

(a) Conditional uses shall be permitted in the Waterfront Port Development Zone, provided that, notwithstanding section 14-471 (c), section 14-474(a), or any other provision of this Code, the Planning Board shall be substituted for the Board of Appeals as the Reviewing Authority.

In addition to the provisions of section 14-474(c)(2) such uses will:

- Not impede or preclude existing or potential water-dependent development on other lots;
- Allow for adequate access to the water;
- Be compatible with water dependent and marine uses;
- Operationally support one or more water dependent use(s), or be located in a building or structure that is physically adaptable or relocatable to make way for future development of water-dependent uses; and
- Meet any additional performance and dimensional standards set forth below.

The development as proposed is only considered a conditional use due to the height of the proposed building and not because of the use itself, which in fact is a water-dependent use. These zone-specific conditions are largely relevant to marine-related or non-marine uses permitted within the WPDZ only on a conditional basis.

With this said, the development does fully meet aforementioned standards. The proposed building is designed to be a short-term 20-year building that serves the marine repair and maintenance component of this operation. All portions of this site, including the proposed buildings are easily adaptable and or relocatable given their relatively temporary nature, and do not occupy space directly adjacent to the water. The development proposal as presented does not preclude future water-dependent uses in this location and further supports existing and proposed water-dependent uses at this location.

The staff finds that this application meets the WPDZ conditional use standards.

Section 14-474. Conditional Use

The Board shall, after review of required materials, authorize issuance of a conditional use permit, upon a showing that the proposed use, at the size and intensity contemplated at the proposed location, will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zoning district. The Board shall find that this standard is satisfied if it finds that:

(a) The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone; and

Staff Review: This project is not anticipated to result in additional activity or traffic generation, given that facility would serve existing vessels currently being serviced elsewhere at this site. As such, staff finds that the proposal is in conformance with this standard.

(b) The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewerage disposal, emissions to the air, odor, lighting or litter; and

Staff Review: The proposed uses are not expected to produce any such impacts as stated above, thus, staff finds that the proposal conforms with this standard.

(c) The design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash, or waste generation, arrangement of structures, and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.

Staff Review: The proposed development will not differ from any other uses in this zone in regards to site design, given that the use is only a conditional use due to the building's proposed height, and not use. Staff are requesting that additional landscaping be provided.

B. SITE PLAN STANDARDS

(a) Transportation Standards

1. Impact on the Surrounding Street Network and Circulation

In reviewing the applicant's proposal against site plan standards regarding impacts to the surrounding street network and site circulation, the city's consulting traffic engineer, Tom Errico, found that the proposed development will not result in additional traffic impacts (Attachment 2).

2. Loading and Servicing

The site will be serviced via two separate driveways along West Commercial Street, which both provide access to one of two railroad crossings, located on either side of the proposed maintenance building. The driveway itself does not continue to the proposed building, though the applicant has indicated that the 'manmade pervious surface' is suitable for vehicle use.

As a marine maintenance and repair facility, much of the loading and servicing will actually arrive from the Fore River, and will be accessed using a marine travel lift, intended to transport marine vessels between the water and building. Tom Errico, in reviewing this proposal, has no concerns with the current configuration (Attachment 2).

3. Sidewalks

The project site has 2,160 linear feet of frontage along West Commercial Street, and given the fact that no sidewalk exists along the south side of West Commercial Street between the intersection of West Commercial and High Street (near Becky's Diner) and Cassidy Point, the applicant is requesting a waiver from the sidewalk requirement along their entire frontage. As this waiver was granted for phase 3 of this development, the staff does not believe a new waiver is required.

4. Public Transit Access

Not Applicable

5. Parking

The applicant has indicated that the proposed building is an expansion of services, not so much an expansion of capacity, and because of this, no additional employees are anticipated. Furthermore, given that the 'manmade pervious surface' is considered suitable for employee vehicles, the staff finds that there is sufficient on-site parking capacity.

6. Bicycle Parking

Given that no additional staff are anticipated, and as a result, no new additional parking, the proposal does not include new bicycle parking.

7. Snow Storage
The applicant has identified locations on their site plan for snow storage.

8. Transportation Demand Management (TDM)
Not Applicable

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features
The site is located on fill land which was developed for and used as a rail yard. Its natural features were disturbed many years ago and today the existing site has sparse vegetation.

2. Landscape and Landscape Preservation
The development site is undeveloped with no vegetation, and as such, no landscape preservation is required.

3. Site Landscaping
No site landscaping is proposed. Given that there is limited space for maneuvering between the proposed building and rail corridor, the staff are asking that landscaping be provided in this location.

4. Water Quality, Stormwater Management and Erosion Control
A description of the proposed stormwater scheme is provided below:

- The site's runoff conditions are primarily self-contained and runoff infiltrates or sheets to the Fore River; therefore, issues related to offsite or downstream flooding are not applicable. The Boatyard surface, consisting of a thick section of granular and crushed stone soils, provides for nearly 100% absorption, other than for very heavy rainfall events, thus water quality treatment is also achieved.

  All stormwater runoff is proposed to discharge to the Fore River. The project will not adversely impact adjacent lots or the City street system.

Reviewing Engineer, Lauren Swett, P.E., Woodard and Curran, has reviewed the final plan and her comments are listed below (Attachment 1).

- The Applicant has noted that they are requesting a waiver of the flooding standard. This should be documented on the waiver request sheet.
- A stormwater management report has previously been submitted for the overall site. This should be provided and updated based on the current project.
- No site details are provided. At a minimum, plans should include details associated with utility work, surface restoration, and erosion and sedimentation control.

(c) Public Infrastructure and Community Safety Standards

1. Consistency with City Master Plans
The proposed development is highly supportive of the City's recently approved Comprehensive Plan, which provides a number goals and strategies to create a vibrant and diversified working waterfront. Two goals in particular identified in the Comprehensive Plan stand out as being highly compatible with this proposed development.

- Prioritize and promote Portland's unique mix of water-dependent, marine-related and compatible non-marine uses.
- Ensure the future of the marine economy through support for emerging marine industries and mitigation of market trends that could compromise the balance between marine industries and competing development.

The proposed marine maintenance and repair facility will further diversify the operations occurring at Canal Landing, which is poised to become the first true shipyard in the City of Portland. This facility will expand available services, enabling this operation to work on larger marine vessels such as those of the Casco Bay Line fleet.

2. Public Safety and Fire Prevention

The proposed development has been reviewed by Fire Chief, Robert Thompson, who offers the following comments in regards to Public and Fire Safety (Attachment 1).

- The street side of the building(s) must be the address for the property. This should be consistent with 911, tax assessor, Inspections Division and future mailing address.

3. Availability and Adequacy of Public Utilities

Submission of Utility Capacity letters will be required as part of the final plan submission, or otherwise, shall be made a condition of approval.

(d) Site Design Standards

1. Massing Ventilation and Wind Impact

It is not anticipated that the proposed development will result in adverse impacts related to ventilation or wind as a result of proposed massing.

2. Shadows

Not Applicable

3. Snow and Ice Loading

Not Applicable

4. View Corridors

Recent text amendments to the WPDZ require view corridors measuring a minimum of 90 feet in width to remain unbuilt to preserve a clear line of sight between West Commercial Street and the water. No formalized view corridor has been provided, although the intent of the view corridor provision is met given the substantial area left undeveloped.

5. Historic Resources

The site contains historic and archaeological resources. The 19th century seawall is currently being restored in conjunction with the proposed marine improvements as approved during phase 3 of this project.

6. Site Lighting

The applicant has not submitted a lighting and photometric plan, though they have indicated that existing ambient light is more than sufficient. The staff are asking that additional information regarding site lighting be provided to confirm that no site lighting is proposed.

7. Noise and Vibration

The proposed develop is not anticipated to result in adverse conditions related to noise and or vibration.

8. Signage and Wayfinding

Not Applicable.

9. Zoning Related Design Standards

Please see discussion above

VII. FINANCIAL AND TECHNICAL CAPACITY

The applicant has provided a description of their technical capacity to complete the proposed project. Similarly, a letter from Norway Savings Bank was supplied demonstrating the applicant's financial capacity to complete the project, which is estimated to cost approximately $100,000 for site work, and $1.5 million to $2 million for construction of the building.

VIII. RIGHT, TITLE & INTEREST

The applicant supplied a Release Deed and Settlement Agreement demonstrating ownership of the property and property encumbrances.

IX. NEXT STEPS

- Hold required neighborhood meeting
- Provide a written impact mitigation narrative addressing WPDZ Performance Standards
- Provide additional information regarding site lighting, including relevant details and photometric plans
- Provide landscaping as requested by the City Arborist.
- Respond to comments from Woodard and Curran, updating stormwater plans and providing erosion control information
- Submit waiver of Maine DEP Ch. 500 Flooding Standard
- Include photorealistic renderings of proposed building with surrounding context
- Update applicable plan sheets as required to meet shoreland zone standards and provide written narrative to explain compliance with standards

X. ATTACHMENTS:

Attachments to Memorandum

1. Preliminary Planning and Peer Review Comments
2. Traffic Engineering Review comments
3. Shoreland Zone Review Comments
4. Design Review Comments (To be included prior to workshop)

Applicant's Submittal

A. Project Description
B. Site Plan Checklist
C. Financial Capability
D. Right, Title & Interest
E. Technical Capacity
F. Waiver Requests
G. Zoning Assessment
H. Environmental and Stormwater Document
I. Environmental Landscape Features
J. Public Infrastructure & Safety
K. Site Design Memo
L. Transportation

M. Construction Management Plan

Plans

P1. Cover Sheet
P2. Existing Conditions
P3. Site Layout Plan
P4. General Construction Notes
P5. Building Elevations

PLAN CORRECTIONS REPORT PL-000216-2018
FOR CITY OF PORTLAND

PLAN ADDRESS: 400 West Commercial Street
Portland, ME 04101

PARCEL: 059 A003001

APPLICATION DATE: 06/26/2018

SQUARE FEET: 0.00

DESCRIPTION: Canal Landing New Yard - Phase IV (Building E)

EXPIRATION DATE:

VALUATION: $0.00

CONTACTS	Name	Company	Address
Agent/Representative	Stephen Bushey	Stantec	778 Main Street, Suite 8 So. Portland, ME 04106

Corrections Required

City Arborist — Jeff Tarling

Civil Engineering - Third Party Reviewer — Lauren Swett

v.1.00 - Not Resolved

Correction: General
All building utility services are shown on the existing conditions plan, but they are called out on the proposed site plan. Please clarify that these site items (lift station, sanitary, fire, and domestic services) are already installed.
Corrective Action: Provide written response and or updated plans

Correction: General
The Applicant has noted that they are requesting a waiver of the flooding standard. This should be documented on the waiver request sheet.
Corrective Action: Provide waiver request

Correction: General
No site details are provided. At a minimum, plans should include details associated with utility work, surface restoration, and erosion and sedimentation control.
Corrective Action: Provide updated plans

Correction: General
Utility ability to serve requests have been submitted for water and sewer. Final confirmation of ability to serve should be provided when received.
Corrective Action: Provide written confirmation from utility providers

Correction: General
Please provide additional clarity on the CSO easement that exists adjacent to the site, and what restrictions exist. We understand that this CSO and easement are under the authority of the Portland Water District, and not the City of Portland as was previously understood. Specifically, are there restrictions on filling and grading over the easement, and are there any long-term maintenance or access requirements.
Corrective Action: Provide update on status of CSO easement

Correction: General
A stormwater management report has previously been submitted for the overall site. This should be provided and updated based on the current project.
Corrective Action: Revise stormwater management report to reflect updated conditions.

Fire — Pool Fire

Parking — John Peverada

Planning — Matt Grooms

v.1.00 - Not Resolved

Correction: Screening of Site Features
In accordance with site landscaping standards, the proposed development should provide some vegetation between the building and Maine DOT ROW to provide visual interest and buffering between the building and rail corridor.
Corrective Action: Coordinate with City Arborist in developing a landscape plan.

Correction: Utility Capacity
Prior to the issuance of any building permits, a copy of all 'ability to serve' letters shall be provided to the Planning Authority, which demonstrate adequate utility capacity for the project.

Corrective Action: Provide written confirmation from utility providers.

Correction: General
Renderings of the proposed building shall be provided to confer impact of the proposed building upon the surrounding context. These renderings should include multiple perspectives taken from West Commercial Street and from the West End neighborhood.
Corrective Action: Provide renderings of proposed building

Correction: Bicycle Parking
Bicycle parking shall be provided at a rate of two spaces per ten vehicle spaces. If the applicant does not wish to provide bicycle spaces, then a waiver request shall be submitted.
Corrective Action: Update plans or provide written waiver request.

Correction: Emergency Vehicle Access
The project site shall be designed to ensure adequate emergency access, notably access for fire apparatus and proximity to required fire hydrants. The name and address of the property should be standardized across assessor and 911 records to ensure efficient response times in case of an emergency.
Corrective Action: Provide written response outlining emergency vehicle access.

Correction: Site Lighting
It is not clear from the applicant's submittal whether or not site lighting is proposed? The applicant shall indicate the location and type of all site lighting on applicable plan sheets, and shall include lighting details and photometric plans demonstrating acceptable illumination levels and light trespass. All proposed lighting shall be full cutoff and shall be in compliance with Section 12 of the City's Technical Manual.
Corrective Action: Provide written response and if necessary, update and or provide plan showing location of lighting along with relevant details and photometrics.

Correction: General
The building elevations submitted are not sufficient. An updated building elevation shall be submitted which includes the following information regarding facade materials, average building grade and height based upon that grade.
Corrective Action: Provide updated building elevation

Correction: Exterior/Roof-Mounted Mechanical Equipment
The location of all exterior and or rooftop mechanical equipment shall be shown on applicable plan sheets, including but not limited to HVAC systems, transformers, air handling units, emergency generators and meter boxes. In the case of this building, long views shall be taken into consideration from the surrounding neighborhoods.
Corrective Action: Update plan sheets as necessary

Correction: General
The applicant states that an impact mitigation narrative was included in the submitted material, however this does not appear to be the case. The staff are requesting that this document be resubmitted.
Corrective Action: Resubmit document

Public Works Engineering	Mike Farmer
Public Works Street Openings	Rhonda Zazzara
Public Works Water Resources	Nathaniel Smith
Public Works Water Resources Engineering	Doug Roncarati
Traffic - Third Party Reviewer	Tom Errico
Transportation/Planning	Bruce Hyman
Zoning	Pool Zoning

Conditions Required

Portland Maine Yes. Google's good here.

Matthew Grooms <mgrooms@portlandmaine.gov>

400 W Commercial Street - Canal Landing Phase IV

Tom Errico <thomas.errico@tylin.com> Fri, Aug 31, 2018 at 7:37 AM
To: Matthew Grooms <mgrooms@portlandmaine.gov>

Hi Matt – I do not have any comments from a traffic perspective. Thanks

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
T·Y·LIN INTERNATIONAL
12 Northbrook Drive
Falmouth, ME 04105
+1.207.781.4721 main
+1.207.347.4354 direct
+1.207.400.0719 mobile
+1.207.781.4753 fax
thomas.errico@tylin.com
Visit us online at www.tylin.com
Twitter | Facebook | LinkedIn | Google+

"One Vision, One Company"

From: Matthew Grooms <mgrooms@portlandmaine.gov>
Sent: Thursday, August 30, 2018 3:50 PM
To: Jeff Tarling <jst@portlandmaine.gov>; Swett, Lauren <lswett@woodardcurran.com>; Robert Thompson <rmt@portlandmaine.gov>; Tom Errico <thomas.errico@tylin.com>; Keith Gray <kgray@portlandmaine.gov>
Subject: 400 W Commercial Street - Canal Landing Phase IV

[Quoted text hidden]

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.

Portland Maine Yes. Google's good here.

Matthew Grooms <mgrooms@portlandmaine.gov>

Canal Landing Ph. IV - Shoreland Zone Review

Ann Machado <amachado@portlandmaine.gov> Thu, Aug 30, 2018 at 10:05 AM
To: Matthew Grooms <mgrooms@portlandmaine.gov>

Matt -

Flood Plain:

The only real reference to the flood plain is in the Project Description as shown on Figure 7. This is from the Maine office of GIS. This is not the correct map to use for identifying the flood zone under our floodplain ordinance (Divison26.5). Portland is part of the National Flood Insurance Program and therefore the flood zone is based on the Flood Insurance Rate Maps (FIRMS) put out by FEMA. The area of development is located on Community Panel 230051 0016 B. Part of the property is located in the Flood Zone A2 (EL 10) and part is located in Zone C. The A2 Flood Zone line needs to be clearly located on the site plan. If any part of the proposed structure is located in the A2 Flood Zone, the applicant will need to submit the permits for Development in the Fllod zone and either a flood elevation certificate or a Flood Proofing Certificate.

Shoreland Zone: Division 26

The extent of the Shoreland Zone needs to be clearly identified on the site plan.

The property is located in the Waterfront Port Development Zone (WPDZ).

Section 14-449(a)(1)(b) exempts any structure in the WPDZ zone from having to be set back 75' from the highest annual tide.

Section 14-449(c)(2) exempts the development in the WPDZ zone from the clearing or removal of vegetation standards in this section

Section 14-449(d) addresses erosion and sedimentation control. Make sure that the criteria has been addressed.

Section 14-449(m) addresses Stormwater Runoff. Make sure that the criteria has been addressed.

Section 14-449(o) addresses General Site Plan Features in the Shoreland Zone. Make sure that this criteria has been addressed.

Does the location of the building require any approval from DEP under NRPA?

Let me know if you have any questions.

Ann

Ann Machado
Zoning Administrator
Permitting and Inspections Department
City of Portland, Maine
(207) 874-8709
[Quoted text hidden]

Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 26, 2018

Mr. Matthew Grooms
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: Canal Landing New Yard – Phase IV (Building E)
400 West Commercial Street
Level III Site Plan and Conditional Use Application
Applicant: Canal Landing, LLC

Dear Matthew:

On behalf of Canal Landing, LLC, we are pleased to provide the accompanying package of submission materials related to the proposed **Phase IV** Canal Landing New Yard development off West Commercial Street. This submission package is intended to meet the City's Submission Requirements as outlined in the Level III Application procedures.

As you are aware, the applicant has completed the initial phases of development consisting of two buildings constructed since late 2013 on their 5.03-acre remainder property positioned just to the southeast corner of the IMT Expansion project. The Portland Planning Authority previously approved these activities beginning in the fall of 2013. More recently in January 2018, the Planning Board approved the Phase III Site Plan for Buildings C & D and in February 2018 the Planning Authority approved a Level II Site Plan for the Travel Lift Basin construction and various and improvements. This current application is for the next phase **(Phase IV)** of development activity which will include the development of an 80' x 150' Maintenance Building (E), to be located on the waterfront parcel near the new Travel Lift Basin. As outlined in previously submitted Master Plans, the Canal Landing development will include multiple new buildings to be constructed along the Commercial Street frontage as well as shorefront areas. It is expected that all uses will be marine related and thus compliant with the WPDZ zoning either as permitted or conditional uses. An impact mitigation narrative is contained in Section 3 of this submission package.

The **Phase IV** development activity for which this application is made includes the construction of approximately 12,000 SF of new maintenance building space. The Canal Landing **Phase IV** activity includes a use that is identified as Permitted under the WPDZ Zone (Marine Repair Services) and therefore the appropriate supporting information is contained within this submission. The proposed building will also extend to a height of 72'-0" the it qualifies as a conditional use under Section 14-320.2(a).

PROJECT OVERVIEW

Canal Landing, LLC proposes to construct an expansion to their boat maintenance and repair yard within approximately 17.77 acres of land located prominently along the West Commercial Street waterfront. This land area includes 5.03 acres of remainder land that the Applicant retained after the MaineDOT acquired nearly 18 acres of land from New Yard, LLC for the IMT Expansion project. The Applicant acquired an additional 12.74 acres from Maine Central Railroad to fulfill their goals for a full-scale boat maintenance and marine related activities facility. The project represents an ideal reuse of a former highly industrialized property. The Canal Landing Boat Maintenance facility and IMT expansion have now initiated a new resurgence in marine waterfront related activity along the Fore River.

The proposed project includes previously approval buildings constructed over multiple phases along with constructed shorefront uses including a marine travel lift basin, two boat ramps, floats/docks, new or reconstructed piers and ancillary support features. The current Level III Site Plan approval request is only for **Phase IV** activities which are listed below in the Proposed Development section.

The **Phase IV** project includes limited site development activities involving earthwork, grading, building construction, and utilities associated with the proposed Maintenance Building (E). Among other things, utilities have been previously stubbed to the proposed Building E location.

The following sections provide greater detail regarding the site's existing conditions and the proposed development program.

Site Ownership

According to the ALTA/ACSM Survey completed by Owen Haskell, Inc. in April 2015, the development site contains multiple parcels as identified in the City of Portland Tax Assessor's maps. These parcels are more fully described as follows:

TABLE 1 – Land Ownership

Chart-Block-Lot	Owner	Description
59-A-3 & 4	New Yard, LLC CCRD Book 30887; Page 2	Consists of 5.03 acres. Land retained following the MaineDOT land taking.
60-F-1, 3 &4 71-F-2	Canal Landing, LLC CCRD Book 32239; Page 148	Consists of a 6.75-acre area between the IMT rail track and the street; also consists of 5.99 acres of area along the waterfront, out to mean low water.

Figures 1-12 provided with this letter depict the project location on various available resource maps. As shown, the site location is on West Commercial Street just west of the Casco Bay Bridge and between Commercial Street and the waterfront. The combined parcels have approximately 2,159.55 LF of frontage along Commercial Street. The development site is identified on the U.S.G.S. Portland West 7.5 Minute Quadrangle Map.

PROJECT PURPOSE AND NEED

The Canal Landing project has transformed an underutilized, yet prominent property, into water dependent maritime use as was contemplated within the City's zoning and comprehensive plans. The project's community benefits continue to include:

- Enhanced commercial/marine related opportunity and rehabilitation of a deteriorated, older industrial property.
- Rehabilitated waterfront including new/renovated pier(s), boat ramp(s) and shoreline stabilization.
- Various remedial activities related to recognized environmental conditions on the properties will be performed, thus addressing several long-standing environmental issues.
- Revitalization of an important waterfront property that has excellent access to deep water, various utilities, City services, and related shorefront amenities.
- Furtherance of the purposes of the Waterfront Port Development zone as articulated in the Land Use Ordinance to "*ensure the continued viability of the Port of Portland*" by limiting use to "*those uses which are dependent upon deep water and which contribute to port activity*".
- Creation of new buildings and site use consistent with waterfront activities in a gateway location along the busy West Commercial Street corridor. The proposed **Phase IV** building includes marine repair service facilities that are essential to the operations of the Portland Yacht Services business.

EXISTING CONDITIONS

The site consists of approximately 17.77 acres of land that is composed of three primary areas described as follows:

1. **Retained Parcel (Map 59A, Lots 3 & 4)**: Consists of the retained 5.03-acre area owned by New Yard, LLC and it represents the retained land originally permitted by the Applicant during late 2012 – 2013. Within this land area New Yard, LLC has constructed Building A and Building B amounting to approximately 48,000 SF of

building space. This parcel contains a boat ramp and boat yard area currently in use by Portland Yacht Services.

2. **Shorefront Parcel (Map 60F, Lots 3 & 4)**: This area is irregularly shaped and contains approximately 1,581 LF of waterfront. The site area is approximately 5.99 acres. This area is now home to the new travel lift and travel lift basin which has been under construction since early spring.

3. **Street Front Parcel (Map 60F, Lot 1)**: This 6.75-acre area contains approximately 2,160 LF of street front. Previously approved Buildings C & D are scheduled for construction this summer in this area.

Existing development in the area includes the following:

- The City of Portland Marine Terminal and expansion area is located to the east of the site.
- Commercial activity including Nova Seafood and Graybar Electric operate out of buildings on the north side of Commercial Street.
- The Portland Star Match Co. building lines up opposite the site.
- The State of Maine now operates rail tracks into the IMT expansion area. These tracks were completed in 2014/2015.

ACCESS CONDITIONS

The applicant has installed two new driveways (east & central as shown on plans) to allow access to Canal Landing's business operations. The central driveway will continue to be the primary site entrance as it aligns with a 50' wide rail track crossing. The easterly driveway will provide access to the east end of the site including the existing buildings and easterly boat ramp. A third driveway, previously approved as part of the Phase III activity for Buildings C & D, is currently under construction at the far west end of the property.

SITE UTILITIES

The site contains numerous utility lines. The primary utilities are identified as follows:

- The Portland Water District maintains a 48" sanitary sewer interceptor sewer along the site's entire Commercial Street frontage. A portion of this sewer is located within the site within a utility easement. The District/City also maintain two CSO lines that discharge out to the Fore River. The previously completed Buildings A and B discharge

to an onsite private pump station that ultimately discharges to the 48" interceptor sewer. The proposed **Phase IV** building's sanitary sewer will also connect to the existing force main on the waterfront side of the tracks and these flows will continue to discharge to the 48" interceptor sewer.

- The Portland Water District maintains a water main in Commercial Street that varies from 12" to 16". The Applicant has previously installed a fire line and fire line meter to supply water to allow for both fire and domestic water supply service into the waterfront site. This system will be used for the **Phase IV** Maintenance Building.

- Unitil maintains high-pressure and low-pressure natural gas line along Commercial Street. The Applicant continues to investigate service connections for natural gas supply to the property. Currently, Buildings A and B are served by onsite LP fuel storage tanks. Building E is also expected to be served by onsite LP tank supply.

- Power to the site is supplied by Central Maine Power. Currently, there is an overhead service crossing Commercial Street to a pole from which underground facilities extend to Buildings A and B. This service will also be used to supply power to Building E. We have requested CMP provide a statement regarding their ability to continue supplying power to the development site.

Letters were sent to the following utility providers requesting ability to serve for the project (copies provided with this letter in Tab 5):

- Portland Water District (water supply)

- City of Portland Public Services (sanitary sewer)

Plan C-2.1 shows the proposed utilities for **Phase IV**.

TOPOGRAPHY AND DRAINAGE

Owen Haskell, Inc. has completed a topographic survey of the property. The site is relatively flat with the highest points along the Commercial Street frontage, sloping to the waterfront. Site elevations along Commercial Street trend down from east to west from Elevation 18' (NGVD 1929) to Elevation 16'. Recent site improvements include the placement of a boatyard surface material over most of the shorefront parcel, as was previously approved. This has raised site grades up several feet. The High Annual Tide Line (HAT) for the Fore River is elevation 7.4' and mean low water is approximately Elevation -4.0'. The Federal Channel is also represented on the project drawings and it is generally located 60' to 120' off the shorefront.

The site's runoff drains directly to the Fore River via overland flow. There are very few drainage measures on site except for several old catch basins, although there is a closed storm drainage system within Commercial Street.

Ongoing ground activities include improved surfaces to support boatyard activities. This includes the placement of the "Boatyard Surface" consisting of new gravel and crushed stone surfacing thereby aiding stormwater control and treatment. This "Boatyard Surface" treatment has been widely placed throughout the shorefront land and it has been found effective in handling the site's runoff conditions. This surface is compliant with the MeDEP Brightwork Manual. The majority of the shorefront parcel area is now covered with the "Boatyard Surface" and generally speaking produces minimal runoff as nearly all rainfall is absorbed into the surface area.

SOILS CONDITIONS

- 10 to 15 feet of sand and gravel fill – there is little to no organic surface layer throughout the site which is reflective of the site's rail yard history.
- 5 to 10 feet of silt and sand.
- 10 to 40 feet of gray clay identified as the Presumpscot formation.
- 30 to 40 feet of dense silty marine sands.
- An undetermined thickness of dense silty sand and gravel identified as glacial till overlaying bedrock.

According to various investigation data, depth to groundwater varies from 3 to 7 feet and this likely varies with tidal conditions in the Fore River. Generally, the groundwater flows from the northwest to the southeast across the site. The **Phase IV** project will not impact the underlying soils or groundwater conditions.

PROPOSED DEVELOPMENT

The Applicant proposes to continue development of the property in a manner consistent with the WPDZ Standards. The **Phase IV** development program includes construction of a 12,000 SF Maintenance Building.

Offsite

Site access is proposed via Commercial Street as well as from the Fore River. The **Phase IV** primary site entrance is proposed from both of the existing rail crossing and West Commercial Street entrances.

LAND ORDINANCE REVIEW

The property currently lies within the City of Portland Waterfront Port Development Zone (WPDZ). Within the WPDZ district the following uses are permitted or conditioned:

Permitted Uses

- Marine repair services and machine shops
- Tug boat, fire boat, pilot boat and similar services
- Boat repair yard
- Marine cargo handling facilities, including docking, loading, and related storage
- Warehousing and storage of goods which are awaiting shipment via cargo carriers

Conditional Uses

- Marine ship building and facilities for construction, maintenance, and repair of vessels
- Boat storage facilities excluding rack storage
- Seafood processing
- Seafood packing and packaging
- Off-street parking lots, excluding parking structures

The following dimensional requirements apply in the WPDZ District:

Dimensional Standard	Requirement
Minimum Lot Size	None
Minimum Frontage	None
Front Yard Setback	None
Side Yard Setback	None
Rear Yard Setback	None
Setback from Pier Line	5 feet for structures
Maximum Lot Coverage	50%
Maximum Building Height	55 feet or 75 feet (conditional use)[1]

With regard to building height compliance, the proposed finished floor elevation of the **Phase IV** building is 12.0 feet and the building height will be 70'-0".

In accordance with Section 14-318.5 (no adverse impact on marine uses) the following statements support the project intentions:

[1] The proposed Building E will have a maximum height of 72'-0". This is considered a conditional use in the WPDZ per Section 14-320.2(a) Dimensional Table.

- *Criteria 1 – The proposed non-water dependent use will not displace an existing water-dependent use.*

  Supporting Evidence: In fact, the proposed project is a water dependent use and it is not displacing any existing water related use.

- *Criteria 2 – The proposed use will not reduce existing commercial vessel berthing spaces.*

  Supporting Evidence: In fact, the project includes measures to improve and increase commercial vessel berthing space as the project activities contemplate pier rehabilitation and the installation of berthing spaces for maintenance of vessels including tug boats or similar sized vessels and travel lift capacity to remove vessels from the water for placement into the proposed Maintenance Building.

- *Criteria 3 – The proposed non-water dependent use, structure or activities, including but not limited to access, circulation, parking, dumpsters, exterior storage or loading facilities, and other structures, will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses.*

  Supporting Evidence: The proposed uses are water-dependent and do not interfere with any existing water dependent uses or activities on the site.

- *Criteria 4 – The siting of a proposed non-water dependent use will substantially reduce or inhibit existing public access to marine or tidal waters.*

  Supporting Evidence: The project is not non-water dependent and it will not reduce or inhibit existing public access to marine or tidal waters. It is expected that waterfront access will be improved as a result of the installation of the previously approved boat ramp(s) and floating dock facilities.

In accordance with Section 14-320 – Conditional Use Standards, the following evidence is provided:

Provisions to satisfy:

- *Not impede or preclude existing or potential water dependent development on other lots.*

Supporting Evidence:

The proposed Maintenance Building will be an integral part of the marine services provided on the property. Its placement will not impede uses or future activities at the IMT or Cassidy Point.

- *Allow for adequate access to the water.*

Supporting Evidence:

The Maintenance Building has been positioned to allow for use by the travel lift basin and it will not impede access to the two boat ramps on the site.

- *Be compatible with water dependent and marine uses.*

Supporting Evidence:

The proposed Maintenance Building is an integral part of the boat repair and maintenance operations to be provided at this site. It is considered absolutely compatible with water dependent and marine uses.

- *Operationally support one or more water dependent use(s) or be located in a building or structure that is physically adaptable or relocatable to make way for future development of water dependent uses.*

Supporting Evidence:

The proposed Maintenance Building will be used for vessel repairs and maintenance and is therefore supportive of water depended uses.

- *Meet any additional performance and dimensional standards set forth below (per Section 14-320.3)*

Supporting Evidence:

The proposed Maintenance Building will have a maximum height of 72'-0" and is therefore compliant with the conditional use dimensional standards.

Performance Standard Compliance

The Applicant will comply with all items listed and described in the performance standards for the WPDZ in the development of the proposed **Phase IV** project as well as through the day to day operational activity at the site once construction of **Phase IV** is

complete. Compliance with these standards is discussed in the Impact Mitigation narrative contained in Section 3 of this submission.

The off-street parking and loading requirements will not be applicable to Canal Landing's business operations. The construction of the Maintenance Building will not involve the increase of staffing beyond current levels. Generally, the project involves employee parking which will vary within the yard area to allow flexibility for boat storage.

Brightwork manual overview

In 2005, the Maine Department of Environmental Protection released "*Brightwork -- A Best Management Practices Manual for Maine's Boatyards and Marinas* ". The goal of the manual is to help site owners and operators of marinas and boatyards to reduce pollution from their facilities by providing environmental compliance benchmarks, common sense practices that enable the benchmarks to be met, a list of regulatory references that form the basis of the benchmarks, and a series of tools to enable easier benchmark progress measuring.

The manual describes in detail, the types of toxic pollutants generated by boatyard and marina sites and the resulting environmental and economic impacts.

The manual provides guidance on how to carry out typical jobs and practices associated with boatyards and marinas and the associated benchmarks, best management practices, clean up and waste disposal, customer relations, legal requirements, etc.

The practices described include:

- Hull Preparation
- Sandblasting
- Painting
- Boat Washing
- Engine Repair and Maintenance
- Stormwater Planning
- Fueling and Fuel Storage
- Waste Management

The manual provides best management practices for each practice including containment, indoor vs. outdoor recommendations, dust emissions, managing spills, storage, labeling and disposal of various waste products.

The Applicant currently complies with the Brightwork practices within their new facilities at the Canal Landing Yard. They will continue to utilize the Brightwork Manual as a reference and adhere to the requirements set forth for all activities at the proposed site.

TRAFFIC

The proposed project will not result in significant impacts to the surrounding street system. The previous approval review in January 2016 included a Traffic Movement Permit which we understand remains in force. No further traffic analysis for the **Phase IV** application has been performed at this time as the proposed building is a maintenance building that will be part of the ongoing business operations and no impact to site traffic generation is anticipated.

The existing boatyard consists of two buildings totaling 48,000 SF of boat storage/maintenance space. There are approximately 50 employees at the site at various times. The proposed **Phase IV** activities include the construction of Building E that will include the following use:

- Approximately 12,000 SF of marine repair and support space (Building E)

NATURAL FEATURES

The development site does not contain any significant natural features including wetlands, vernal pools or other protected resources except for the shorefront edge adjacent the Fore River. The site has been developed for a period greater than 150 years and there is generally no land area that has not been disturbed or otherwise developed. Stantec previously has contacted various resource agencies regarding the site's potential to contain significant wildlife habitat, historic or archaeological resources. Findings from each of the agencies has been previously provided to the City. The MeDEP has previously approved the ongoing construction of the travel lift basin and revetment repairs.

NOISE/VIBRATION

The WPDZ has the following standards for noise and vibration:

"Noise:

1. *The level of sound, measured by a sound level meter with frequency weighting network, inherently and recurrently generated within the WPDZ between the hours of 7.00 p.m. and 7.00 a.m. from industrial facilities or operation commenced on or after July 1, 1988, shall not exceed 55 dB on the A scale at or within the boundaries of any residential zone, except for sound from construction activities, sound from traffic on public streets, sound from temporary activities such as festivals, and sound created as a result of, or relating to, an emergency, including sound from emergency warning devices.*

2. *In measuring sound levels under this section, sounds with a continuous duration of less than 60 seconds shall be measured by the maximum reading on a sound level meter set to the weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of 60 seconds or more shall be measured on the basis of the energy average sound level over a period of 60 seconds (LEQ_1).*
3. *In addition to the sound level standards otherwise established, facilities or operations established or built in the waterfront port development zone on or after July 1, 1988, shall employ best practicable sound abatement techniques to prevent tonal sounds and impulse sounds or, if such tonal and impulse sounds cannot be prevented, to minimize the impact of such sounds in residential zones. Tonal sound is defined as a sound wave usually perceived as a hum or which because its instantaneous sound pressure varies essentially as a simple sinusoidal function of time. Impulse sounds are defined as sound events characterized by brief excursions of sound pressure, each with a duration of less than one second."*

"Vibration:

Vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile supported pier."

It is the Applicant's intention to comply with the noise and vibration standards above. Night time activity will be minimal. Typical sources of noise from routine boat yard jobs and practices include hull preparation, sandblasting, painting, boat washing, engine repairs and maintenance and transportation of vessels throughout the site. All these practices will be performed in accordance with the MeDEP Brightwork Manual.

The site is well separated from noise sensitive sites with no direct abutting impacts to abutting residential neighborhoods. The nearest residential building is approximately 800' away from the edge of the proposed buildings and is located along the Beach Street ramp connection to the Casco Bay Bridge.

The site is surrounded by commercial/industrial uses including the International Marine Terminal to the east, Commercial activity including Nova Seafood and Graybar Electric operate out of buildings on the north side of Commercial Street. Other adjacent noise generating sources including the Casco Bay Bridge and the flight path of the Portland International Jetport. To the best of our understanding, the operations of the site over the past few years has not resulted in neighborhood complaints or issues.

LIGHTING

The primary purpose for site lighting for Canal Landing is for security in the vicinity of the buildings and to provide lighting at key operational access points to the Fore River.

Nighttime operations for the boatyard are atypical. Security at the site will be supplemented by infrared cameras mounted on the buildings.

It is important to note that light sources from abutting properties cast direct and indirect illumination onto the property. The adjacent light sources include cobra head sodium lights on utility poles along Commercial Street.

Based upon the existing ambient light levels and the proposed lighting, the Applicant is comfortable that adequate lighting will be present at the property for the proposed uses. Comments from the residential neighbors during the previous review periods indicate that additional lighting to raise the overall level of light at the property is not desired.

The Applicant is requesting that the Planning Staff support a waiver by the Planning Board of the lighting standards of Section XV 4.A. Uniformity and 4.B. Illumination Levels, based upon the following:

1. Existing ambient light levels at the property are between 0 and 0.3 foot-candles at the interior and 0.8 to 1.5 fc at the edges of the lot;
2. Proposed lighting will raise the light levels needed for safe access and egress in and out of the property onto Commercial Street to reasonable average levels of 1.25; and
3. Proposed lighting will provide for security, safety, and nighttime use of the new buildings and work yards;
4. Illumination of the property to the levels required by the City Ordinance will impact the residences located uphill from the proposed project.

SOLID WASTE

The proposed boatyard use will generate two types of solid waste: regular waste and hazardous waste.

Regular non-hazardous waste will be stored on site in a dumpster(s) and collected by a local solid waste company who the Applicant will form an annual contract.

Hazardous waste will be stored in accordance with the requirements of the Brightwork Boatyard Manual and collected, transported and disposed of by ENPRO Services, Inc. or another similar company. We have previously provided a letter from ENPRO identifying the most common drummed wastes generated by the Applicant's former facility on Fore Street in Portland, how they are tracked, where they are transported to and how they are disposed of. No further information related to solid waste will be provided unless requested by City Staff.

STORMWATER MANAGEMENT

The development will rely on the placement of boatyard surface materials consisting of crushed stone aggregate and subbase gravels similar to what has been placed on the majority of the shorefront parcel. The Applicant will be requesting a waiver from the City's Flooding Standards due to the site's proximity to Tidal Conditions in the Fore River. We propose the placement of the "Boatyard Surface" as the primary means of water quality treatment for the site.

EROSION AND SEDIMENT CONTROL

A temporary Erosion and Sediment Control Plan is included as part of the plan documents. Because of the placement of the crushed stone surface over most of the property, there is little to no exposure for erosion or sediment transport off the site.

FLOODING

The project site has been depicted graphically on a portion of the FEMA Flood Insurance Rate Map and is attached as Figure 7 and provided at the end of this section. The **Phase IV** building will be constructed with a finish floor elevation of at least 12.0 feet, which is 2 feet higher than the 100-year flood elevation of 10.0 feet.

BLASTING

Based on previous soil investigation at the site, blasting is not anticipated for construction of Building E.

AIR EMISSIONS/ODORS/VAPORS

Air emissions expected to occur as a result of, or within the project area, are as follows:

- Temporary emissions associated with construction vehicles and construction of project.
- Temporary emissions associated with vehicular travel of employees, delivery vehicles, travel lift, etc.
- Emissions associated with the heating systems for the building.
- Emissions related to boat repair activity.
- Insignificant odors will be generated during the construction phase of the development and during day to day operation of the proposed boatyard facility.

Short term odors or odors generated during construction include the following:

- Organic odors from earth moving during construction.
- Petroleum odors from construction equipment and vehicles used during construction for the project.
- These odors will emanate from the site and may be detectable in the immediate vicinity of the development but will dissipate through the air into the atmosphere in negligible amounts.

Long term odors or odors generated during day to day operation of the facility such as that proposed include:

- Petroleum odors from vehicles/travel lift.
- Solid Waste odors.
- Odors from boatyard activities such as painting, etc.

These odors are not likely to be offensive, as they are of low intensity and the site is not in a densely developed area. Therefore, no provisions for odor control are planned. However appropriate ventilation procedures will be utilized on site for health and safety of staff during certain boat repair activities.

Large scale water vapor emissions are not anticipated as part of this project.

SUNLIGHT

The proposed building at the site will not cast significant shadows onto neighboring properties, or block access to direct sunlight for structures utilizing solar energy. The Site Layout Plan and Grading and Drainage Plan show the proposed site improvements and their relationships to property lines. The site plan shows the relative elevations of the building with respect to elevations along the property lines.

APPROVAL REQUIREMENTS

The following **Phase IV** permits are required:

- City of Portland Planning Board Level III Amended Site Plan Approval, Conditional Use Approval and Shoreland Zoning Approval
- City of Portland Building Permit(s)

CLOSURE

Accompanying this cover letter are the following materials to complete Tab 1 – General Application Documents:

- Attachment A: Level III Site Plan Application Completed Checklist
- Attachment B: Right, Title and Interest
- Attachment C: Zoning Assessment
- Attachment D: Waiver Requests
- Attachment E: Financial Capability
- Attachment F: Technical Capability

In addition to the information listed above, we are also providing the following materials with our submission:

- Tab 2 – Transportation
- Tab 3 – Environmental and Landscape Features
- Tab 4 – Environmental and Stormwater
- Tab 5 – Public Infrastructure and Safety
- Tab 6 – Site Design
- Tab 7 – Construction Management Plan
- Plan Sheets

On behalf of the Canal Landing Team, we look forward to your continued assistance on the project and we look forward to the next available Public Hearing meeting with the Planning Board. We are of the opinion that a workshop with the Planning Board is not necessary given the previous appearances we have made before the Planning Board. In advance of the Public Hearing, the applicant will be conducting a Public Informational Meeting. We anticipate this meeting will be conducted prior to the Public Hearing.

If you have any questions regarding the materials being submitted, please contact this office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Phone: (207) 887-3406
Fax: (207) 883-3376
stephen.bushey@stantec.com

Attachments – As listed above

c: Phineas Sprague, Jr. – Canal Landing, LLC
Clint Marshall

V:\1953\active\195350129\Admin\Permitting\Level III - Ph 4 - Site Plan Application\ltr_grooms_level3_2018.06.26.docx

FIGURES 1-12

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LOCATION MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: DELORME STREET ATLAS USA 5.0

FST 100 YEARS

FAY, SPOFFORD & THORNDIKE
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

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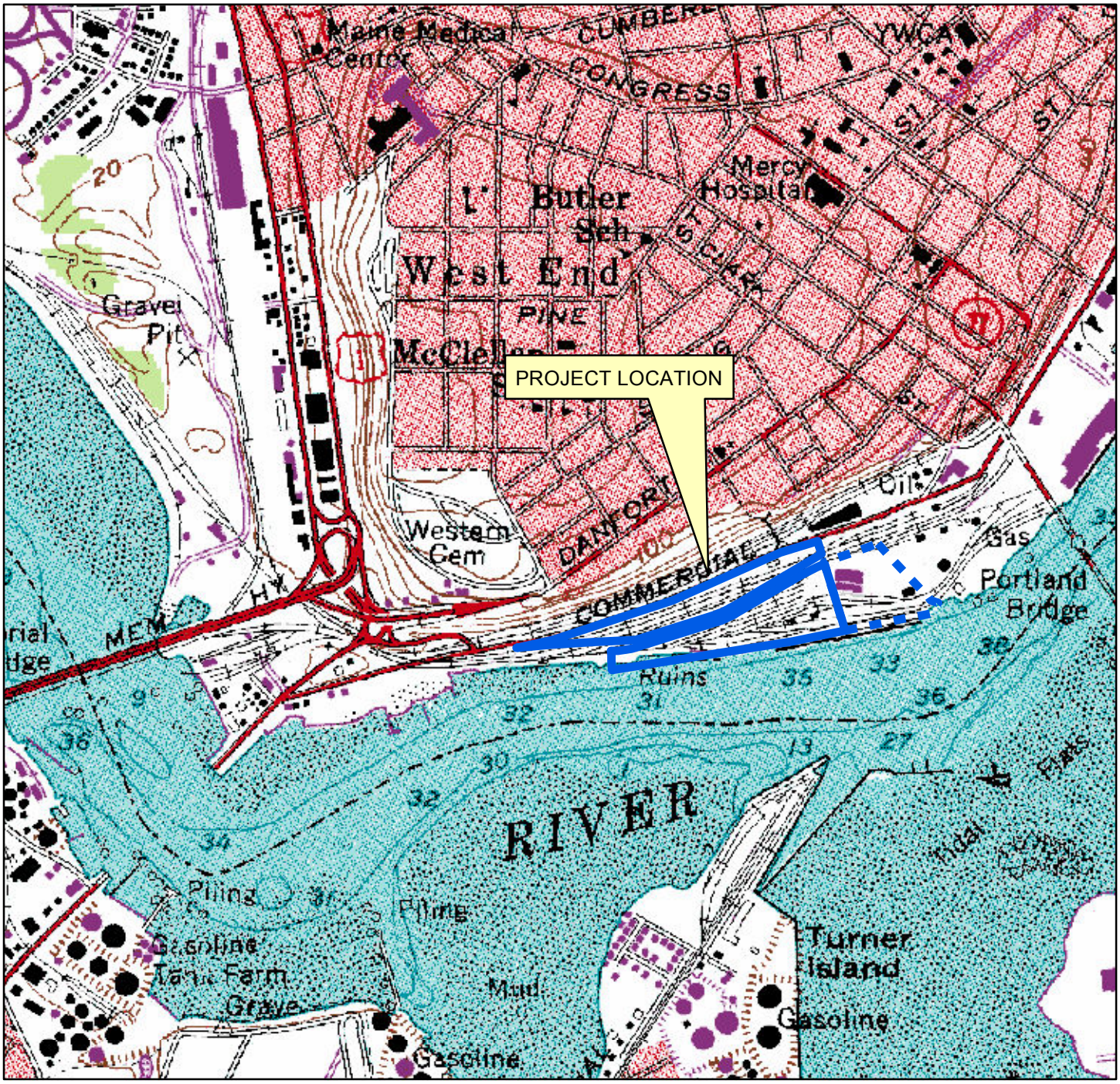
CHECKED:	SRB
DATE:	FEB 2015
FILENAME:	3091.04 LOCMAP
SCALE:	1" = 1000'

FIGURE
1



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USGS LOCATION MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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ENGINEERS • PLANNERS • SCIENTISTS
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FIGURE

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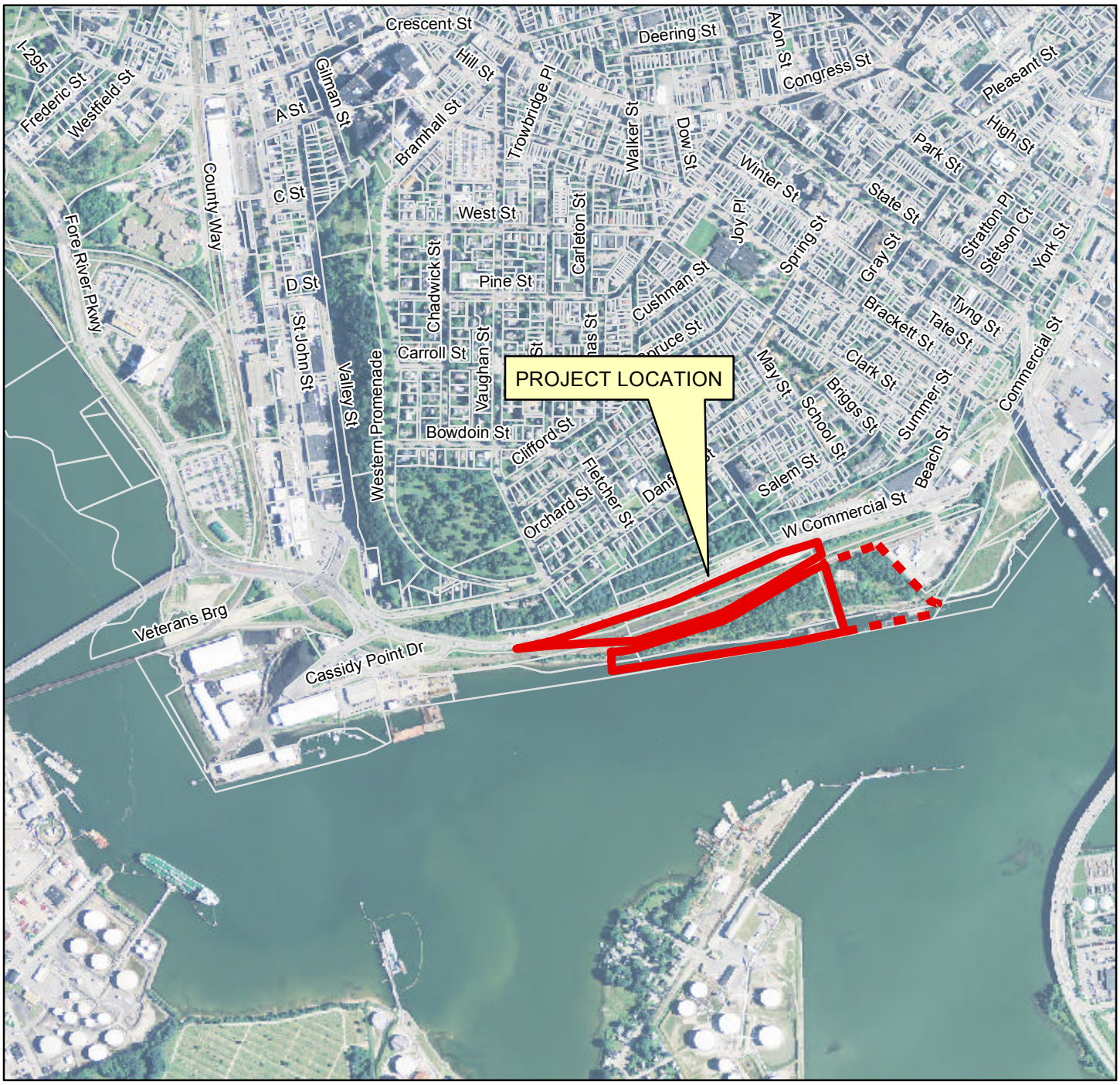

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TAX MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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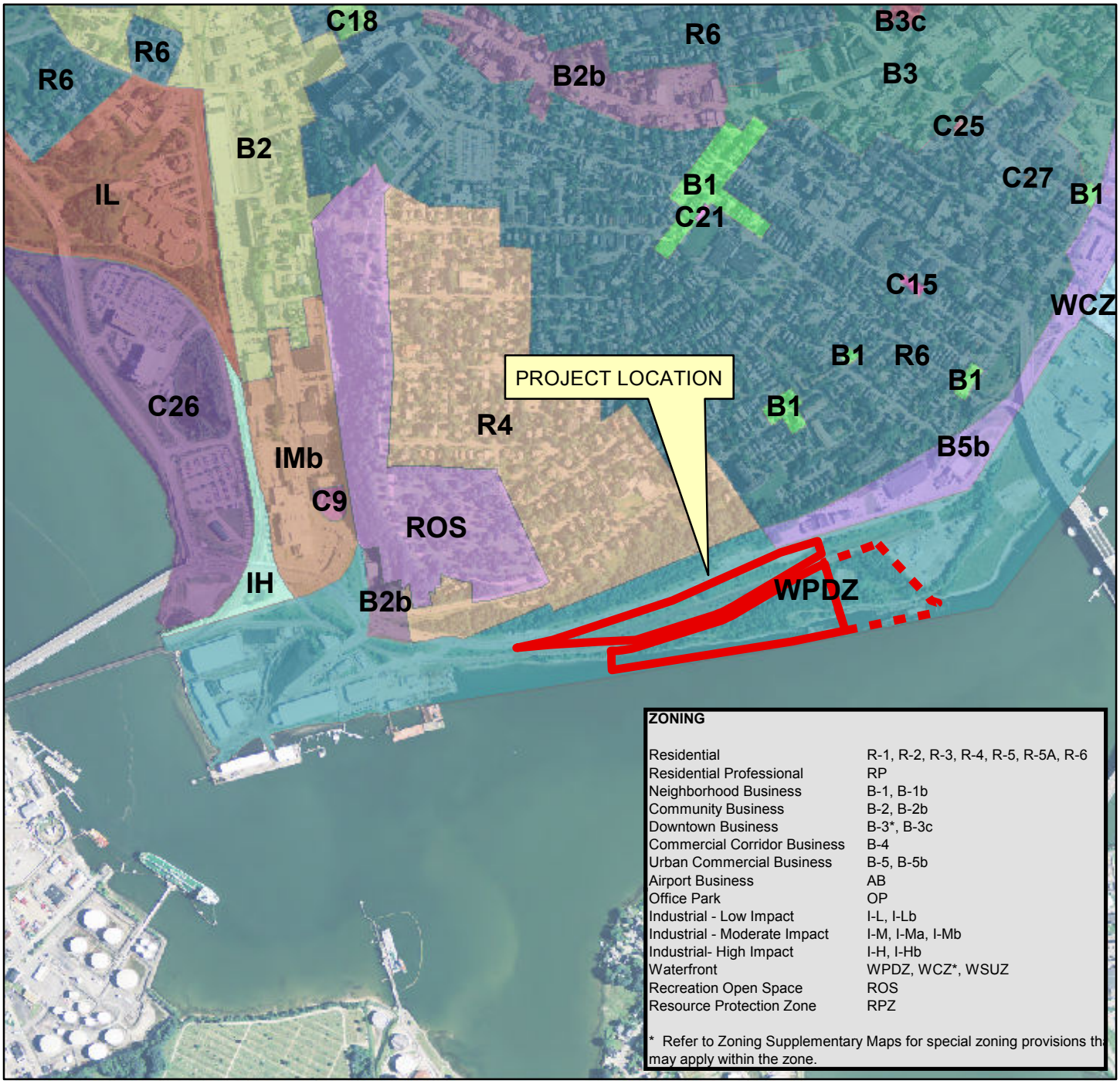
FIGURE

3



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ZONING MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

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FIGURE
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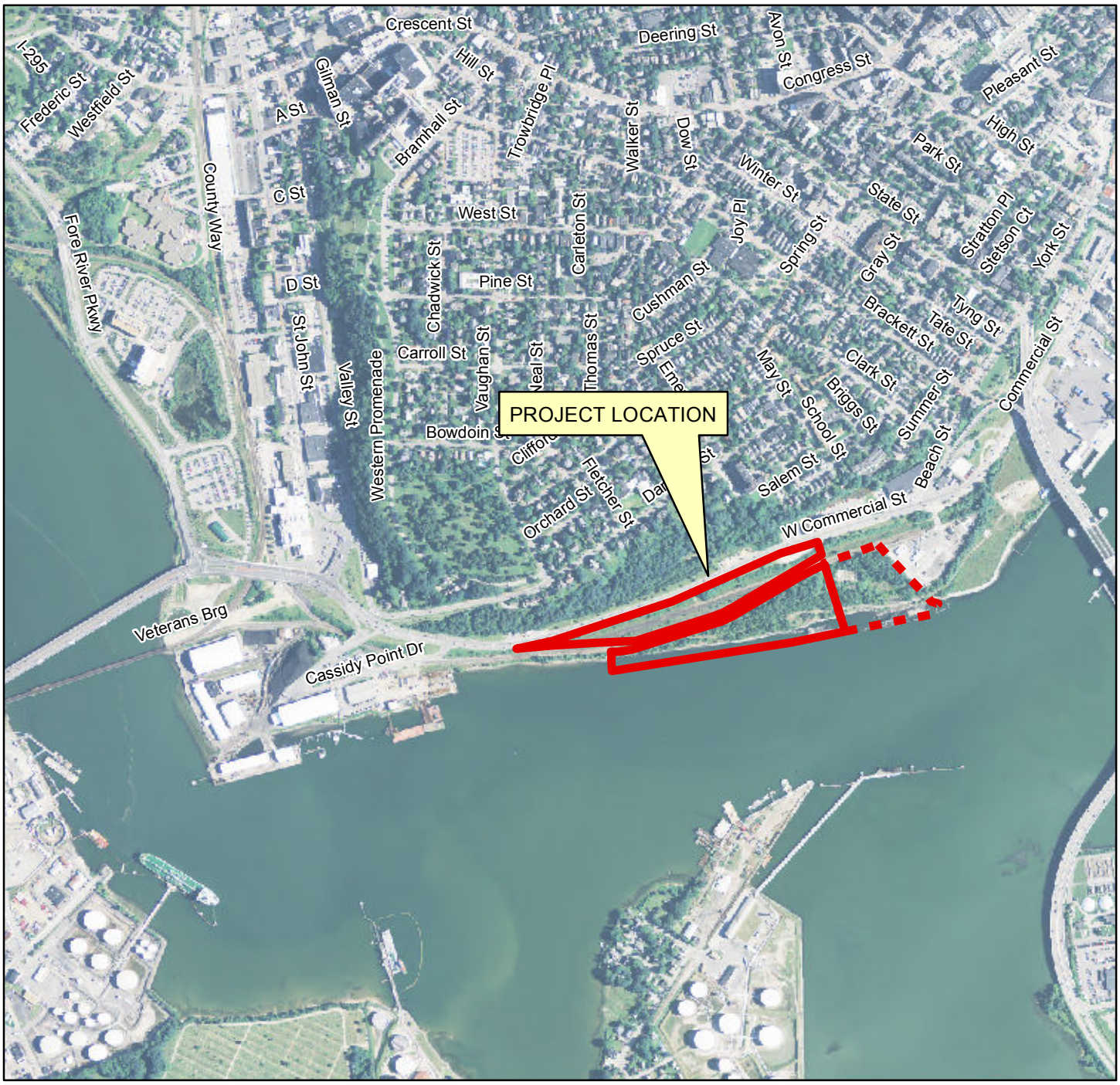

AERIAL PHOTOGRAPH
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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FIGURE

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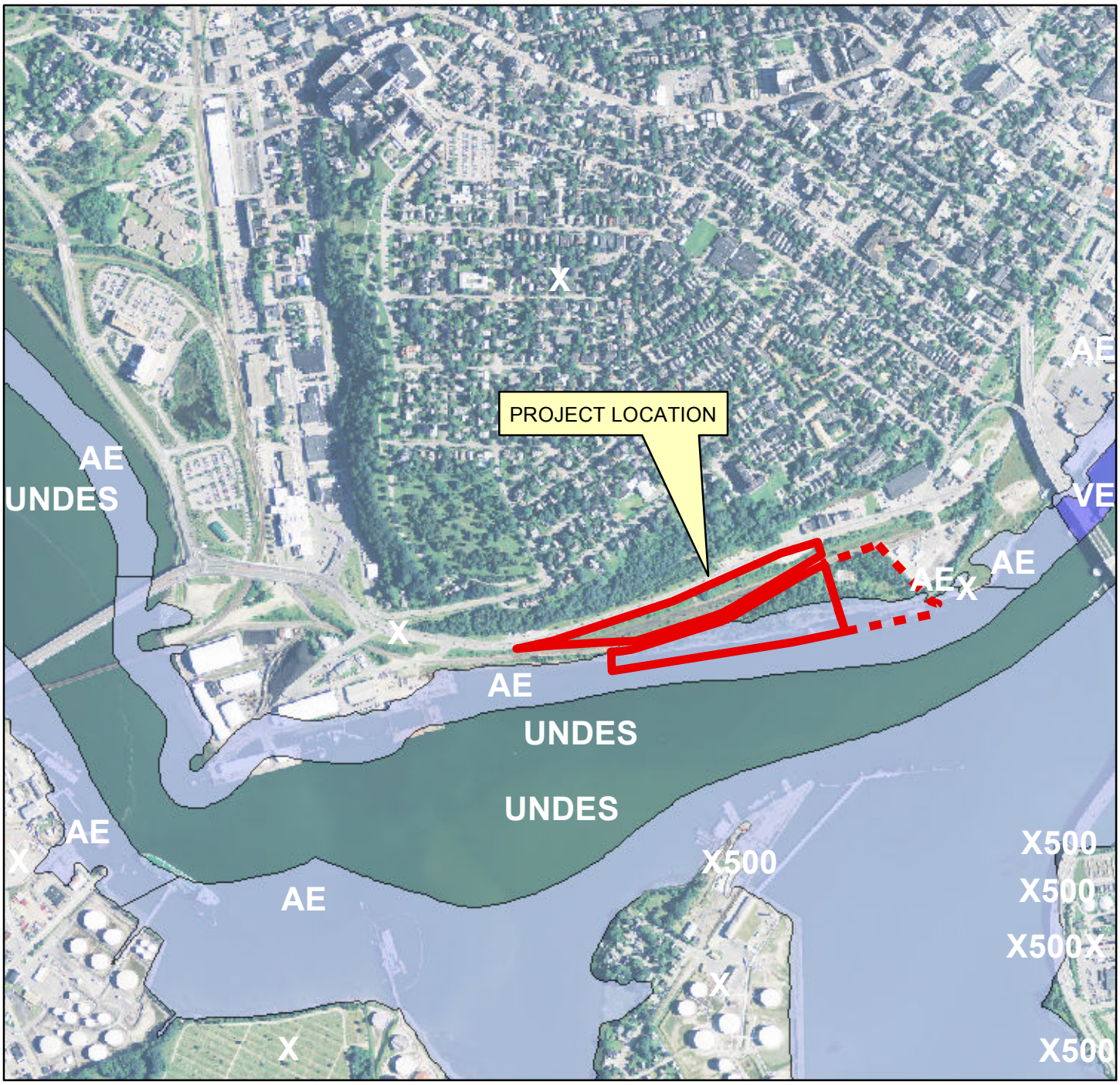

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FLOOD MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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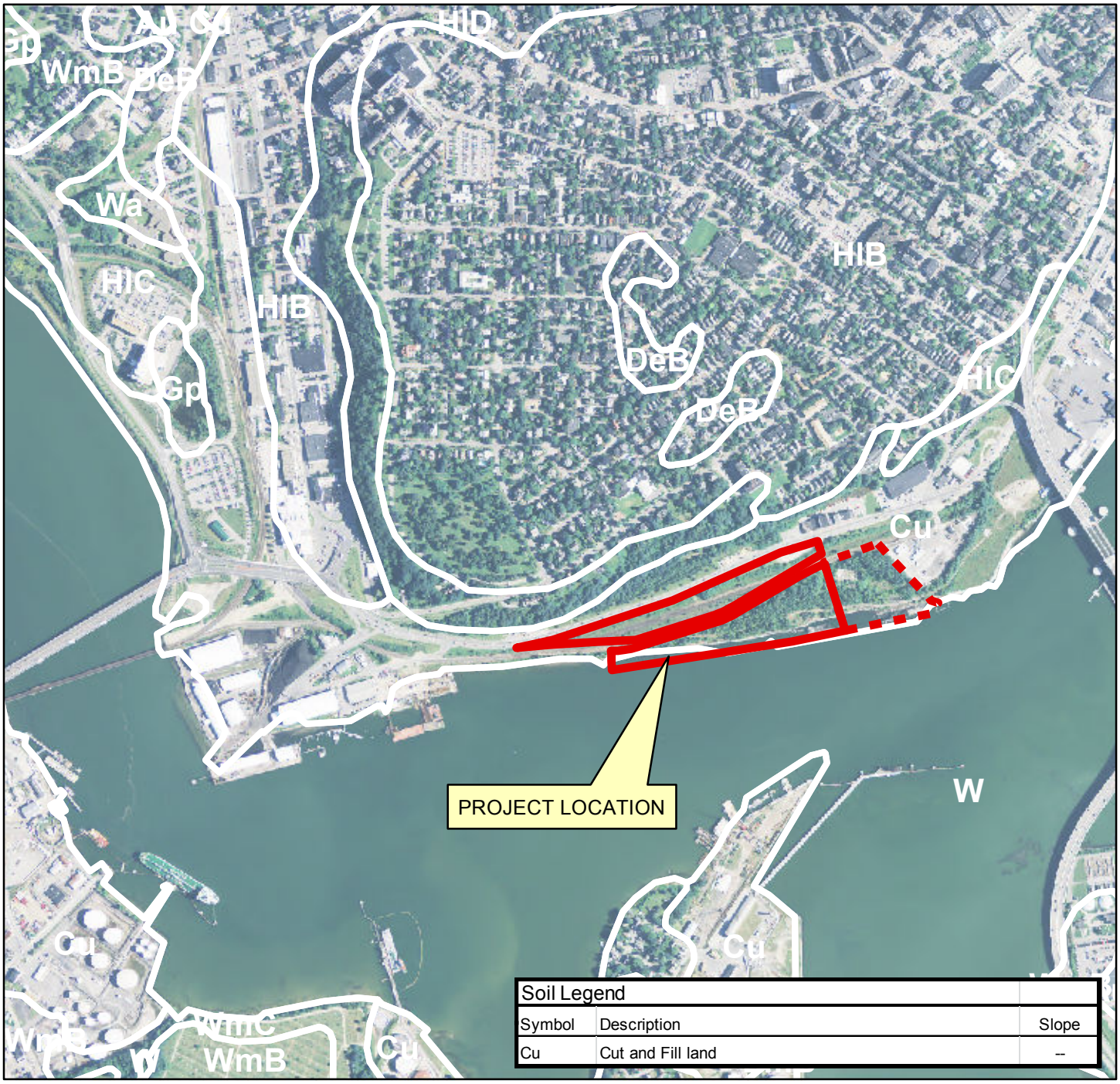
FIGURE

7



Soil Legend		
Symbol	Description	Slope
Cu	Cut and Fill land	--

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SOILS MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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FIGURE

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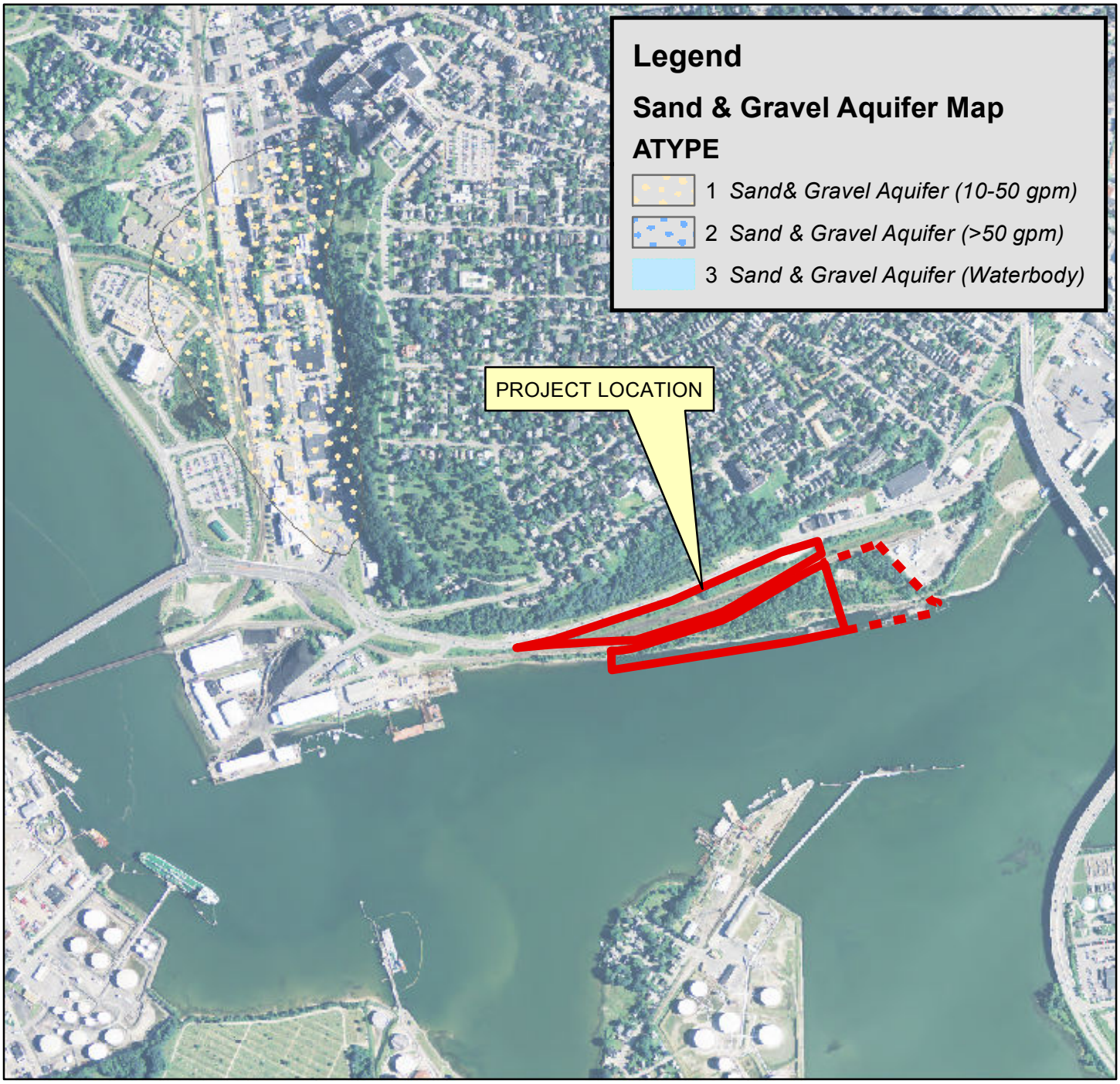

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SAND GRAVEL AQUIFER MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS
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SCALE:	1 inch = 1,000 feet

FIGURE
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SURFICIAL GEOLOGY MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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FIGURE
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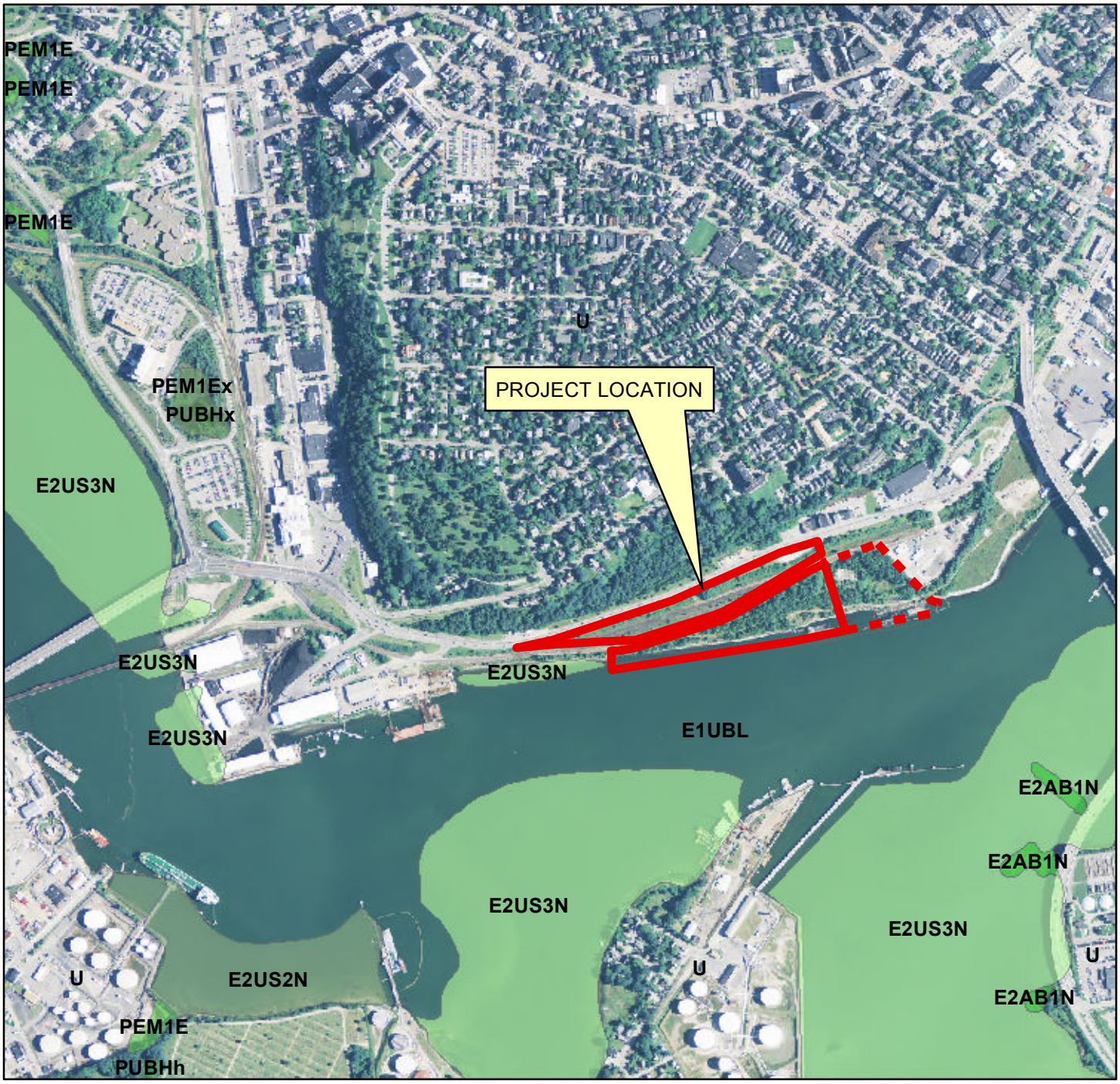

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NWI MAP
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

FST 100 YEARS

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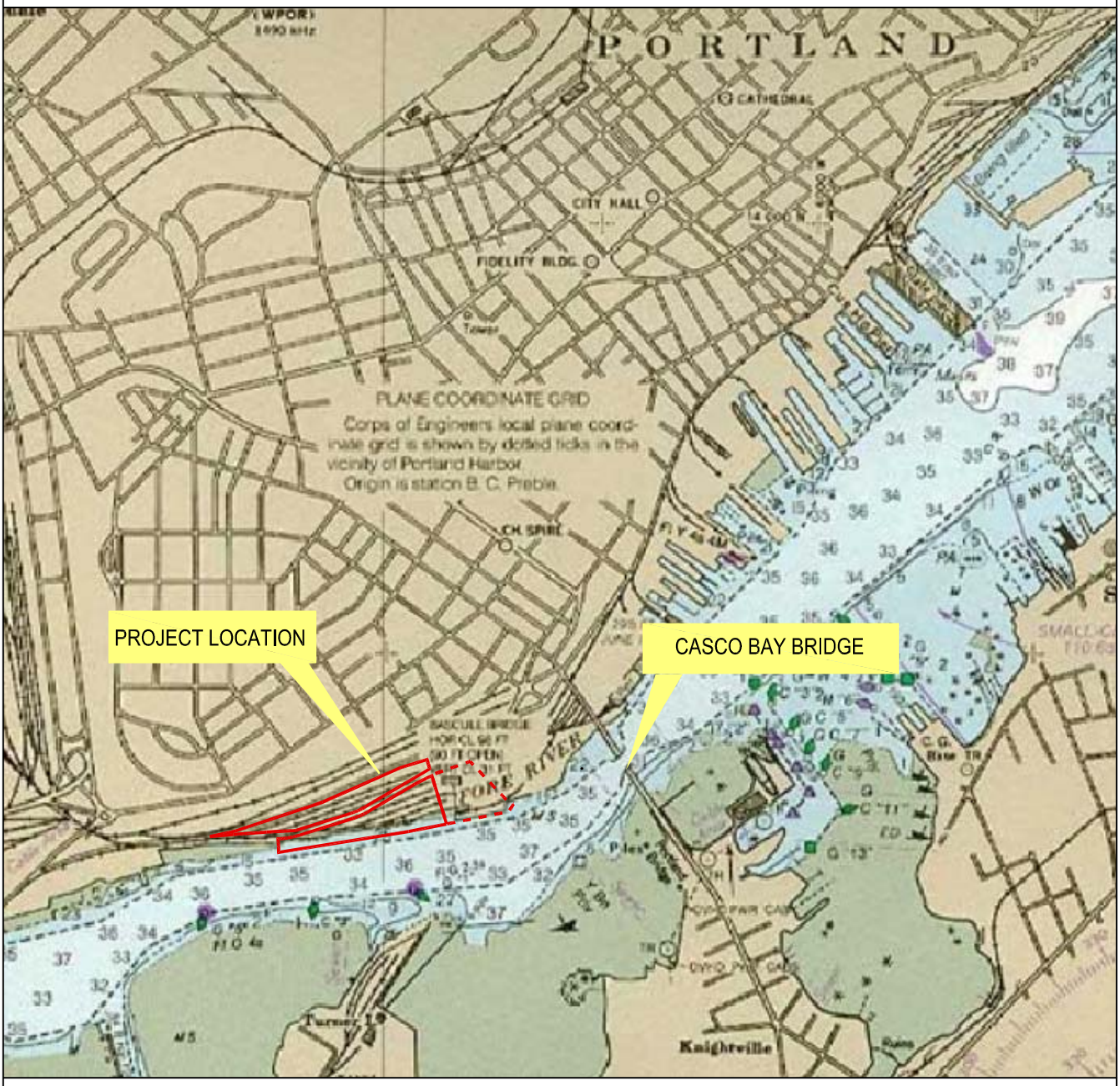
FIGURE
11



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PORT OF PORTLAND - HARBOR CHART
CANAL LANDING - NEW YARD EXPANSION
PORTLAND, MAINE

SOURCE: PORT OF PORTLAND HARBOR CHART

FST 100 YEARS

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FIGURE
12

ATTACHMENT A

LEVEL III APPLICATION SUBMISSION CHECKLIST

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Submit each Tab as one PDF file and bookmark the items as noted below

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

Checklist	Items to be Provided
Yes NA Plan ✔ ☐ ☐	PROJECT DESCRIPTION • Cover Letter with detailed project description
Yes NA Plan ✔ ☐ ☐	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes NA Plan ☐ ✔ ☐	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements
Yes NA Plan ☐ ✔ ☐	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable
Yes NA Plan ✔ ☐ ☐	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes NA Plan ☐ ✔ ☐	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements
Yes NA Plan ✔ ☐ ☐	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table
Yes NA Plan ☐ ✔ ☐	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA Plan ☐ ✔ ☐	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.

Submit each Tab as one PDF file and bookmark the items as noted below

Tab 2 - TRANSPORTATION

Check list	Assess/Provide/Document:
Yes NA Plan ☐ ✔ ☐	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan ✔ ☐ ☐	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable
Yes NA Plan ✔ ☐ ☐	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable
Yes NA Plan ☐ ✔ ☐	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan ☐ ✔ ☐	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan ☐ ✔ ☐	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan ☐ ✔ ☐	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan ☐ ✔ ☐	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan ☐ ✔ ☐	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies

Tab 3 - ENVIRONMENTAL AND LANDSCAPE FEATURES	
Check list	Assess/Provide/Document:
Yes NA Plan ☐ ✔ ☐	**Preservation of Significant Natural Features (14-526 (b) 1), if applicable** • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes NA Plan ☐ ✔ ☐	**Landscaping and Landscape Preservation (14-526 (b) 2 a)** • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes NA Plan ☐ ✔ ☐	**Site Landscaping (14-526 (b) 2 b)** • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes NA Plan ☐ ✔ ☐	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable** • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes NA Plan ☐ ✔ ☐	**Street Trees (14-526 (b) 2 b iii)** • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

Tab 4 - ENVIRONMENTAL AND STORMWATER	
Check list	Assess/Provide/Document:
Yes NA Plan ☐ ✔ ☐	**Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)** • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Consistency with City Master Plans (14-526 (c) 1)** • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA Plan ✔	**Public Safety and Fire Prevention (14-526 (c))** • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes NA Plan ✔	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)** • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

Tab 6 - SITE DESIGN

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
Yes NA Plan ✔	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA Plan ✔	**Snow and Ice Loading (14-526 (d) 3)** • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA Plan ✔	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appendix 1)

Yes NA Plan ☐ ✔ ☐	**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
Yes NA Plan ✔ ☐ ☐	**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes NA Plan ☐ ✔ ☐	**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes NA Plan ☐ ✔ ☐	**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
Yes NA Plan ☐ ✔ ☐	**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples
Tab 7 - Construction Management Plan	
Check list	
Yes NA Plan ✔ ☐ ☐	**Construction Management Plan** • Construction Management Document and Plan

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan

☑ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☑ Existing Conditions

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☑ Proposed Site Plan

- Ground floor area, and grade elevations for all buildings

☑ Access, Circulation, and Parking

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

☑ Site Considerations

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☑ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☑ GRADING and DRAINAGE PLAN including:
• Existing grades and drainage • Proposed grades • Proposed stormwater management meeting Technical Manual (Section 5) standards • Location and proposed alteration of a water course • Preservation or alteration of wetlands
☑ EROSION CONTROL
• Must be in compliance with Technical Manual, Section 5
☐ LANDSCAPE PLAN including:
• Existing vegetation to be preserved and preservation measures • Proposed landscaping and buffers • Planting schedule
☐ RECORDING PLAT, if applicable
• IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)
☑ ARCHITECTURAL PLANS & RENDERINGS including:
• Exterior building elevations, color renderings, illustrations of all sides • Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening • Provide context drawings, if applicable (Design Manual, page 1) • Floor plans

ATTACHMENT E

FINANCIAL CAPABILITY

The Applicant has the means at its disposal for financing the proposed Canal Landing project. A letter from Norway Savings Bank was supplied previously indicating their support of the project. They remain actively involved and supportive of the Phase IV and future phase activities. An updated letter from Norway Savings can be supplied upon request.

A breakdown of the preliminary project cost for Phase IV includes the following:

- Phase IV Site Work <$100,000
- Structures $1.5 million to $2 million

These values are considered preliminary and approximate and are subject to change as building design and project layout is refined.

ATTACHMENT B

RIGHT, TITLE & INTEREST

The Applicant has completed the acquisition of the property with Portland Terminal Company as evidenced by the Release Deed previously submitted to the City as part of the Buildings C & D application; approved by the City of Portland in January 2018. A copy of this deed is provided following this page.

RELEASE DEED

MAINE CENTRAL RAILROAD COMPANY, a corporation duly organized and existing under the laws of the State of Maine, with offices at 1700 Iron Horse Park, North Billerica, Middlesex County, Massachusetts 01862 (the "Grantor") in consideration of [redacted] Dollars paid to it by **CANAL LANDING, LLC,** with a mailing address of 400 West Commercial Street, Portland, Maine 04101 (the "Grantee") hereby grants to the Grantee all the Grantor's right, title and interest, without any warranties or covenants of title whatsoever, in a certain parcel of land, and the buildings, bridges, structures, crossings, fixtures and improvements thereon, if any, situated in Portland, County of Cumberland, State of Maine (the "Premises") described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND
MADE A PART HEREOF BY THIS REFERENCE.

This conveyance is subject to the following reservations, conditions, covenants and agreements:

1. This conveyance is made without granting any right of way, either by necessity or otherwise, over any remaining land or location of the Grantor.

2. ~~The Grantor hereby reserves a permanent, exclusive right of way and easement in, on, over, under, across and through the Premises for the purpose of accessing, constructing, installing, operating, maintaining, modifying, repairing, replacing, relocating and removing a telecommunications system or other system for transmission of intelligence or information by any means, whether now existing or hereafter devised, including such poles, pipes, wires, fibers, fiber optic cables, repeater stations, attachments, appurtenances, structures or other equipment and property of any description necessary or useful for the same (the "Telecommunications Easement"). The Grantor further reserves the right to freely lease, license, mortgage, assign, pledge and otherwise alienate the Telecommunications Easement. The Grantee hereby covenants with the Grantor to recognize the Telecommunications Easement and, without the payment of any further consideration, to execute, acknowledge and deliver such instruments suitable for recording with the registry of deeds as the Grantor may reasonably require to acknowledge title to the Telecommunications Easement in the Grantor. The Grantor covenants to reasonably repair and restore the surface of the easement area after any work.~~

MAINE REAL ESTATE TAX PAID

3. The Grantor excepts from this conveyance any and all railroad tracks, railroad track materials (including, but not limited to, ties, connections, switches and ballast) and/or related equipment of any description located in whole or in part within the Premises.

4. ~~The Grantor excepts from this conveyance any and all advertising signs and/or billboards located upon the Premises which are not owned by the Grantor. Furthermore, this conveyance is subject to the right of the owners of said signs and/or billboards to go upon the Premises and remove them within ninety (90) days from the date of delivery of this deed.~~

5. By the acceptance of this deed and as part consideration therefor, the Grantee hereby assumes any and all agreements, covenants, obligations and liabilities of the Grantor in respect to any underground facilities, drainage culverts, walls, crossings and/or other structures of any nature and description located in whole or in part within the Premises.

6. By the acceptance of this deed and as part consideration therefore, the Grantee agrees to indemnify, defend and hold harmless the Grantor (including its officers, employees, agents, directors, shareholders and affiliates) from and against any and all loss, liability, damage, cost and expense (including reasonable attorneys' fees) occasioned by or associated with any claims, suits and/or enforcement actions (including any administrative or judicial proceedings and any remedial, removal or response actions) ever asserted, threatened, instituted or requested by any person and/or governmental agency on account of: (a) any release of oil or hazardous materials or substances of any description on, upon or into the Premises in contravention of any ordinance, law or statute (including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. Section 9601, et seq., as amended); and (b) any and all damage to real or personal property, natural resources and/or harm or injury to persons alleged to have resulted from such release of oil or hazardous materials or substances.

7. ~~By the acceptance of this deed and as part consideration therefor, the Grantee hereby agrees to build and forever maintain fences (together with any necessary gates), suitable to the Principal Engineering Officer of the Grantor, along the boundaries of the Premises which are common to remaining land or location of the Grantor (the "Fences"), if Fences are ever required in the sole and reasonable opinion of said Principal Engineering Officer.~~

8. This conveyance is subject to the following restriction for the benefit of other land or location of the Grantor, to wit: that from the date of delivery of this deed, the Grantor shall not be liable to the Grantee or any lessee or user of the Premises (or any part thereof) for any damage to any buildings or property upon them caused by fire, whether communicated directly or indirectly by or from locomotive engines of any description upon the railroad operated by the Grantor, or otherwise.

9. ~~By the acceptance of this deed and as part consideration therefor, the Grantee hereby agrees to make no use of the Premises which, in the sole and reasonable opinion of the Principal Engineering Officer of the Grantor, adversely affects, increases or decreases drainage to, from, upon or in any remaining land or location of the Grantor. The Grantee agrees to indemnify and save the Grantor harmless from and against any and all loss, cost, damage or expense including, but not limited to, the cost of defending all claims and/or suits for property damage, personal injury or death arising out of or in any way attributable to any breach of the foregoing covenant.~~

10. ~~The Grantor excepts from this conveyance any and all overhead, surface or underground signal and communication line facilities of the Grantor located within the limits of the Premises and this conveyance is subject to the Grantor's use of any such facilities in their present locations and entry upon the Premises from time to time to maintain, repair, replace, renew, relay or remove such facilities.~~

11. Whenever used in this deed, the term "Grantor" shall not only refer to the **MAINE CENTRAL RAILROAD COMPANY**, but also its successors, assigns and affiliates and the term "Grantee" shall not only refer to the above-named Grantee, but also the Grantee's successors, assigns and grantees, as the case may be.

12. The several exceptions, reservations, conditions, covenants and agreements contained this deed shall be deemed to run with the land and be binding upon the Grantee forever. In addition to the acceptance and recording of this deed, the Grantee hereby signifies assent to the said several exceptions, reservations, conditions, covenants and agreements, by joining in its execution.

WITNESS WHEREOF, the said **MAINE CENTRAL RAILROAD COMPANY** has caused this release deed to be executed in its name and its corporate seal to be hereto affixed by David A. Fink, its President, thereunto duly authorized this 27th day of April, 2015.

GRANTOR:
MAINE CENTRAL RAILROAD COMPANY

Witness

By: David G. Fink
David A. Fink, President

Witness

GRANTEE:
CANAL LANDING, LLC

SEAL

By: Phineas Sprague Jr
Phineas Sprague, Jr., Manager

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss. April 27, 2015

On this 27th day of April, 2015, before me, the undersigned notary public, personally appeared the above-named David A. Fink, the President of the **MAINE CENTRAL RAILROAD COMPANY** as aforesaid, proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose.

Notary Public:
My Commission Expires: FEB 24 2017

STATE OF MAINE

Cumberland, ss. May 1, 2015

On this 1st day of May, 2015, before me, the undersigned ~~notary public,~~ attorney at law personally appeared the above-named Phineas Sprague, Jr., Manager of Canal Landing, LLC, as aforesaid, proved to me through satisfactory evidence of identification, which was personal recognizance, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose.

~~Notary Public~~ Attorney-at-Law: Drew H. Arde
My Commission Expires: Ind

EXHIBIT "A"

MAINE CENTRAL RAILROAD COMPANY
TO
CANAL LANDING, LLC
RAILROAD LAND
IN
PORTLAND, MAINE

A certain lot or parcel of land situated on the southerly side of West Commercial Street in the City of Portland, County of Cumberland and State of Maine as shown on a plan entitled "Land on West Commercial Street, Portland, Maine, Maine Central Railroad Company to Canal Landing, LLC, dated April 30, 2015 to be recorded in the Cumberland County Registry of Deeds in Plan Book 215, Page 157 (the "Plan"), bounded and described as follows:

Beginning at a point on the southerly sideline of West Commercial Street at the northwesterly corner of land now or formerly of New Yard, LLC recorded in the Cumberland County Registry of Deeds in Book 30887, Page 247;

Thence, S 16°58'37" E along the westerly line of land of said New Yard, LLC 90.30 feet to the northerly line of land now or formerly of the State of Maine Department of Transportation recorded in said Registry of Deeds in Book 31408, Page 301;

Thence, the following courses and distances along the northerly line of land of said State of Maine:

S 59°26'10" W 693.10 feet;

Thence, along a curve to the right with a radius of 673.74' feet, having an arc length of 153.57 feet, having a chord bearing of S 65°57'58" W and chord length of 153.24 feet;

S 72°29'45" W 542.24 feet;

S 87°07'38" W 273.21 feet;

S 86°01'33" W 312.82 feet;

S 84°41'57" W 219.48 feet to the southerly sideline of said West Commercial Street;

Thence the following courses and distances along the southerly sideline of West Commercial Street:

N 77°41'31" E 248.67 feet;

N 71°39'48" E 854.33 feet;

N 66°06'18" E 793.06 feet;

N 73°01'23" E 263.49 feet to the point of beginning. Containing 294,083 S.F. or 6.75 acres, more or less.

Also another certain lot or parcel of land situated on the southerly side but not adjacent to West Commercial Street in the City of Portland, County of Cumberland and State of Maine as shown on the Plan, bounded and described as follows:

Commencing at a point on the southerly sideline of West Commercial Street at the northwesterly corner of land now or formerly of New Yard, LLC recorded in said Registry of Deeds in Book 30887, Page 247;

Thence, S 16°58'37" E along the westerly line of land of said New Yard, LLC 158.20 feet to the point of beginning at the southerly line of land now or formerly of the State of Maine Department of Transportation recorded in said Registry of Deeds in Book 31408, Page 301;

Thence, S 16°58'37" E continuing along the westerly line of New Yard, LLC 503 feet, more or less, to the spring high tide line of the Fore River;

Thence, westerly along the spring high tide line of the Fore River 1659 feet, more or less, to land of the State of Maine;

Thence, the following courses and distances along the southerly line of land of said State of Maine:

N 02°52'22" W 26 feet, more or less;

N 87°07'38" E 21.45 feet;

Thence, along a curve to the left with a radius of 725.78 feet, having an arc length of 185.34 feet, having a chord bearing of N 79°48'41" E and chord length of 184.84 feet;

N 72°29'45" E 519.07 feet;

Thence, along a curve to the left with a radius of 725.74 feet, having an arc length of 165.42 feet, having a chord bearing of N 65°57'58" E and chord length of 165.07 feet;

N 59°26'10" E 495.19 feet;

N 62°41'27" E 125.13 feet;

N 66°19'39" E 57.45 feet to the point of beginning. Containing 260,844 S.F. or 5.99 acres, more or less.

Together with all right, title and interest that this grantor may have in the intertidal and submerged lands abutting the above described parcel.

The property is subject to a Deed of Easement from Maine Central Railroad Company to Canal Landing, LLC, dated August 7, 2014 and recorded in said Registry of Deeds in Book 31723, Page 95.

MAINE CENTRAL RAILROAD COMPANY was f/k/a Maine Central Road Company, Portland and Ogdensburg Railroad Company and Boston and Maine Railroad.

Meaning and intending to convey and hereby conveying a portion of the premises conveyed to Maine Central Railroad Company, a/k/a Maine Central Road Company by deed of Portland Terminal Company, dated December 30, 1985 and recorded in said Registry of Deeds in Book 7026, Page 187.

Received
Recorded Register of Deeds
May 01,2015 11:27:57A
Cumberland County
Nancy A. Lane

ATTACHMENT F

TECHNICAL CAPABILITY

The Applicant has assembled a highly-qualified team of professionals to plan, permit, and develop construction documents for the project. The Team is working under the direction of Mr. Phineas Sprague, Jr. as Project Developer.

The Team services will be provided by the following companies and their respective team leaders:

Civil Engineer	Stephen R. Bushey, P.E. Stantec Consulting Services Inc. 482 Payne Road Scarborough, Maine 04074 (207) 887-3478 – Work (207) 756-9359 – Cell Stephen.Bushey@Stantec.com
Surveyor	John Swan, P.L.S. Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, ME 04105 (207) 774-0424 – Work (207) 774-0511 – Fax jswan@owenhaskell.com
Attorney	Peter Plumb, Esq. Murray Plumb & Murray 75 Pearl Street Portland, ME 04104 (207) 773-5651 – Work (207) 773-8023 – Fax pplumb@mpmlaw.com
Geotechnical	Tim Boyce, P.E. S. W. Cole Engineering 286 Portland Road Gray, ME 04039 (207) 657-2866 – Work (207) 657-2840 – Fax TBoyce@SWCole.com
Environmental	Rip Patten, P.E. Credere Associates, LLC 776 Main Street Westbrook, ME 04092 (207) 828-1272 – Work (207) 887-1051 – Fax rpatten@crederellc.com
Structural Engineering	Roger Gagnon Gagnon Engineering 10 Solomon Drive Gorham, ME 04038 (207) 839-8085 – Work roger@gagnonengineering.com

Construction Manager	Jim Keeley Keeley Crane Service P.O. Box 1074 Portland, ME 04104 (207) 885-0035 jim@keeleycrane.com

The team of consultants retained by developer has expertise and experience in the design of similar commercial projects. Resumes of key personnel for development team can be provided upon request.

The Applicant also has significant experience in the development and management of large commercial projects having managed Portland Yacht Services for many years.

ATTACHMENT D

WAIVER REQUESTS

See Waiver Table and additional information provided in cover letter.

Standard to be Waived: Cite Ordinance or Technical Manual Standard	Cite Standard Language: Cite specific language of applicable Ordinance or Technical Manual Standard	Waiver Being Sought: Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	Justification for Waiver: Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Section 14-498(b)(8)(a) Sidewalks and Curbs	a. Sidewalks shall be constructed on each side of each street in accordance with Article III of Chapter 25. Sidewalks to be used by pedestrians are to be so located as to minimize contacts with normal automotive traffic, with preference given to interior	We are requesting a waiver to provide a sidewalk along the full property frontage	There is no sidewalk in existence or expected within 1000 feet and the construction of sidewalks does not contribute to the development of a pedestrian oriented infrastructure.
Section 14-498(b)(8)(b) Sidewalks and Curbs	b. Curb shall be constructed on each side of each street. The curbing shall be constructed as provided in Article VI of Chapter 25.	We are requesting a waiver to provide curb along the full property frontage.	The street has been rehabilitated without curbing in the last 60 months. Runoff from the development site or within the street does not require curbing for stormwater management.
Section 14-526 (a) 3 a Public Transit Access	a. For any residential development consisting of twenty (20) or more dwelling units or commercial or institutional development of at least 20,000 square feet gross floor area, a transit facility shall be constructed where the	The Applicant requests a waiver of the transit facility requirement.	The proposed project will only be 12,000 SF and will not generate public transit usage

ATTACHMENT C

ZONING ASSESSMENT

See Zoning Analysis table and additional information provided in cover letter.

ZONING ANALYSIS Relevant Zone(s) Waterfront Port Development Zone (WPDZ)

All Projects:

	Required	Proposed
Lot Size	N/A	
Area Per Dwelling Unit		
Minimum Street Frontage		
Front Yard Minimum	N/A	
Front Yard Maximum		
Rear Yard		
Yard Right		
Yard Left		
Side Street Setback		
Step Back		
Maximum Lot Coverage	50%	
Minimum Lot Coverage	N/A / 5 acres cond use	
Maximum Height	55 ft / 75 ft. cond use	72 ft.
Open Space		
Maximum Impervious Area		
Pavement Setback		
Floor Area Ratio		
Off Street Parking Spaces		
Loading Bays		
Other 1 Setback from Pier Line	5 ft.	
Other 2 Max. Building Length	450 ft.	150 ft.
Other 3		

Planned Residential Unit Developments (PRUD) Requirements - N/A

	Required	Proposed
Minimum Lot Size		
Minimum Lot Area per Dwelling		
Maximum # Units per Building		
Maximum Building Length		
Maximum Accessory Building Length		
Minimum Setbacks		
Minimum Building Separation		
Minimum Open Space		

Affordable Housing Density Bonuses (if applicable) - N/A

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

TAB 4 – ENVIRONMENTAL AND STORMWATER

Section 14-526. Site Plan Standards

The following statements are provided in accordance with the submission checklist Tab 4 and Section 14-526 of the ordinance.

(b) Environmental Quality Standards

Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)

- *Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable*
- *Erosion control plan and measures*
- *Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable*
- *Subsurface sanitary sewage disposal and groundwater protection*

3. *Water Quality, Stormwater Management and Erosion Control:*

   a. *Stormwater:*

      (i) The site's runoff conditions are primarily self-contained and runoff infiltrates or sheets to the Fore River; therefore, issues related to offsite or downstream flooding are not applicable. The Boatyard Surface, consisting of a thick section of granular and crushed stone soils, provides for nearly 100% absorption, other than for very heavy rainfall events, thus water quality treatment is also achieved.

      (ii) All stormwater runoff is proposed to discharge to the Fore River. The project will not adversely impact adjacent lots or the City street system.

      (iii) All stormwater runoff is proposed to discharge to the Fore River. The project will not adversely impact adjacent lots or the City street system.

      (iv) All stormwater runoff is proposed to discharge to the Fore River. The project will not adversely impact adjacent lots or the City street system.

TAB 3 – ENVIRONMENTAL AND LANDSCAPE FEATURES

Section 14-526. Site Plan Standards

The following statements are provided in accordance with the submission checklist Tab 3 and Section 14-526 of the ordinance.

(b) Environmental Quality Standards

Preservation of Significant Natural Features (14-526 (b) 1), if applicable

- *Trees, plants, habitats listed on State or Federal list of endangered or threatened*
- *High and moderate value waterfowl and wading habitat*
- *Aquifers on Casco Bay Islands*
- *Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains)*
- *Proposed preservation areas and protection measures*
- *Documentation from environmental consultants, determinations from applicable state agencies*

1. *Preservation of Significant Natural Features:*

   a. The existing site retains no prominent significant natural features therefore no issue related to the preservation of these features applies.

   b. The Applicant is not requesting a waiver from this standard.

Landscaping and Landscape Preservation (14-526 (b) 2 a)

- *Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4)*
- *Protection measures of existing vegetation during construction*
- *Protection measures within Shoreland Zone, if applicable*

2. *Landscaping and Landscape Prevention:*

   a. Landscape Preservation.

      (i) The site's existing tree population is limited and the City's Shoreland Zoning vegetation management provisions do not require tree protection in the Waterfront Development Zone.

      (ii) Not applicable.

      (iii) Not applicable.

      (iv) The Applicant will request a waiver from this standard.

Site Landscaping (14-526 (b) 2 b i)

- *Screening and buffering of service areas and between non-residential and residential uses*
- *Planting plans with plant schedule and sizes (Technical Manual, Section 4)*

2. *Landscaping and Landscape Prevention:*

   b. Site Landscaping:

      (i) Landscaped Buffers:

         (a) There are no service or loading areas observable from nearby sidewalks or residential properties.

         (b) The development is not subject to zoning setbacks or buffering requirements.

         (c) Not applicable.

         (d) Not applicable.

Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable

- *Landscaped islands within parking areas (Technical Manual, Section 4)*

2. *Landscaping and Landscape Preservation:*

   b. Site Landscaping.

      (ii) Parking Lot Landscaping:

         a) thru d) The applicant is requesting a waiver of the landscape requirements based on the proposed boatyard use and the need for flexibility with respect to boat parking and heavy vehicle maneuvering.

Street Trees (14-526 (b) 2 b iii)

- Existing Heritage or Feature Trees on site and measures to preserve
- Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

2. *Landscaping and Landscape Preservation:*

   b. Site Landscaping.

      (iii) Street Trees:

(a) In accordance with the previously approved plan for the Phase III Buildings C & D, various street trees will be provided along the West Commercial Street frontage. No further street tree measures are proposed as part of the Phase IV Building E proposal.

TAB 5 – PUBLIC INFRASTRUCTURE AND SAFETY

Section 14-526. Site Plan Standards

The following statements are provided in accordance with the submission checklist Tab 5 and Section 14-526 of the ordinance.

(c) Public Infrastructure and Community Safety Standards.

Consistency with City Master Plans (14-526 (c) 1)

- *Identify consistency with master plans*
- *Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable*

1. *Consistency with City Master Plans:*

   a. The project has been designed to be consistent with the City's Zoning Ordinance and off-site infrastructure plans.

   b. The Applicant will coordinate with utility representatives for the continuation of easements related to utility infrastructure crossing the site.

Public Safety and Fire Prevention (14-526 (c) 2)

- *Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3)*
- *Emergency vehicle access*
- *Address consistency with public safety standards (Technical Manual, Section 3)*
- *Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist*

2. *Public Safety and Fire Prevention:*

   a. The site has been designed to promote a safe and inviting customer access. The MaineDOT has previously constructed the two rail crossings as shown on the plans.

   b. No changes to emergency access conditions within the surrounding streets is proposed.

   c. Fire hydrants are located within the adjacent street system. Additional fire hydrants have been installed within the site.

Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)

- Electrical services, including providing underground services

- Identify existing and proposed connections for public utilities and required public utility upgrades
- Sewer line connections are required, if there is a main within 200 feet
- Proposed solid waste management facilities on-site and management for the site
- Written evidence of the ability to serve from utility companies, as applicable

3. *Availability and Adequate Capacity of Public Utilities:*

   a. The Applicant has previously secured letters from all applicable utilities stating their ability to serve the site and systems have been previously installed that are available to serve Building E.

   b. All on site electrical lines will be underground.

   c. All new utility infrastructures will meet the provisions of the Technical Manual.

   d. The project will use an existing force main sewer and gravity connection to the interceptor sewer located along the property frontage.

   e. The sanitary sewer collection system will be designed to meet all applicable sections of the Technical Manual.

   f. Not applicable.

Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 26, 2018

Captain Chris Pirone
City of Portland Fire Department
380 Congress Street
Portland, ME 04101

Subject: Canal Landing New Yard – Phase IV – Building E
400 West Commercial Street
Applicant: Canal Landing, LLC
NFPA 1 Review to Access and Other Fire Department Issues

Dear Captain Pirone:

In accordance with instructions in the City's Site Plan Review packet, please find enclosed the drawing necessary for your review of the Canal Landing site at 400 West Commercial Street project. We are submitting a Level III Site Plan Application associated with a proposed 12,000 SF metal Maintenance Building to be located on the shorefront side of the development. We have listed each item in your checklist below, followed by our response:

- **Fire Department Checklist:**

1. Name, address, telephone number of applicant:

   Canal Landing, LLC
   400 West Commercial Street
   Portland, Maine 04101
   Cell: 207-653-1414
   phin@portlandyacht.com

2. Name address, telephone number of architect:

   David Lloyd
   Archetype PA
   48 Union Wharf
   Portland, ME 04101
   Phone: 207-772-6022
   Lloyd@archetypepa.com

3. Proposed uses of any structures [NFPA and IBC classification]:

   The following IBC and NFPA classifications will apply to the Phase IV development:

IBC	NFPA Classification
2B	II (000)
5B	V (000)

4. Square footage of all structures [total and per story]:

BUILDING PROGRAM		
Structure	**Total (SF)**	**Per Story ±**
Marine Maintenance (Building E)	12,000	same

5. Elevation of all structures:

   Building elevations accompany this letter.

6. Proposed fire protection of all structures:

   All of the structures are proposed to have a sprinkler system. Fire protection is currently provided by several onsite hydrants and hydrants within Commercial Street in the vicinity of the site.

7. Hydrant locations:

   Multiple new hydrants have been installed onsite. The Fire Department should review and provide any additional information necessary regarding placement and locations of future fire hydrants on the site. All hydrants installed comply with the Portland Water District and Portland Fire Department standards pertaining to manufacturer, style, and installation specifications.

8. Water main[s] size and location:

   The site will be served by an 8" water main that will extend off the 12" main in Commercial along the east end of the site. There is an existing fire line supply meter serving the property. Below the meter pit, the project water main size will be a minimum of 6" to serve the development site.

9. Access to all structures [min. 2 sides]:

   The accompanying site plan depicts the site's access conditions that include access to two or more sides of the buildings.

10. A Code Summary shall be included referencing NFPA 1 and all Fire Department Technical Standards.

- **NFPA 1 – Chapter 18 Fire Department Access and Water Supply**

18.2 Fire Department Access

The project access conditions for east to west include an entrance at the eastern side of the site generally in the location of an existing graveled lot opposite the Star Match Building. A primary access will be available from the existing driveway in the middle of the property. A third, secondary driveway is proposed at the west end of the site off Commercial Street. The separation between all driveways will be at least 700 feet. The driveways will be greater than 24 feet in width which satisfies NFPA 1 18.2.3.4.1.1 that requires a minimum width of 20 ft.

Per NFPA 1 Chapter 18.2.3.2.1 the interior site access conditions will extend to within 50 ft. of at least one exterior door of all structures. This is satisfied on the site plan.

Per NFPA 1 Chapter 18.2.3.2.2 all first story floors shall be located not more than 150 ft. from the Fire Department access road. This is satisfied on the site plan.

NFPA 1 18.2.3.3 pertains to the number of access roads required and states that this determination is subject to the Authority Having Jurisdiction (AHJ).

69. 3.3.4 Minimum Separation Distances

Stantec reviewed NFPA 1 pertaining to separation distances between LP gas storage containers and buildings. NGL has removed all of their tank storage in the nearby parcel, therefore separation to LP tank storage no longer applies.

- **City of Portland Technical Manual Section 3 – Public Safety**

Part 3.4 Site Access Standards

3.4.1. Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figures I-5).

Supporting evidence: The development site is located along Commercial Street which is accessible from either direction. A minimum of two points of access will be provided into the Building E site.

3.4.2. Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Supporting evidence: As depicted on the site plans, the proposed building layout provides for a minimum two-sided access to all structures.

3.4.3. Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height.*
- *Building Occupancy.*
- *Construction Type.*
- *Impediments to the Structures.*
- *Safety Features Provided.*

Supporting Evidence: The proposed development layout has contemplated emergency access conditions and provided for safe and efficient access for emergency vehicles.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Supporting Evidence: All buildings will be provided with an exterior entrance door that will be within 50' of a Fire Department access route.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Supporting Evidence: A minimum 9 ft. vertical clearance will be provided below any overhead signage or utilities entering the site. Generally speaking, all utilities will be underground.

3.4.6. Elevators shall be sized to accommodate an 80 x 24 inch stretcher.

Supporting evidence: There are no elevators proposed for the project.

3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Supporting Evidence: The applicant will work with the City's Public Services Division to assign street addresses and numbering to meet City standards.

If you have any questions regarding the materials being submitted, please contact this office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Phone: (207) 887-3406
Fax: (207) 883-3376
stephen.bushey@stantec.com

Attachments – Amended Fire Protection Plan

c: Phineas Sprague, Jr. – New Yard LLC
Clint Marshall

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UTILITY ABILITY TO SERVE REQUESTS

Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 20, 2018

MEANS GROUP
Portland Water District
225 Douglass Street
P.O. Box 3553
Portland, ME 04104-3553

Subject: Canal Landing New Yard – Phase IV
400 West Commercial Street, Portland, Maine
Ability to Serve Project with Water Supply & Wastewater Collection/Treatment

Dear Coordinator:

On behalf of Canal Landing, LLC, we would like to verify the Portland Water District's ability to provide domestic and fire supply water and wastewater capacity for their project at 400 West Commercial Street in Portland. This Phase IV project consists of a proposed 12,000 SF metal maintenance building that will include sprinkler service and domestic water supply. The building will be served from the existing supply main that crosses the rail tracks and serves the two existing buildings. The existing fire line supply meter is part of this service system. The project site is located on all or a portion of Map 59, Block A Lots 3 & 4; Map 60, Block F, Lots 1, 2, 3 & 4; Map 71, Block F, Lots 2, 4, 5 & 6.

Water demand for domestic consumption is expected to be similar to wastewater demands or as observed at the PYS center on Fore Street, water consumption will be slightly more than wastewater flow. We do not anticipate the use of irrigation at this time.

We are in the process of completing the Level III Site Plan Application for a submission to the City of Portland Planning Staff and would appreciate your response to the Planning Department.

Specifically, our office is interested in a letter from you indicating the following:

- The continued ability of the Portland Water District's facilities to serve the project.
- Any other factors which may affect the water and sewer service to this site.
- The ability of the collection system to accept this flow.
- Any connection service or impact fees.
- The ability of the Portland Water District to provide domestic and fire water supply to the new Phase IV 12,000 SF Maintenance Building.

If you have any questions with regards to the information submitted, please contact our office.

Regards,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Phone: (207) 887-3478
Fax: (207) 883-3376
Stephen.bushey@stantec.com

Attachment

c: Phin Sprague, Portland Yacht Services

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Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 20, 2018

Mr. Brad Roland, PE
City of Portland Public Works
55 Portland Street
Portland, Maine 04104-3553

Subject: Canal Landing New Yard – Phase IV
400 West Commercial Street
Applicant: Canal Landing, LLC
Wastewater Capacity Application

Dear Mr. Roland:

Our office is working as a consultant to Canal Landing, LLC on the site planning and permitting associated with the proposed Phase IV of the Canal Landing New Yard Development. This Phase IV project consists of a proposed 12,000 SF metal maintenance building. The project site is located on all or a portion of Map 59, Block A Lots 3 & 4; Map 60, Block F, Lots 1, 2, 3 & 4; Map 71, Block F, Lots 2, 4, 5 & 6.

Water demand for domestic consumption is expected to be similar to wastewater demands or as observed at the former PYS center on Fore Street, water consumption will be slightly more than wastewater flow. We do not anticipate the use of irrigation at this time. Based on this modest amount of domestic flow, we trust that the City's wastewater collection and treatment system has adequate capacity to serve this project.

We are in the process of completing the Level III Site Plan Application for for a submission to the City Planning Staff and would appreciate your response to the Planning Department. If you have any questions regarding the materials being submitted, please contact this office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Phone: (207) 887-3406
Fax: (207) 883-3376
stephen.bushey@stantec.com

Enclosure

c: Phineas Sprague, Jr. – Canal Landing, LLC
Clint Marshall

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CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division

Date: June 20, 2018

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 400 West Commercial Street (Building E) — Chart Block Lot Number: 59-A-3, 4; 60-F-1, 2, 3, 4; 71-F-2, 4, 5, 6

Proposed Use: 12,000 SF Boat Maintenance/Marine

Previous Use: Rail Yard

Existing Sanitary Flows: 0 GPD

Existing Process Flows: 0 GPD

Description and location of City sewer that is to receive the proposed building sewer lateral.

Site Category:

Commercial *(see part 4 below)*	X
Industrial *(complete part 5 below)*	
Governmental	
Residential	
Other *(specify)*	

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: Matthew Grooms Phone: 207-874-8725

Owner/Developer Name: Canal Landing LLC

Owner/Developer Address: 400 West Commercial Street

Phone: 207-774-1067 Fax: E-mail: phin@portlandyacht.com

Engineering Consultant Name: Stephen Bushey, P.E.

Engineering Consultant Address: Stantec, 482 Payne Rd, Scarborough, ME 04074

Phone: 207-887-3478 Fax: 207-883-3376 E-mail: stephen.bushey@stantec.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 20 employees at 15 gpd = 300 GPD

Peaking Factor/ Peak Times: Not Applicable

Specify the source of design guidelines: *(i.e.* __ *"Handbook of Subsurface Wastewater Disposal in Maine,"* __ *"Plumbers and Pipe Fitters Calculation Manual,"* X *Portland Water District Records, Other (specify)* _____

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: Not Applicable

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: Not Applicable GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

TAB 6 – SITE DESIGN

Section 14-526. Site Plan Standards

The following statements are provided in accordance with the submission checklist Tab 6 and Section 14-526 of the ordinance.

(d) Site Design Standards.

Massing, Ventilations and Wind Impact (14-526 (d) 1)

- *Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable.*
- *Bulk, location or height impacts on adjoining structures*
- *Identify and locate HVAC equipment and venting away from public spaces and residential properties*
- *Identify screening and manufacturing specifications for noise, if applicable*

1. *Massing, Ventilation and Wind Impact:*

   a. The bulk, location and height of the proposed Building E has been designed to not result in adverse impacts to abutting properties.

   b. The bulk location and height of the proposed building is consistent with the WPDZ requirements and there are no nearby developed lots that may be negatively impacted. The IMT expansion area is an industrial waterfront use. There is currently no development on the opposite side of Commercial Street. Land to the west includes more waterfront industrial land uses and buildings.

   c. HVAC venting, if necessary, will be directed through rooftop units and will not impact any adjacent public spaces.

Shadows (14-526 (d) 2), if applicable

- Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)

2. *Shadows:*

   a. The development is located in the WPDZ Zone and this standard is not applicable.

Snow and Ice Loading (14-526 (d) 3)

- *Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways.*

3. *Snow and Ice Loading:*

a. The proposed building has been designed and located such that accumulated snow and ice will not fall onto adjacent properties or public ways.

View Corridors (14-526 (d) 4), if applicable

- *Protection of designated view corridors (Portland Design Manual, Appendix 1)*

4. *View Corridors:*

   a. The project site it located outside the Downtown Vision Corridor Protection Plan.

Historic Resources (14-526 (d) 5), if applicable

- *Identify developments within Historic Districts or affecting Designated Landmarks*
- *Certificate of Appropriateness or other evidence*
- *Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required*
- *Address preservation and documentation of Archaeological Resources*

5. *Historic Resources:*

   a. The development is not located in a historic district, historic landscape district or City designated landmark.

   b. The development is not located adjacent to or within 100 ft. of a designated landmark, historic district, or historic landscape district.

   c. There are no known archaeological resources on the site except for the location of the former Cumberland and Oxford Canal and the former Portland Glassworks. There are no known aspects of the Canal visible at the site. The Applicant has been cooperating with officials from MHPO as they conducted an archaeological investigation of the Glass Works site. Their findings can be provided under separate cover, if necessary.

Exterior Lighting (14-526 (d) 6)

- *Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12)*
- *Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)*

6. *Exterior Lighting:*

   a. Site Lighting

      (i) Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual.

   b. Architectural and Specialty Lighting

(i) Not applicable to the project.

(ii) Not applicable to the project.

c. Street Lighting

(i) There are existing street lights along Commercial Street. No changes are currently contemplated to the existing street light conditions.

Noise and Vibration (14-526 (d) 7)

- *Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements*

7. Noise and Vibration:

The project noise levels will be designed to meet the permitted levels as outlined in the WPDZ Zone. All HVAC and mechanical equipment is proposed to be mounted on the roof, or otherwise ground mounted and concealed from nearby properties.

Signage and Wayfinding (14-526 (d) 8), if applicable

- *Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff*
- *Proposed commercial and directional signage on site*

8. Signage and Wayfinding:

a. All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

(i) The project is not located in a historic district or subject to Article IX.

(ii) Proposed commercial signage is still being designed and subject to a condition of approval.

(iii) All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

Zone Related Design Standards (14-526 (d) 9)

- Address Historic Preservation Design Review, if applicable
- Address any applicable design review standards by zone
- Address submission requirements from Design Manual, page 1, addressing neighborhood context
- Description of exterior materials, color, finish, and samples

9. *Zoning Related Design Standards:*

    a. The project is within the WPDZ and zoning related design standards are not applicable.

TAB 2 – TRANSPORTATION

Section 14-526. Site Plan Standards.

The following statements are provided in accordance with the submission checklist Tab 2 and Section 14-526 of the ordinance.

(a) Transportation Standards

Transportation Analysis – Traffic Impact (14-526 (a) 1)

- *Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts*
- *Traffic Impact Study (Technical Manual, Section 1) if applicable*

1. *Impact on Surrounding Street Systems:*

   The development will fit in with the existing street system, as it will continue to use improved access locations off Commercial Street. Based on the limited intensity of use, the project is expected to have an insignificant impact on traffic in the neighborhood. Due to its land use as a Boat Maintenance Facility, Building E does not involve specific pedestrian or bicycle facilities. Vehicle and loading circulation to the building are accounted for on the plan.

Access and Circulation (14-526 (a) 2 a)

- *Access and internal circulation, addressing ADA access*
- *Access and egress impacts on traffic flows*
- *Description and use of drive-up features, if applicable*

2. *Access and Circulation:*

   a. *Site Access and Circulation.*

      (i) The development provides access via Commercial Street. Ample turning movement is provided at each street entrance. Internal circulation has been reviewed and designed to accommodate the typical use of semi-trailers, boat trailers, and the travel lift. The driveways have been operating satisfactorily over the course of the past years and are expected to continue into the future.

      (ii) Access and egress have been designed to avoid conflict with existing turning movements and traffic flows.

      (iii) The site does not feature drive up services as mentioned in this requirement.

      (iv) Site access has been designed so as not to impede potential future connection to adjacent streets.

Loading and Servicing (14-526 (a) 2 b)

- *Loading and servicing needs, route and travel way geometrics for deliveries*
- *Turning templates for delivery vehicles, if applicable*

2. *Access and Circulation:*

   b. *Loading and Servicing:*

      (i) The site layout has been configured to accommodate the typical movements of large boat delivery vehicles and access to the boat ramps. Moreover, the operations of the travel lift basin have factored into the positioning of the building.

Sidewalks (14-526 (a) 2 c)

- *Sidewalks and condition along street frontages and internal walkways*
- *Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)*

2. *Access and Circulation:*

   c. *Sidewalks:*

      (i) The Applicant is requesting a waiver to provide a sidewalk along the full property frontage as previously contained in the Findings for the Buildings C & D project and approved by the Planning Board on January 23, 2018. We believe no further evidence is required for the Building E project.

Public Transit (14-526 (a) 3), if applicable

- *Existing available transit services*
- *Proposed site plan design details, such as easement, pad base, and shelter*

3. *Public Transit Access.*

   a. The development contains no residential uses therefore Public Transit Access is not applicable.

   b. A new Transit stop is not proposed.

   c. A new Transit stop is not proposed.

   d. Waiver: The Applicant requests a waiver of the transit facility requirement.

Off-Street Parking: Vehicle & Motorcycle/Scooter (14-526 (a) 4 a and c)

- *Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements*
- *Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan*

4. *Parking.*

   a. *Location and Required Number of Vehicle Parking Spaces.*

      (i) The Applicant is providing parking for their employees within the boat parking area around the site. The Applicant is seeking flexibility to move vehicular parking around the site to meet variable vessel parking demand therefore no specific vehicular spaces are identified on the site plans. Building E will not involve any increase to employee or patron parking demand.

      (ii) The Applicant has not prepared a TDM strategy, as it is not applicable to the intended uses.

      (iii) The Applicant proposes the amount of parking which is appropriate for the anticipated uses of this site.

      (iv) Parking spaces and aisles have been designed to meet the dimensional requirements of the Technical Manual.

      (v) Vehicle and vessel parking areas have been designed to withstand site conditions.

   c. *Motorcycles and Scooter Parking.*

      (i) The Applicant is requesting a waiver of the motorcycle/scooter parking requirements based on the site use.

Bicycle Parking (14-526 (a) 4 b)

- *Address bicycle parking requirements and identify locations on-site*
- *Construction details for bike racks (Technical Manual, Section 1)*

4. *Parking.*

   b. *Location and Required Number of Bicycle Parking Spaces.*

      (ii) The Applicant is requesting a waiver of the bicycle parking requirements based on the site use for Building E.

Snow Storage (14-526 (a) 4 d)

- *Management plan for snow removal and locate snow storage areas on plans*

4. Parking.

d. Snow Storage.

(i) Snow storage management will employ two strategies:

1. On-site snow storage around the perimeter of the site.

2. Snow removal and off-site storage. Generally speaking, the nature of the proposed site use precludes the need for significant snow removal.

Traffic Demand Management (TDM) (14-526 (a) 5), if applicable

- *Develop TDM with Trip Reduction Targets and Strategies*

5. Transportation Demand Management (TDM).

a. A TDM plan is not required for the project.

Construction Management Plan

Canal Landing New Yard – Phase IV – Building E
Canal Landing, LLC

This document and its subsequent attachments comprise The Construction Management Plan being submitted to the City of Portland for the Canal Landing development at 400 West Commercial Street. The Construction Management Plan contains information pertaining to the overall planning and coordination of Phase IV of the project.

Phase IV involves the construction of a new 12,000 SF maintenance building to be located within the shorefront parcel. The building will be used for marine repairs and vessel maintenance. Site improvements include parking, utilities, and yard work.

A. Construction Management Principles

The impact of this project on the public will be minimized via the following construction management principles:

- The construction zone for the building will be fully secured with hard barriers/fencing preventing any access into the site by the public. Barriers are not expected to extend into the Public R.O.W.
- All construction activities will occur within the construction barriers/fencing to ensure the public is never exposed to any risks caused by the activities.
- There will be an onsite staging and unloading area for all deliveries which will prevent any impacts caused by offsite staging of trucks.
- All deliveries will be coordinated and scheduled to ensure that there is no offsite queuing required in West Commercial Street. The Owner plans to schedule as many deliveries as possible in the early morning to limit impact on the surrounding area.
- All construction activities will occur within normal daytime working hours to minimize sound impacts to the surrounding area.

B. Development Review of Construction Management Plan

The Owner will use a site-specific safety program for all team members who work on the construction site. The public will not be put at risk at any point throughout this project, as all work will be completed within the fenced off jobsite. At no point of the project will the public have access to this job site. Minimizing impacts to areas surrounding the building/construction site will be a primary consideration in the process.

The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan or require a condition of approval that states an applicant shall coordinate a project's construction schedule with the timing of nearby construction activity, in order to avoid cumulative impacts on a neighborhood. Such a condition may involve a delay in commencement of construction, if necessary.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

All fees, permits, and guarantees will be paid/issued prior to construction commencing.

This project will require no anticipated public street openings for utility tie-ins. If found to be necessary, all required permits will be requested and granted by the Department of Public Works prior to any street openings occurring. MUTCD plans will be submitted to and approved by the City of Portland for any traffic disruptions caused by street openings or interruptions to West Commercial Street traffic.

D. Construction Administration and Communication

The contact person for all construction activities for the project will be:

Phineas Sprague
207-653-1414
phin@portlandyacht.com

Temporary signage will be posted onsite with additional contact information for the contractor.

E. Construction Schedule

The preliminary construction schedule for the project starts in Fall 2018 and runs through Spring 2019.

All construction activities will be completed during daytime hours, there will be no need for night work. All deliveries for this project will also occur during normal daytime hours.

F. Security & Public Safety

See the Site Plans for fencing and barriers to be used to isolate the construction site from the public. All gates into the project may have Knox locking devices to allow for emergency access.

The fire safety program onsite will consist of the following:

- Fire extinguishers placed throughout the construction site for the duration of the project.
- The new fire alarm system installation will be ongoing throughout the project duration.
- All team members will be briefed on the emergency evacuation plan for the project site prior to starting work.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: This project will not require street openings on West Commercial Street.

2. Sewer: This building will need to connect to the public sewer system via an existing on site service connection. All required permits will be submitted for and approved by the Sewer Connection Clerk at the Department of Public Works.

3. Traffic Control Plans: There will be periods of time throughout the project where construction activity may impact the existing public street system although this is expected to be very limited. Prior to any interruptions, a MUTCD plan will be created and submitted to the City for approval. The MUTCD will ensure that traffic and safe passage for the public is maintained in a satisfactory manner.

H. Site Management and Controls

The following actions will be taken by the Owner as regular site management and control activities:

- Construction site signage will be provided, installed, and maintained by the Owner throughout the duration of the project.
- Access to the site will be controlled.
- Trash and debris will be removed from site via a construction dumpster which will be changed out as needed on a regular basis.
- Street cleaning will not be required on a regular basis, but if it is deemed necessary the Owner will coordinate the cleaning of any excess dirt that has resulted from construction activities.
- Onsite snow removal will be the Owner's responsibility.

I. Erosion Control and Preservation of Trees

Erosion control measures will be installed onsite prior to any work commencing. A complete erosion control plan will be put together and reviewed with the City at the preconstruction meeting. Some of the measures that will be taken are utilization of silt fences to protect to surrounding area from any silt run off from the site. The control measures will be maintained daily and inspected weekly or after any major rain event. The inspections will be documented for review by the City of Portland, Maine Department of Environmental Protection, or the U.S. Environmental Protection Agency.

All stored materials onsite will be located away from any trees or vegetation.

J. Construction Staging Area

All trucks will be unloaded within the construction site's footprint to avoid impacts on public traffic. An offsite marshalling area will not be required for this project. All materials will be stored onsite and in a manner to avoid impacts to ongoing Boat Yard operations and emergency vehicle access to the property.

K. Parking During Construction

Construction parking will be provided onsite. No parking of construction vehicles will be allowed in the West Commercial Street R.O.W.

L. Special Measures as Necessary

There will be no special measures necessary for this project.

Please do not hesitate to contact me with any comments, questions, or concerns regarding the Canal Landing Phase IV project and subsequent Construction Management Plan.

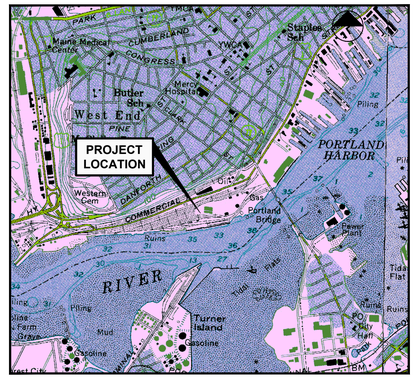
SITE DEVELOPMENT PLANS
FOR
CANAL LANDING
NEW YARD EXPANSION - PHASE IV
(FOR CONSTRUCTION OF BUILDING E)
PORTLAND, MAINE
PERMIT DOCUMENTS
JUNE 2018

PROJECT PARCEL SITE			
ZONING: WATERFRONT PORT DEVELOPMENT ZONE (WPDZ)			
PORTLAND TAX ASSESSOR'S MAP AND LOT NUMBERS			
MAP	BLOCK	LOTS	OWNER
59	A	1, 2, 5, 6, 7,8, 9, 10, 11	MAINE DEPARTMENT OF TRANSPORTATION
59	A	3, 4	NEW YARD LLC
60	F	1,2,3, 4	CANAL LANDING, LLC
71	F	2,4,5,6	CANAL LANDING, LLC

OWNER / APPLICANT:
CANAL LANDING, LLC
101 WEST COMMERCIAL STREET
PORTLAND, ME 04101
ATTN: PHINEAS SPRAGUE, JR
CCRD BOOK 32239, PAGE 148

REFERENCE PLANS:
1. STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP "LAND ACQUISITIONS" BY OWEN HASKELL, INC. DATED APRIL 2014. D.O.T. FILE No. 3-595.
2. "BOUNDARY AND TOPOGRAPHIC SURVEY - WEST COMMERCIAL STREET PORTLAND, CUMBERLAND COUNTY, MAINE" MADE FOR HNTB & THE MAINE DEPARTMENT OF TRANSPORTATION BY OWEN HASKELL, INC. DATED APRIL 4, 2014. D.O.T. FILE NO. 3-595.
3. "LAND ON WEST COMMERCIAL STREET, PORTLAND, MAINE MAINE CENTRAL RAILROAD, CO. TO CANAL LANDING LLC" BY OWEN HASKELL, INC. DATED APRIL 29,2015.

NOTES
1. IN ACCORDANCE WITH A SETTLEMENT AGREEMENT THE MAINE DEPARTMENT OF TRANSPORTATION ACQUIRED BY EMINENT DOMAIN TAKING APPROXIMATELY 17.9 ACRES OF LAND FORMERLY CONTROLLED BY NEW YARD, LLC AND AS DEPICTED ON SITE DEVELOPMENT PLANS ORIGINALLY APPROVED AND SUBSEQUENTLY AMENDED AND LAST APPROVED ON OCTOBER 22, 2013.
2. SEE DEVELOPMENT PLANS FOR PORTLAND INTERNATIONAL MARINE TERMINAL BY HNTB AND THE MAINE DEPARTMENT OF TRANSPORTATION FOR INFORMATION RELATED TO IMT EXPANSION AND SITE DEVELOPMENT ACTIVITY.
3. THE AMENDED DRAWINGS AS INDICATED IN THE INDEX BELOW ARE INTENDED TO SUPERCEDE THE APPROVED PLANS DATED 09.20.2013. PREVIOUSLY APPROVED SHEETS, NOT OTHERWISE CONTAINED IN THIS SUBMISSION WILL CONTINUE TO APPLY.



LOCATION MAP
N.T.S.

INDEX

C-1.0 COVER SHEET
C-1.1 GENERAL NOTES AND LEGEND
C-1.2 EXISTING CONDITIONS PLAN
C-2.1 BUILDING E SITE LAYOUT PLAN

UTILITIES
WATER
ATTN: ROBERT BARTELLS
PORTLAND WATER DISTRICT
225 DOUGLAS STREET
P.O. BOX 3533
PORTLAND, MAINE 04104
207.761.8310

SEWER
ATTN:BRAD ROLAND, P.E.
CITY OF PORTLAND
PUBLIC SERVICES ENGINEERING DEPT.
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8840

POWER
ATTN: JAMIE COUGH
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
207.828.2882

TELEPHONE
ATTN: SCOTT DERRIG
FAIRPOINT COMMUNICATIONS
ONE DAVIS FARM ROAD
PORTLAND, MAINE 04103
207.797.1842

CABLE
ATTN: MARK PELLETIER
TIME WARNER CABLE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
877.546.0962

NATURAL GAS
ATTN:SCOTT CARPENTER
UNITIL / FORMERLY NORTHERN UTILITIES
1075 FOREST AVENEUE
PORTLAND, ME 04103
207.541.2505

CALL BEFORE YOU DIG:
1.888.DIGSAFE (1.888.344.7233)
DIG SAFE MAINE

PERMITS / APPROVALS

LOCAL	GOVERNING BODY	STATUS
SITE PLAN, SHORELAND ZONING AND SUBDIVISION REVIEW CONDITIONAL USE PERMIT	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL 389 CONGRESS STREET PORTLAND, MAINE 04101 207.874.8699 CONTACT: BARBARA BARHYDT	PRELIMINARY PLAN SUBMISSION 08.21.12 FINAL PLAN APPROVED 12.18.12 AMENDED SITE PLAN SUBMISSION 08.27.13 AMENDED SITE PLAN APPLICATION FOR PHASE 1B 10.22.13 AMENDED SITE PLAN APPLICATION FILED 06.27.14 (APPROVED 08.12.14) PRELIMINARY PHASE III AMENDED SITE PLAN APPLICATION FILED 06.15.15 FINAL PHASE III AMENDED SITE PLAN APPLICATION FILED 09.04.15 LEVEL III / PHASE III APPROVED 01.2018 LEVEL II / PHASE II APPROVED 02.27.2017
BUILDING AND DEMOLITION PERMITS	CITY OF PORTLAND CODE ENFORCEMENT OFFICE CITY HALL 389 CONGRESS STREET PORTLAND, MAINE 04101 207.874.8703	TO BE FILED PRIOR TO CONSTRUCTION BY CONTRACTOR
STREET OPENING PERMIT	CITY OF PORTLAND PUBLIC SERVICES DIVISION 55 PORTLAND STREET PORTLAND, MAINE 04101 207.874.8801	TO BE FILED PRIOR TO CONSTRUCTION BY CONTRACTOR
PORTLAND HARBOR COMMISSIONER REVIEW	BOARD OF HARBOR COMMISSIONER 2 PORTLAND FISH PIER (SUITE 105) MARINE TRADE CENTER PORTLAND, MAINE 04101 207.772.8121 CONTACT: KEVIN BATTLE	APPROVED 01.10.13 AMENDED APPLICATION AND HCR PENDING AS OF 08.24.15 APPROVED 12.14.17
STATE	**GOVERNING BODY**	**STATUS**
SITE LOCATION OF DEVELOPMENT	CITY OF PORTLAND PLANNING AUTHORITY DELEGATED REVIEW AUTHORITY CITY HALL, 389 CONGRESS STREET 207.874.8699 CONTACT: BARBARA BARHYDT	FILED UNDER CITY OF PORTLAND DELEGATED REVIEW
NATURAL RESOURCES PROTECTION ACT (NRPA) / MAINE CONSTRUCTION GENERAL PERMIT	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION 312 CANCO ROAD PORTLAND, MAINE 04103 207.822.6300 CONTACT: ALISON SIROIS	FILED NOVEMBER 2012 APPROVED PERMIT ORDER #L-25823-4E-A-N AMENDED APPLICATION MeDEP SUBMITTED 10.20.17 LAST APPROVED PERMIT ORDER #L-25823-4E-D-N 02.16.2018 #L-25823-TW-E-N #L-25823-2F-F-N
SUBMERGED LANDS LEASE	DEPARTMENT OF CONSERVATION BUREAU OF PARKS AND LANDS 22 STATE HOUSE STATION AUGUSTA, MAINE 04333 CONTACT: CAROL DIBELLO	FILED NOVEMBER 2012 APPROVED 03.01.13 FOR ORIGINAL PHASEI/II SHOREFRONT ACTIVITIES PHASE III APPLICATION SUBMISSION 10.20.17/APPROVED MARCH 1, 2018
TRAFFIC MOVEMENT PERMIT	CITY OF PORTLAND (DELEGATED AUTHORITY) CITY HALL 389 CONGRESS STREET PORTLAND, MAINE 04101 207.874.8703	ISSUED JANUARY 27, 2016
FEDERAL	**GOVERNING BODY**	**STATUS**
U.S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT	U.S. ARMY CORPS OF ENGINEERS RR2 BOX 1855 MANCHESTER, MAINE 04351 207.623.8367 CONTACT: JAY CLEMENT	FILED NOVEMBER 2012 APPROVED PERMIT ORDER #NAE-2012-02469 FOR ORIGINAL PHASEI/II SHOREFRONT ACTIVITIES TRAVEL LIFT & BASIN APPROVED DECEMBER 20, 2017 (NAE-2012-02469-MOD)

CONSULTANT LIST

CIVIL ENGINEER:
Stantec
482 PAYNE ROAD SCARBOROUGH COURT
SCARBOROUGH, MAINE 04074
207.883.3355
ATTN: STEVE BUSHEY
STEPHEN.BUSHEY@STANTEC.COM

SURVEYOR:
Owen Haskell, Inc
390 U.S. ROUTE 1, UNIT 10
FALMOUTH, ME 04105
207.774.0424
ATTN: JOHN SWAN, P.L.S.
www.owenhaskell.com

GEOTECHNICAL:
S.W. Cole Engineering, Inc
286 PORTLAND ROAD
GRAY, ME 04039
207.657.2866
ATTN: TIM BOYCE, P.E.
www.swcole.com

ENVIRONMENTAL:
Credere Associates, LLC
776 MAIN STREET
WESTBROOK, ME 04092
207.828.1272
ATTN: RIP PATTEN
www.crederellc.com

STRUCTURAL:
Gagnon Engineering, Inc.
10 SOLOMON DRIVE
GORHAM, ME 04038
207.839.8085
ATTN: ROGER GAGNON, P.E.

ATTORNEY:
Murray, Plumb & Murray
P.O. BOX 9785
PORTLAND, ME 04104
207.773.5651
ATTN: MICHAEL TRAISTER
www.mpmlaw.com

ELECTRICAL DESIGN:
Bartlett Design
942 WASHINGTON STREET
BATH, ME 04530
207.443.5447
ATTN: LARRY BARTLETT

CONSTRUCTION MANAGER:
KEELEY CONSTRUCTION Co., Inc.
P.O. BOX 1074
PORTLAND, ME 04104
207.885.0035
ATTN: JAMES KEELEY
www.keeleycrane.com

I HEREBY ACKNOWLEDGE THAT THESE PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE AND THAT I AM COMPETENT TO PREPARE THIS DOCUMENT.

ALL PERMITS ARE ANTICIPATED TO HAVE CONDITIONS ATTENDANT WITH THEIR APPROVAL. THE CONTRACTOR SHALL REVIEW ALL PERMITS AND THE CONDITIONS ATTENDANT WITH APPROVALS PRIOR TO THE START OF THE WORK. UNLESS OTHERWISE STIPULATED BY THE CONTRACT DOCUMENTS, THE CONTRACTOR IS REQUIRED TO COMPLY AND FULFILL ALL CONDITIONS OF APPROVAL.

REV	DATE	DESCRIPTION
7	06.26.18	SUBMITTED PHASE IV - LEVEL III SITE PLAN APPLICATION
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2	09.04.15	FINAL PLAN SUBMISSION TO CITY OF PORTLAND
1	06.15.15	PRELIMINARY PHASE III AMENDED SITE PLAN TO CITY OF PORTLAND

REVISIONS

STATE OF MAINE — STEPHEN R. BUSHEY — 06/26/18 — LICENSED PROFESSIONAL ENGINEER
P.E. STEPHEN BUSHEY
LIC. # 7429

PROJECT: CANAL LANDING AMENDED SITE PLAN
SHEET TITLE: PHASE IV COVER SHEET
CLIENT: CANAL LANDING LLC
400 WEST COMMERCIAL STREET
PORTLAND, ME 04101

STANTEC CONSULTING SERVICES INC.
482 PAYNE ROAD
SCARBOROUGH, ME 04074
WWW.STANTEC.COM
Stantec

DRAWN:	PBF	DATE:	OCTOBER 2017
DESIGNED:	SRB	SCALE:	AS NOTED
CHECKED:	SRB	JOB NO.	195350129
FILE NAME:	3091.04-COV		
SHEET	C-1.0		

NORTH

DRIVEWAY #3
(UNDER CONSTRUCTION
JUNE 2018)

EX. SAN MH
INV. 5.3'±

CMP MH'S

EX. SAN MH
INV. 5.10'±

EX. SAN MH
INV. 4.71'±

EX. SAN MH
INV. 4.3'±
12" x 16"
REDUCER

WEST COMMERCIAL STREET

U.S. ROUTE 1A WEST COMMERCIAL STREET

PAVED - PUBLIC - VARIABLE WIDTH

DANFORTH ST.

GRANITE
"M" MONUMENT
FOUND

EXTENTSION OF
EMERY ST.

3' O/S GRANITE
MONUMENT
W. COMMERCIAL ST.

B2b
ZONE

WPDZ
ZONE

NORTH 75
1A SIGN

PROPOSED 24' WIDE ROW EASEMENT

N86°01'33"E
312.82'

N71°39'45"E
854.33'

APPROX. GAS

APPROX. WATER

DROP INLET

STORM MH

EXISTING PINE
TREES TO REMAIN
EXISTING BIRCH
TREES TO REMAIN

EXISTING BIRCH CLUMP TO
REMAIN

EXISTING PAVED APRON

GRAVEL DRIVEWAY

N66°06'18"E
793.06'

N87°07'38"E
273.21'

S87°07'38"W
21.45'

24" BRICK
STORM WATER
OVERFLOW
INV. = ~1.4

20' x 120'
SHELL STORAGE
BLDG. (RUBB STYLE)
(NOT YET INSTALLED JUNE 2018)

S02°52'22"E
44.04'

S02°52'22"E
60.04'

CHORD S79°48'41"W 184.84'
L=185.34'
R=725.78'

EXISTING
PIER/FLOATS

EXISTING RELOCATED
TRACK LOCATION
(COMPLETED JULY 2015)

REMAINING AREA
OF NORTH PORTION =
±294,083 S.F.
±6.75 ACRES
CANAL LANDING LLC
CCRD BOOK 32239 PAGE 148

N72°29'45"E
542.24'

S72°29'45"W
519.07'

FUTURE PAVING - PART
OF BUILDING C/D
PROJECT

BLDG. C
180'x110'
19,800 S.F.
F.F.E. 16.0
(TO BE CONSTRUCTED)

BLDG. D
80'x60'
4,800 S.F.
(TO BE
CONSTRUCTED)

SIGN

RIM=20.62
INV. IN=3.8

RIM=20.60
INV. NOT VISIBLE

RIM=20.61
INV. OUT=4.21
TOP OF BRICK
PIPE UNKNOWN
SIZE=9.6'

RIM=20.21

ABANDONED
WATER

N73°01'23"E
263.48'

SEWER
EASEMENT
3975/262

GAS METERS

GRANITE CURB #66

IMT
LOADING SLAB
(UNDER CONSTRUCTION
AUGUST 2018)

SMH
RIM=13.66
CL INV=5.2
12" INV. IN=6.7

CHORD N65°57'58"E 153.24'
R=673.74'
L=153.57'

CHORD S65°57'58"W 165.07'
L=165.42'
R=725.74'

N59°26'10"E
693.10'

S59°26'10"W
495.19'

S62°41'27"W
125.13'

S66°19'39"W 57.45'

2" FORCEMAIN

BOAT RAMP #2
(UNDER CONSTRUCTION JUNE 2018)

UTILITY EASEMENT
FROM PORTLAND
TERMINAL COMPANY TO
CANAL LANDING, LLC

REMAINING AREA
OF SOUTH PORTION =
±260,844 S.F.
±5.99 ACRES
TO SPRING HIGH TIDE
CANAL LANDING LLC
CCRD BOOK 32239 PAGE 148

EXISTING TRAVEL LIFT BASIN
(UNDER CONSTRUCTION
JUNE 2018)

BUILDING B
(COMPLETED WINTER
2014/2015)

TO SPRING HIGH TIDE

SPRING HIGH TIDE OR HIGH
ANNUAL TIDE - ELEV. 7.4'
(NGVD 1929)

105' USACOE SETBACK LINE

50' HARBOR COMMISSION
LINE

PROPOSED FLOATS
(NOT YET INSTALLED AS
OF JUNE 2018)

EXISTING GRANITE REVETMENT WALL

DILAPIDATED PIER

EXISTING
CSO
OUTFALL

APPROXIMATE
MEAN LOW WATER
ELEVATION -4.0
NGVD 1929

SPRING HIGH TIDE
ELEVATION 7.4
NGVD 1929

EXISTING
DILAPIDATED PIERS
TO BE REMOVED

EXISTING FLOATS
(INSTALLED
SUMMER 2014)

FEDERAL CHANNEL LINE

FORMER HARBOR COMMISSIONERS LINE OF 1929 (PLAN REFERENCE 2)

FEDERAL CHANNEL LINE (PLAN REFERENCE 2)

PLAN REFERENCES

1. "BOUNDARY AND TOPOGRAPHIC SURVEY WEST COMMERCIAL STREET PORTLAND, CUMBERLAND COUNTY, MAINE" MADE FOR HNTB AND THE MAINE DEPARTMENT OF TRANSPORTATION BY OWEN HASKELL, INC. DATED APRIL 4, 2014.
2. PLAN TITLED "STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP" "LAND ACQUISITIONS" BY OWEN HASKELL INC. DATED APRIL 4, 2014.
3. PLAN SET TITLED "STATE OF MAINE DEPARTMENT ON TRANSPORTATION" CITY OF PORTLAND, CUMBERLAND COUNTY, PORTLAND INTERNATIONAL MARINE TERMINAL - EXISTING LAYDOWN AND CONNECTING CORRIDOR CONNECTION WIN: 022809.20
4. PORTLAND HARBOR, PORTLAND, ME AFTER DREDGE SURVEY - 35 FOOT CHANNEL AND TURNING BASINS BY THE U.S. ARMY CORPS OF ENGINEERS. SHEETS V-101 THROUGH V-104, DATED APRIL 16, 2014.

50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

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REVISIONS

STATE OF MAINE
STEPHEN R. BUSHEY
06/26/18
LICENSED
PROFESSIONAL ENGINEER

P.E. STEPHEN BUSHEY
LIC. # 7429

PROJECT
CANAL LANDING
AMENDED SITE PLAN

SHEET TITLE
PHASE IV EXISTING
CONDITIONS PLAN

CLIENT
CANAL LANDING LLC
400 WEST COMMERCIAL STREET
PORTLAND, ME 04101

STANTEC CONSULTING SERVICES INC.
482 PAYNE ROAD
SCARBOROUGH, ME 04074
WWW.STANTEC.COM
Stantec

DRAWN:	PBF	DATE:	OCTOBER 2017
DESIGNED:	SRB	SCALE:	1" = 50'
CHECKED:	SRB	JOB NO.	195350129
FILE NAME:	3091.04 - EXISTING CONDITIONS		
SHEET	C-1.2		

ZONING INFORMATION

ZONE: WATERFRONT PORT DEVELOPMENT ZONE (WPDZ)

PERMITTED USES: MARINE REPAIR SERVICES / BOAT REPAIR YARD

	REQUIRED	PROVIDED
MINIMUM LOT SIZE	NONE	17.77 AC
MINIMUM LOT FRONTAGE	NONE	NONE
MINIMUM YARD DIMENSIONS		
FRONT	NONE	0 FT
SIDE	NONE	18.1 FT
REAR	NONE	N/A
SETBACK FROM PIER LINE	5 FT	>100 FT
MAXIMUM LOT COVERAGE	100%	9.6%
MAXIMUM BUILDING HEIGHT	75 FT (CONDITIONAL)	<45 FT

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STRUCTURES WITHIN PROJECT TO BE CONSTRUCTED IN ACCORDANCE WITH PORTLAND CITY CODE, SECTION 14-450.8 FLOOD PLAIN MANAGEMENT.

LEGEND

- EXISTING BUILDING
- PROPOSED BUILDING (PHASE III)
- PREPARED PERVIOUS SURFACE FOR VESSEL DISPLAY, STORAGE AND MAINTENANCE
- HEAVY DUTY PAVEMENT
- STANDARD DUTY PAVEMENT
- OPTIONAL CONCRETE PAD (TO BE DETERMINED BY APPLICANT)

GENERAL NOTE:

1. THE PLACEMENT OF A FLOWABLE FILL CAP OVER THE CSO LINE WOULD BE PROVIDED AS A PROTECTIVE MEASURE TO HELP DISTRIBUTE EQUIPMENT LOADS OVER THE UNDERLYING PIPE BELOW ONLY IN THE EVENT THAT THE CITY REQUESTS IT OR OTHER EVIDENCE OF DEFICIENT PIPE LOADING CAPACITY IS DISCOVERED.
2. PREFAB BUILDINGS ARE CURRENTLY ONSITE. EACH WILL BE RETROFITTED TO INCLUDE POWER CONTROLS AND RELATED EQUIPMENT, WATER SUPPLY (YEAR ROUND AND/OR SEASONAL) AND OTHER SERVICES AS DETERMINED BY OWNER. WORK SHALL INCLUDE POSITIONING OF THESE BUILDINGS ON CRUSHED STONE BASE AND ALL UTILITY INSTALLATIONS.

NOTES

1. THE OWNER SHALL BE RESPONSIBLE TO REMOVE PROPOSED STRUCTURES I.E. STAIRS, RAMPS, ETC. WITHIN THE PROPOSED 30' WIDE EASEMENT OVER THE CSO LINE IN THE EVENT THAT THE CITY MUST HAVE ACCESS FOR MAINTENANCE AND REPAIRS TO THE PIPE.

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REVISIONS

STATE OF MAINE · STEPHEN R. BUSHEY · No. 7429 · 06/26/18 · LICENSED · PROFESSIONAL ENGINEER

P.E. STEPHEN BUSHEY
LIC. # 7429

PROJECT: CANAL LANDING AMENDED SITE PLAN

SHEET TITLE: BUILDING E SITE LAYOUT PLAN

CLIENT: CANAL LANDING LLC
400 WEST COMMERCIAL STREET
PORTLAND, ME 04101

STANTEC CONSULTING SERVICES INC.
482 PAYNE ROAD
SCARBOROUGH, ME 04074
WWW.STANTEC.COM

DRAWN:	PBF	DATE:	OCTOBER 2017
DESIGNED:	SRB	SCALE:	1" = 50'
CHECKED:	SRB	JOB NO.	195350129
FILE NAME:	3091.04-SITE LAYOUT		
SHEET	C-2.1		

GENERAL NOTES

1. IN ADDITION TO THESE PLANS AND NOTES, THE CONTRACTOR SHALL REFER TO THE PROJECT MANUAL OR MOST CURRENT MDOT SPECIFICATIONS FOR CONSTRUCTION SPECIFICATIONS AND BIDDING PROCEDURES.

2. THIS PROJECT WILL BE SUBJECT TO THE TERMS AND CONDITIONS OF ALL PERMITS ISSUED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE U.S DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.

3. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCE, PAVING, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE POINTS. ENTRANCES IN MOST LOCATIONS REQUIRE STRUCTURAL SLABS. REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR INFORMATION ON THE STRUCTURAL SLAB ENTRANCES.

4. ALL REQUIRED AND NECESSARY INSPECTIONS AND OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSIONS AND THE FINAL SERVICE CONNECTIONS.

5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS, AT ITS SOLE COST.

6. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE APPLICANT AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER, THEIR REPRESENTATIVES, OR THE CITY, AT NO ADDITIONAL COST TO THE OWNER.

7. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.

8. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE PROJECT SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SHALL APPLY AT NO EXTRA COST TO THE OWNER.

9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RECORD DRAWINGS THROUGHOUT THE PROJECT AND PROVIDING THE OWNER WITH A SET OF ELECTRONIC FINAL RECORD DRAWINGS WHEN THE PROJECT IS COMPLETE.

10. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AND ALL ADJACENT PROPERTIES INCLUDING NGL-NE SITE AND MDOT MAINTENANCE BUILDING AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN SAFE VEHICLE AND PEDESTRIAN ACCESS THROUGH OUT THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACT OR CHANGES TO SITE ACCESS CONDITIONS.

11. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMANCE OF WORK IN ACCORDANCE WITH ALL AREMA SAFETY STANDARDS AND SHALL COOPERATE FULLY WITH REPRESENTATIVES OF PAN AM RAILWAYS, MDOT, AND UNITIL AS MAY BE REQUIRED.

PERMITTING NOTES

1. THIS PROJECT WILL BE SUBJECT TO THE TERMS AND CONDITIONS OF A MAINE DEP NATURAL RESOURCES PROTECTION ACT PERMIT AS AMENDED FOR ACTIVITIES WITHIN 75' OF THE RIVER, WHICH WILL BE MADE A PART OF THE CONTRACT BID DOCUMENTS.

2. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE AMENDED SITE PLAN REVIEW PERMIT FROM THE CITY OF PORTLAND WHICH WILL BE MADE A PART OF THE CONTRACT BID DOCUMENTS. THE CONSTRUCTION WILL BE GOVERNED BY THE ZONING ORDINANCES WHICH ARE AVAILABLE FOR VIEWING AT THE OFFICE OF THE ENGINEER OR THE MUNICIPAL OFFICE.

3. THE PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE PORTLAND HARBOR COMMISSION APPROVAL AS AMENDED WHICH WILL BE MADE PART OF THE CONTRACT BID DOCUMENTS.

4. THE CONTRACTOR SHALL REVIEW THE ABOVE-REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.

5. THE PROJECT CONSTRUCTION IS SUBJECT TO ALL REQUIREMENTS OF THE VOLUNTARY RESPONSE ACTION PLAN AS PREPARED BY AMEC ON BEHALF OF UNITIL FOR THE NORTHERN UTILITIES PROPERTIES. CREDERE ASSOCIATES IS RESPONSIBLE FOR ENVIRONMENTAL CONSULTATION FOR NEW YARD, LLC AND WILL BE PREPARING ENVIRONMENTAL REPORTS RELATED TO THE PAN AM PROPERTIES FOLLOWING THE PROPERTY TRANSFER AND APPROVED BY THE MAINE DEP. SEE SEPARATE DOCUMENTS PREPARED BY CREDERE ASSOCIATES WHICH ARE TO BE CONSIDERED PART OF THE CONTRACT DOCUMENTS.

SITE LAYOUT NOTES

1. BITUMINOUS CONCRETE CURB, SLIPFORM CONCRETE CURB AND GRANITE CURB SHALL MEET THE REQUIREMENTS OF MDOT 702.001, 703.07 AND 609.04.

2. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB OR THE FACE OF THE BUILDING.

3. EXCEPT WHERE INDICATED OTHERWISE, THE PAVEMENT IS TO BE HEAVY DUTY PAVEMENT.

4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & STANDARDS OF THE MAINE DEPARTMENT OF TRANSPORTATION, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITIONS AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS.

GRADING & DRAINAGE NOTES:

1. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N = 0.012 OR LESS.

2. AN "AS-BUILT" CERTIFICATION AND PLANS OF THE STORMWATER DRAINAGE SYSTEM IS REQUIRED PRIOR TO THE OWNER ACCEPTING ANY BUILDINGS AND PROPERTY. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT ANY DEVIATION FROM THE PLANS MAY DELAY THE ACCEPTANCE OF THE PROJECT, WITH CONTRACTOR RESPONSIBLE FOR ANY ASSOCIATED COSTS.

3. A DETAILED O&M MANUAL FOR STORMWATER MANAGEMENT SYSTEMS IS (WILL BE) FILED WITH THE CITY OF PORTLAND DURING THE PERMIT REVIEW PROCESS. A SPECIFIC MANUAL HAS BEEN PREPARED FOR O&M OF THE DRAINAGE SYSTEM.

4. SEE EXISTING CONDITIONS FOR BENCHMARK INFORMATION.

5. SEE GRADING, DRAINAGE AND EROSION/SEDIMENT CONTROL FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.

6. ALL DISTURBED AREAS NOT TO BE PAVED, GRAVELED, SODDED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER AND MULCH.

7. COMPACTION REQUIREMENTS:

LOCATION	MINIMUM COMPACTION*
SUBBASE AND BASE GRAVEL BELOW PAVED OR CONCRETE AREAS	95%
SUBGRADE FILL BELOW PAVED AREAS	90%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%
STRUCTURAL FILL WITHIN PROPOSED BUILDING AREA	95%
SELECT FILL ADJACENT BUILDING FOUNDATIONS, EXTERIOR FOUNDATIONS AND WITHIN 8 INCHES OF THE SLAB-ON-GRADE	95%

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM-D-1557.

8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.

9. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND EXIT RAMPS ADJACENT TO THE BUILDING AND ALONG NEW CURBED AREAS.

10. PROVIDE STABILIZATION OR SEPARATION GEOTEXTILE FABRIC OVER UNSTABLE SOILS AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND IN ACCORDANCE WITH THE FINAL GEOTECHNICAL RECOMMENDATIONS.

11. NATIVE SOILS RANGE FROM GRANULAR TO CLAYEY AND SILTY. CARE MUST BE EXERCISED TO LIMIT DISTURBANCE OF THE BEARING SOILS. THE NATIVE CLAYEY OR SILTY SOILS SHOULD NOT BE PROOF-ROLLED. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHOULD BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO EXTRA EXPENSE TO THE OWNER. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER.

LOCAL APPROVALS, WAIVERS AND VARIANCES

THE CONSTRUCTION PLANS ARE TO BE SUBMITTED TO THE CITY OF PORTLAND FOR THEIR REVIEW, APPROVAL AND RECORDS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

PENDING SITE PLAN CONDITIONS OF APPROVAL

STANDARD CONDITIONS OF APPROVAL

1. DEVELOP SITE ACCORDING TO PLAN: THE SITE SHALL BE DEVELOPED AND MAINTAINED AS DEPICTED ON THE SITE PLAN AND IN THE WRITTEN SUBMISSION OF THE APPLICANT. MODIFICATION OF ANY APPROVED SITE PLAN OR ALTERATION OF A PARCEL WHICH WAS THE SUBJECT OF SITE PLAN APPROVAL AFTER MAY 20, 1974, SHALL REQUIRE THE PRIOR APPROVAL OF A REVISED SITE PLAN BY THE PLANNING BOARD OR PLANNING AUTHORITY PURSUANT TO THE TERMS OF CHAPTER 14, LAND USE, OF THE PORTLAND CITY CODE.

2. SEPARATE BUILDING PERMITS ARE REQUIRED: THIS APPROVAL DOES NOT CONSTITUTE APPROVAL OF BUILDING PLANS, WHICH MUST BE REVIEWED AND APPROVED BY THE CITY OF PORTLAND'S INSPECTION DIVISION.

3. SITE PLAN EXPIRATION: THE SITE PLAN APPROVAL WILL BE DEEMED TO HAVE EXPIRED UNLESS WORK HAS COMMENCED WITHIN ONE (1) YEAR OF THE APPROVAL OR WITHIN A TIME PERIOD UP TO THREE (3) YEARS FROM THE APPROVAL DATE AS AGREED UPON IN WRITING BY THE CITY AND THE APPLICANT. REQUESTS TO EXTEND APPROVALS MUST BE RECEIVED BEFORE THE ONE (1) YEAR EXPIRATION DATE.

4. PERFORMANCE GUARANTEE AND INSPECTION FEES: A PERFORMANCE GUARANTEE COVERING THE SITE IMPROVEMENTS, INSPECTION FEE PAYMENT OF 2.0% OF THE GUARANTEE AMOUNT AND SEVEN (7) FINAL SETS OF PLANS MUST BE SUBMITTED TO AND APPROVED BY THE PLANNING DIVISION AND PUBLIC SERVICES DEPARTMENT PRIOR TO THE RELEASE OF A BUILDING PERMIT, STREET OPENING PERMIT OR CERTIFICATE OF OCCUPANCY FOR SITE PLANS. IF YOU NEED TO MAKE ANY MODIFICATIONS TO THE APPROVED PLANS, YOU MUST SUBMIT A REVISED SITE PLAN APPLICATION FOR STAFF REVIEW AND APPROVAL.

5. DEFECT GUARANTEE: A DEFECT GUARANTEE, CONSISTING OF 10% OF THE PERFORMANCE GUARANTEE, MUST BE POSTED BEFORE THE PERFORMANCE GUARANTEE WILL BE RELEASED.

6. PRECONSTRUCTION MEETING: PRIOR TO THE RELEASE OF A BUILDING PERMIT OR SITE CONSTRUCTION, A PRE-CONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE. THIS MEETING WILL BE HELD WITH THE CONTRACTOR, DEVELOPMENT REVIEW COORDINATOR, PUBLIC SERVICE'S REPRESENTATIVE AND OWNER TO REVIEW THE CONSTRUCTION SCHEDULE AND CRITICAL ASPECTS OF THE SITE WORK. AT THAT TIME, THE DEVELOPMENT REVIEW COORDINATOR WILL CONFIRM THAT THE CONTRACTOR IS WORKING FROM THE APPROVED SITE PLAN. THE SITE/BUILDING CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A DETAILED CONSTRUCTION SCHEDULE TO THE ATTENDING CITY REPRESENTATIVES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A MUTUALLY AGREEABLE TIME FOR THE PRE-CONSTRUCTION MEETING (IF APPLICABLE).

7. DEPARTMENT OF PUBLIC SERVICES PERMITS: IF WORK WILL OCCUR WITHIN THE PUBLIC RIGHT-OF-WAY SUCH AS UTILITIES, CURB, SIDEWALK AND DRIVEWAY CONSTRUCTION, A STREET OPENING PERMIT(S) IS REQUIRED FOR YOUR SITE. PLEASE CONTACT CAROL MERRITT AT 874-8300, EXT. 8828. (ONLY EXCAVATORS LICENSED BY THE CITY OF PORTLAND ARE ELIGIBLE.)

8. AS-BUILT FINAL PLANS: FINAL SETS OF AS-BUILT PLANS SHALL BE SUBMITTED DIGITALLY TO THE PLANNING DIVISION, ON A CD OR DVD, IN AUTOCAD FORMAT (*.DWG), RELEASE AUTOCAD 2005 OR GREATER.

9. STORMWATER MANAGEMENT: THAT THE DEVELOPER/ CONTRACTOR/ SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE CONSTRUCTION STORMWATER MANAGEMENT PLAN AND SEDIMENT & EROSION CONTROL PLAN BASED ON CITY STANDARDS AND STATE GUIDELINES; THAT THE OWNER/OPERATOR OF THE APPROVED STORMWATER MANAGEMENT SYSTEM AND ALL ASSIGNS SHALL COMPLY WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST-CONSTRUCTION STORMWATER MANAGEMENT, WHICH SPECIFIES THE ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS; AND THAT A MAINTENANCE AGREEMENT FOR THE STORMWATER DRAINAGE SYSTEM, AS ATTACHED, OR IN SUBSTANTIALLY THE SAME FORM WITH ANY CHANGES TO BE APPROVED BY CORPORATION COUNSEL, SHALL BE SUBMITTED AND SIGNED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY WITH A COPY TO THE DEPARTMENT OF PUBLIC SERVICES.

PENDING WAIVERS (SUBJECT TO AMENDED SITE PLAN REVIEW)

UTILITY NOTES

1. ALL REQUIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED AND CONSTRUCTED BY THE SITE CONTRACTOR TO WITHIN 5 FEET OF THE BUILDINGS, AT A LOCATION COORDINATED WITH THE MEP CONTRACTOR(S) AND THE BUILDING PLANS. SITE WORK WITHIN 5 FEET OF UNDERSLAB UTILITIES SHALL CONSIST OF TRENCHING AND BACKFILLING. ACTUAL UTILITY INSTALLATION SHALL BE BY THE MEP CONTRACTOR. ALL REQUIRED CONNECTION FEES SHALL BE PAID BY THE GENERAL CONTRACTOR.

2. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF AND/OR RELOCATION OF OVERHEAD AND UNDERGROUND TELEPHONE WITH FAIRPOINT COMMUNICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUITS, PULL WIRES, TRENCHING AND BACKFILLING NECESSARY TO COMPLETE THE WORK.

3. ALL SANITARY SEWER WORK SHALL MEET THE STANDARDS OF THE MAINE STATE PLUMBING CODE AND CITY OF PORTLAND PUBLIC SERVICES DIVISION. CONNECTIONS TO THE 42" SAN. SEWER AND 24" CSO LINE SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF PORTLAND PUBLIC SERVICES DIVISION RECOMMENDATIONS AND REGULATIONS.

4. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRENCHING, CONDUIT AND BACKFILLING ASSOCIATED WITH UNDERGROUND POWER, COMMUNICATIONS AND CABLE.

5. COORDINATE ALL OTHER UTILITY WORK WITH THE APPROPRIATE UTILITY COMPANY. ALL UTILITY WORK SHALL CONFORM TO THE STANDARDS OF THE UTILITY COMPANY AND PROJECT SPECIFICATIONS, WHICHEVER IS MORE STRINGENT, AT NO EXTRA EXPENSE TO THE OWNER.

6. THE LOCATIONS OF THE NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE SERVING UTILITY COMPANY, PROJECT ARCHITECTS AND MEP DESIGNERS.

7. UNDERGROUND ELECTRICAL, CONDUIT MATERIAL AND INSTALLATION SHALL CONFORM TO CENTRAL MAINE POWER STANDARDS AND PROJECT SPECIFICATIONS, WHICH EVER IS MORE STRINGENT. THE EXISTING 115KV TRANSMISSION LINE SHALL BE MARKED/FLAGGED AND PROTECTED DURING CONSTRUCTION. WORK ADJACENT TO THE UNE SHALL BE MONITORED BY CENTRAL MAINE POWER.

8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OR WORK TO FINISH GRADE.

9. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.

10. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.

11. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.

12. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.

13. THE CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION AND PROVIDE TEMPORARY SERVICES AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE JOB SITE. TEMPORARY SERVICES SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. COORDINATE ALL TEMPORARY SERVICES WITH UTILITY COMPANY, OWNER AND AFFECTED BUSINESSES.

14. REMOVAL AND RELOCATION OF THE EXISTING GAS RELATED FACILITIES SHALL BE COORDINATED WITH UNITIL AND THEIR ASSIGNS. CONTRACTOR TO COORDINATE WITH UNITIL'S CONTRACTOR FOR RELOCATION OF THE 8" GAS LINE AND INSTALLATION OF VAULT (SEE UTILITY PLAN FOR LOCATION).

EROSION CONTROL NOTES:

1. PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITIES, CLEARING AND GRADING LIMITS SHALL BE STAKED BY THE CONTRACTOR BASED ON THE LIMITS OF GRADING SHOWN ON THE DRAWINGS AND ACCEPTED BY THE OWNER'S REPRESENTATIVE IN THE FIELD. AFTER THE CLEARING AND GRADING LIMITS HAVE BEEN ACCEPTED, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES, SEDIMENT BARRIERS AND THE CONSTRUCTION ENTRANCES ASSOCIATED WITH THE PROJECT.

2. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCHED AS SOON AS POSSIBLE. TEMPORARY/PERMANENT SEED MIXTURES SHALL CONFORM TO THE SEEDING PLAN CONTAINED IN THE EROSION CONTROL PROJECT PREPARED FOR THIS PROJECT.

3. PRIOR TO PAVING OR GRAVEL PLACEMENT, THE CONTRACTOR SHALL REMOVE SILT FROM ALL STORM LINES AND APPURTANCES.

4. ALL STORM DRAIN INLETS AND OUTLETS NOT IN PAVED AREAS ARE TO RECEIVE RIPRAP PROTECTION APRONS DURING CONSTRUCTION.

5. SILT BARIRIERS SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES SHOWN ON THE EROSION CONTROL DETAIL SHEET.

6. THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCES AS IT BECOMES SATURATED WITH MUD TO ENSURE THAT IT FUNCTIONS TO CAPTURE MUD FROM THE TIRES OF CONSTRUCTION VEHICLES DURING CONSTRUCTION. THE PURPOSE OF THE CONSTRUCTION ENTRANCE IS TO KEEP ADJACENT STREETS CLEAR OF DIRT AND MUD. SWEEPING OF THE ROADWAYS SHALL BE PERFORMED BY THE CONTRACTOR ON AN AS NEEDED BASIS, BUT AT A MINIMUM ONCE A WEEK.

7. SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO TOPSOIL FOR USE IN LANDSCAPING OPERATIONS.

8. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE WHICH CAUSE THE LEAST PRACTICAL UNPROTECTED DENUDED AREAS ON THE SITE DURING CONSTRUCTION.

9. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION/SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS MAY RESULT IN MONETARY PENALTIES AS ENFORCED BY THE MEDEP OR LOCAL AGENCIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.

10. A FULL EROSION/SEDIMENTATION CONTROL PLAN ACCOMPANIES THIS DRAWING SET AND IS ALSO CONTAINED IN THE DIV 312513 SPECIFICATIONS.

11. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS AS SHOWN AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED.

12. INSPECT EROSION AND SEDIMENT CONTROL DEVICES AFTER EACH RAIN STORM OF 0.25 INCHES OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE FILTER EFFICIENCY. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 OF THE STRUCTURE HEIGHT.

13. INSTALL CURLEX EROSION CONTROL MAT OR EQUAL ON ALL SLOPES STEEPER THAN 4:1. TURF REINFORCEMENT (NORTH AMERICAN GREEN OR EQUAL) SHALL BE USED ON SLOPES STEPPER THAN 3:1 IF NOT CALLED OUT FOR RIPRAP STABILIZATION.

14. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES, CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003".

ZONING INFORMATION

ZONE: WATERFRONT PORT DEVELOPMENT ZONE (WPDZ)

PERMITTED USES: MARINE REPAIR SERVICES / BOAT REPAIR YARD

CONDITIONAL USE PERMIT: MARINE RETAIL

	REQUIRED	PROVIDED
MINIMUM LOT SIZE	NONE	17.77 AC
MINIMUM LOT FRONTAGE	NONE	<1,910 FT
MINIMUM YARD DIMENSIONS		
FRONT	NONE	FT
SIDE	NONE	FT
REAR	NONE	N/A
SETBACK FROM PIER LINE	5 FT	FT
MAXIMUM LOT COVERAGE	100%	<20 %
MAXIMUM BUILDING HEIGHT	75 FT (CONDITIONAL)	72'-0" (BUILDING E)

EXISTING		PROPOSED
●	IRON PIPE OR ROD FND	BARRIER FREE SYMBOL
■	MONUMENT FOUND	SIGN
GV	GAS VALVE	SIGN LABEL
WV	WATER VALVE	GUIDERAIL - METAL
HYD	HYDRANT	GUIDERAIL - TIMBER
UP	UTILITY POLE	FENCE - CHAINLINK
LP	LIGHT POLE	FENCE - WOOD
T	COMMUNICATION MANHOLE	BUILDING / BUILDING ACCESS
D	DRAINAGE MANHOLE	RETAINING WALL
E	ELECTRIC MANHOLE	PEDESTRIAN CROSSWALK
S	SEWER MANHOLE	BOLLARD
CB	CATCH BASIN	VERTICAL GRANITE CURB
SIGN	SIGN	SLOPED GRANITE CURB
FENCE	FENCE	CATCH BASIN
EOP	EDGE OF PAVEMENT	CONTOUR LABEL
CURB	CURB	DMH DRAIN MANHOLE
OHW	OVERHEAD WIRES	RIPRAP INLET APRON
UGE	UNDERGROUND ELECTRIC	RIPRAP OUTLET APRON
T	TELEPHONE	2 1 2:1 SLOPE DESIGNATION
W	WATER LINE	SPOT GRADE
G	GAS LINE	TC 92.5 BC 92.0 SPOT GRADE AT CURB (TC = TOP / BC = BOTTOM)
SS	SANITARY SEWER	WATER MARK
SD	STORM DRAIN	10"UD UNDERDRAIN
50	1' CONTOUR	12" SD L = 188' S = 0.005 STORM DRAIN
MW	MONITORING WELL	TREE LINE OR LIMIT OF CLEARING
+ ~10.00	ELEVATIONS DERIVED FROM SOUNDING ON PLAN REF. 7	CURB STOP
× ~10.00	ELEVATIONS DERIVED FROM	HYDRANT
TREE	TREE	LIGHT POLE WITH FIXTURE(S)
BUILDING	BUILDING	JERSEY BARRIER
RAIL TRACKS	RAIL TRACKS	SMH SANITARY SEWER MANHOLE
RIPRAP	RIPRAP	TEST PIT
		T TRANSFORMER PAD
		UTILITY POLE
		VALVE
		6" SAN SANITARY SEWER
		6"W WATER MAIN
		2"G GAS MAIN
		UGE UNDERGROUND ELECTRIC
		OHE OVERHEAD ELECTRIC
		RAIL TRACKS
		STONE BASE AT RAILROAD CROSSING
		TIMBERS AT RAILROAD CROSSING
		CONCRETE
		BOATYARD SURFACE

REV	DATE	DESCRIPTION
7	06.26.18	SUBMITTED PHASE IV - LEVEL III SITE PLAN APPLICATION
6	03.09.18	SUBMITTED PHASE IV - LEVEL III SITE PLAN APPLICATION
5	12.07.17	REVISED FOR RESUBMISSION TO HARBOR COMMISSION
4	10.26.17	REVISED FOR DEP NRPAA AMENDMENT SUBMISSION
3	11.10.15	REVISED FINAL PLAN SUBMISSION
2	09.04.15	FINAL PLAN SUBMISSION TO CITY OF PORTLAND
1	06.15.15	PRELIMINARY PHASE III AMENDED SITE PLAN TO CITY OF PORTLAND

REVISIONS

STATE OF MAINE STEPHEN R. BUSHEY 06/26/18 LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN BUSHEY
LIC. # 7429

PROJECT
CANAL LANDING
AMENDED SITE PLAN

SHEET TITLE
PHASE IV GENERAL NOTES AND LEGEND

CLIENT
CANAL LANDING LLC
400 WEST COMMERCIAL STREET
PORTLAND, ME 04101

STANTEC CONSULTING SERVICES INC.
482 PAYNE ROAD
SCARBOROUGH, ME 04074
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Stantec

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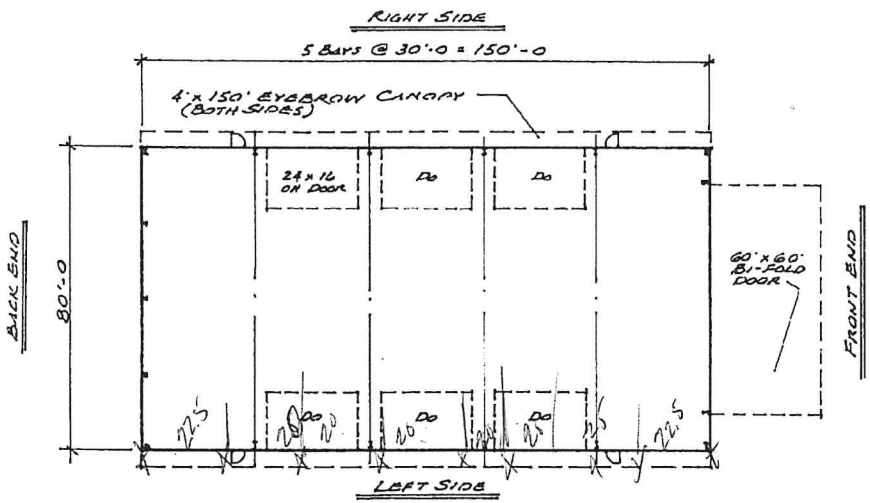
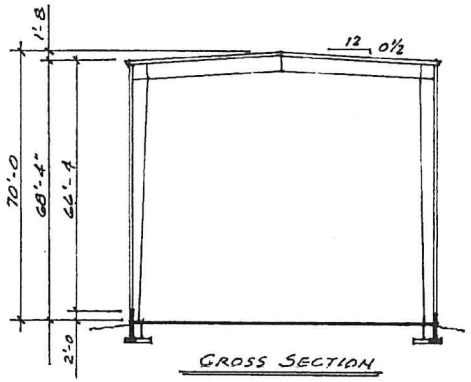
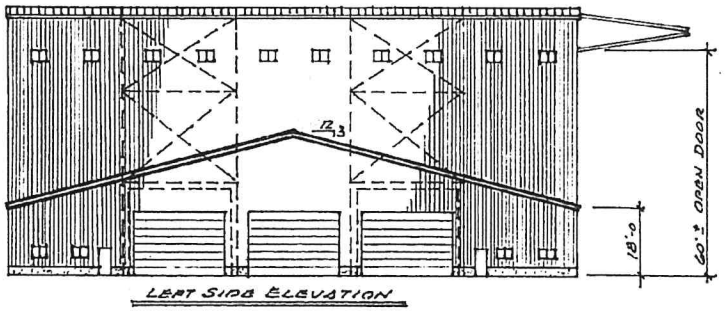
SHEET	C-1.1		

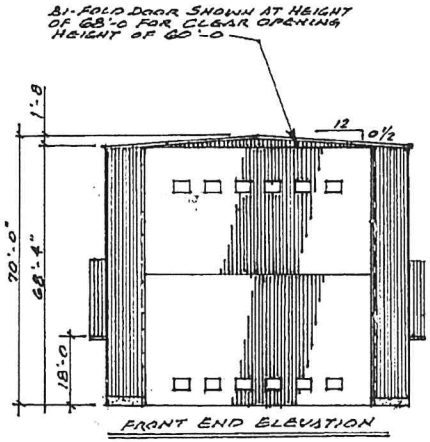




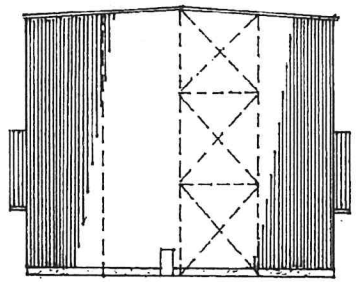
CROSS SECTION

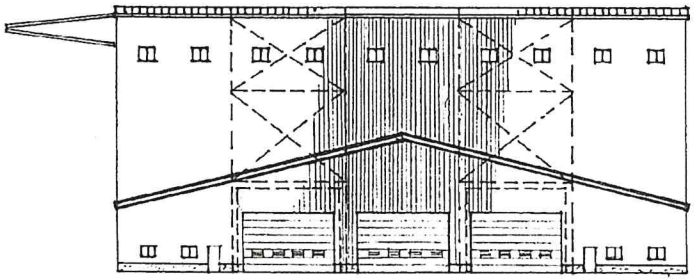


LEFT SIDE ELEVATION



FRONT END ELEVATION


BACK END ELEVATION


RIGHT SIDE ELEVATION

PROPOSED PAINT SHOP BUILDING FOR:

CANAL LANDING

100 WEST COMMERCIAL STREET
PORTLAND, MAINE 04101

BY:

IRISHSPAN INDUSTRIES, INC.

12-20-16 MAP

Planning and Urban Development Department
Planning Division

Subject: WPDZ Design Review – 400 W Commercial Paint Shed

Written by: Caitlin Cameron, Urban Designer

Date of Review: Monday, September 24 2018

The project at 400 West Commercial Street – Canal Landing Paint Shed - was reviewed according to the adopted WPD Zone performance standards by Caitlin Cameron, Urban Designer, Matt Grooms, Planner, and Shukria Wiar, Planner.

Questions & Outstanding items:

- What materials are proposed for the siding and roof?
- What building systems are proposed and where will they be located?

Design Review Comments*: (questions and unmet standards in red)*
Sec. 14-320.3 Performance Standards

(k) Lighting – Applicant did not provide a photometric plan to address the standard that site lighting will not have "an unreasonable adverse impact on adjacent residential zones." Staff recommend cut sheets that give evidence that site lighting is cutoff.

(l) Signs – Signs will come under separate permit application according to Sign Ordinance in Division 22.

(o) Design and Visual Character:

1) Long Views/Building Design: Change in roof form provides some visual interest to meet the standard however, staff suggest the slope could be increased to create a more varied form. The building orientation puts the narrow side to the street minimizing the visual impact of the building to the water from street level and the long views. Building systems; the project narrative suggests there will be systems on the roof – these must be shown on the elevations, be integrated into the roof forms, and not exceed the 75' height limit.

2) Massing: Massing and roof form are simple according to functional relationship of use and relationship to water and other buildings on-site.

3) Façades – equal treatment: More information is needed to evaluate this standard – materials and rooftop systems. This standard would be met if all facades and roof include a material with texture and systems are integrated into the design.

4) Facades – variation and articulation: Project provides some visual interest with sloped roof line (though this could be steeper to vary the form), material texture (depending on proposed materials), roof overhangs, windows. What materials proposed? Label materials on elevations. Canopies at man doors would add articulation, function, and legibility to these side entries.

5) Scale and Articulation: Not applicable – building is further than 50' from street.

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP
Director, Planning & Urban Development Department

Memorandum

To: Housing Committee

From: Jeff Levine, Director

Date: June 21, 2018

Re: Hotel Linkage – Revised Nexus Study and Draft Ordinance

As per your direction at your June 5, 2018, meeting, we have worked with the Greater Portland Council of Governments to revise their nexus study and also drafted a proposed ordinance based on that study. Both are attached.

The nexus study revisions were based on three major comments, which are repeated with their responses and staff comments below:

- *Income needed to afford rent seems low*. GPCOG used Maine Housing data in the initial memo. To address the concern of the subcommittee they added language about the limitations of the Maine Housing data.
- *Static Affordability Gap*. The methodology used to address the affordability gap only covers a single year because it is using annual salary as the basis for the calculation. To research the answer to this question, GPCOG staff reached out to Karl Seidman, a consultant who has completed several of these studies throughout the country, to ask how he would approach this issue. He said the methodology is rational and perhaps we could use a financing guideline to determine a duration of time. They also contacted both Maine Housing and Avesta but were unable to find any relevant guideline to assign a duration of time. Karl suggested it's likely the City would simply need to make a decision about how many years it wanted to use in the calculation. Given that using even one year's impact results in a range of per-room fees up to $5,165, staff does not recommend going above that level at this time.
- *Revise to Linkage Fee Terminology*- They edited the memo accordingly. Staff recommends using the term "Hotel Linkage Fee" rather than "Housing Impact Fee" in order to avoid confusion about this proposed ordinance and the Impact Fee study and proposed ordinance under development for transportation, stormwater/sewer and parks/open space.
- *Jobs per Household Data*- GPCOG's methodology used Cumberland County data for jobs created per household. They changed this data to reflect Portland's geography.

Sec.14-484. Purpose.
It is in the public interest to promote an adequate supply of affordable housing for the city's residents. The purpose of this division therefore is to offer incentives to developers to include units of affordable housing within development projects or based on demonstrated need caused by creation of new lower-income jobs, thereby mitigating the impact of market rate housing construction on the limited supply of available land for suitable housing, and helping to meet the housing needs of all economic groups within the city. The city believes that this division will assist in meeting the city's comprehensive goals for affordable housing, in the prevention of overcrowding and deterioration of the limited supply of affordable housing, and by doing so promote the health, safety and welfare of its citizens.

Sec. 14-485. Definitions.

…

Hotel Project is any hotel, inn or motel, as defined in this ordinance, consisting of 10 or more rooms for rent. Any such development that expands by 10 or more rooms within any 5 year period will also be considered a Hotel Project.

14-489 Hotel Linkage Fee

(a) **Purpose**: This section is based on City analysis, most specifically documented in the Greater Portland Council of Government study "Proposed Methodology for Hotel Linkage Fees" dated 6/15/18, that finds that new hospitality developments create a need for new affordable housing. This need is the result of the fact that these uses create a number of jobs that do not pay sufficiently to afford housing provided in the market.

(b) **Applicability**: This section applies to all Hotel Projects as defined in 14-485 that are not complete as of the effective date of this section.

(c) **Hotel Linkage Fee**: All Hotel Projects shall pay a linkage fee as shown in the table below, which would address one year's impact from development of that hotel room on the housing market. This amount shall be paid into the City's Housing Trust and used for the purposes set forth in the ordinance and regulations applicable to that trust:

Hotel Projects with Building Permits but without Certificates of Occupancy as of the Applicable Date of this Ordinance	$2,500 per room
Hotel Projects without Building Permits as of the Applicable Date of this Ordinance	$5,000 per room

(d) **Annual Adjustments:** These amounts shall be adjusted annually in the same way as the fee under Division 29 for Housing Replacement.

(e) **Reglations:** The Planning Board may promulgate implementing regulations based on this ordinance.

Sec. 14-~~489~~490. Housing trust fund.

To: **Jeff Levine, Planning & Urban Development Director**
From: **Stephanie Carver, GPCOG Planning Director**
Date: **6/15/18**
RE: **Proposed Methodology for Hotel Linkage fees**

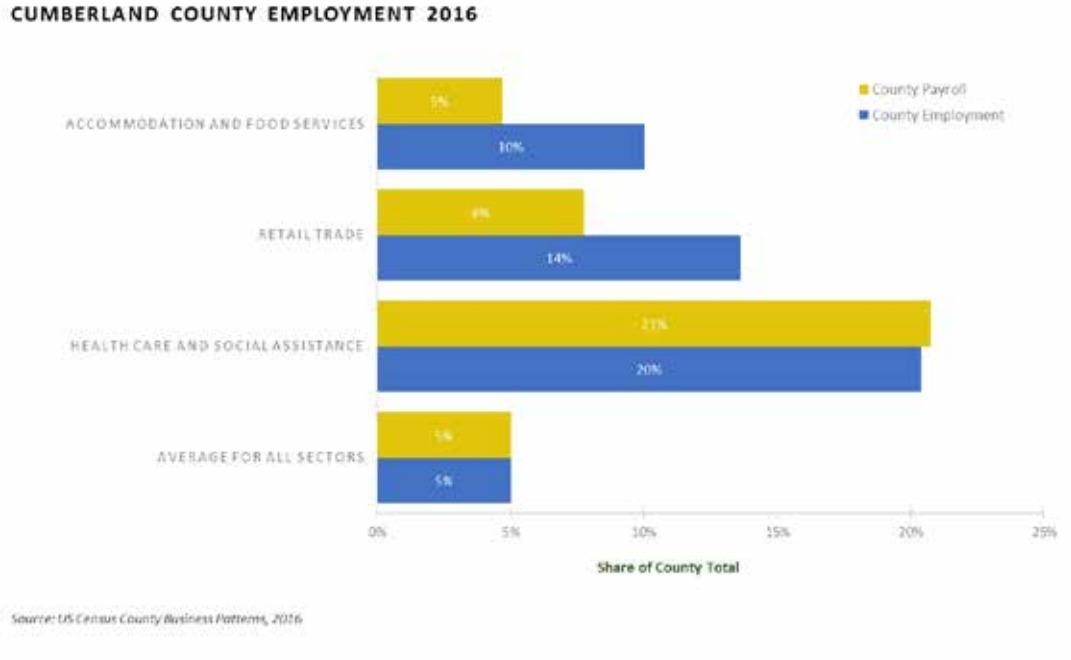
Introduction

The City of Portland's Department of Planning & Urban Development is examining the feasibility of a proposal for assessing hotel linkage fees. The purpose of this memo is to provide information to the City regarding the use of linkage fees for this purpose and outline a potential methodology for the calculation of a fee.

Background

Linkage fees are fees that cities may choose to implement to help mitigate the effects of new commercial development on the demand and availability of affordable housing. Prior to implementing a fee policy, communities often conduct a study to identify the connection, or "nexus" between new commercial development and the need for additional affordable housing. It is assumed that new commercial development contributes additional workers to a city's workforce and adds new worker households. In many industries, a percentage of these households do not make enough to live and work in the same city. Looking outside the city to find affordable housing often results in longer commute times and higher transportation costs. If implemented, a linkage fee is typically charged to a developer as a condition of approval and it is assessed based on total square footage or number of units in the development.

The City's Comprehensive Plan identifies the increasing demand for affordable housing as an emerging issue and sets a goal of pursuing "policies to enable people who work in Portland to have the option to live in Portland." To be considered affordable, housing should consume no more than 30% of a household's income including rent, mortgage, utilities and other household related costs. Of the 1,130 housing units that were permitted and/or built in Portland between 2010 to 2014, including apartments, condominiums and single-family homes, just 29% were offered at a rent or sales price affordable to a household earning the median income[i].



The Maine office of Tourism estimates over 36 million tourists visited Portland in 2017. Hotel development is steadily increasing, with 1,811,050 square feet of hotel development representing 2,647 units currently in operation throughout the City[ii]. According to the US Census, the accommodation and food service sector is the third largest share of employment in Cumberland County, representing 10% of the County's workforce but only 5% of the County's payroll. In fact, the median employee in this sector earns $312 a week or $16,227 per year, nearly half of the median wage in Cumberland County of $696 per week or $36,187 per year[iii]. A worker employed at the County median wage earns 85% of the household income needed to afford the median rent in Portland, while the average accommodation and food service worker earns a median wage that is 37% of the household income needed to afford the median rent in Portland.[iv] This affordability gap may force accommodation workers employed in Portland to seek housing outside of Portland.

COMPARISON OF MEDIAN WEEKLY WAGE BY INDUSTRY 2016

	Portland	Cumberland County	Maine
Accommodation and Food Service	**$353**	**$312**	**$290**
Retail Trade	$418	$466	$410
Health Care and Social Assistance	$685	$699	$611
Total - All Industries	$616	$696	$611

Source: US Census American Community Survey 2016 5-year sample

According to the Maine State Housing Authority the average rent (including utilities) for a two-bedroom apartment in Portland is $1,053 per month and the household income needed to afford the average rent in Portland is $42,111 per year. However, this is the average rent paid by existing renters in Portland and new households moving to Portland will pay the current market rate, which is generally higher than the average rent. As of June 15, 2018, there are roughly 60 two-bedroom apartments listed for rent in Portland on Zillow, with monthly rents ranging between $1,300-$3,500. One third of those apartments are listed with rents between $1,500 and $2,000, and another third of those apartments are listed for more than $2,000 per month. Therefore, a new household moving to Portland will expect to pay between 120%-330% of the average rent to live in the City.

Methodology

Methodologies used to calculate linkage fees vary, but in most cases the analysis begins with an estimation of the number of new employees associated with a typical development, in this case a hotel. In this methodology, a formula is used to calculate the affordability gap between what workers can afford to pay for housing and the average cost of market rate housing.

In Portland's case, a link is established between the creation of new jobs in the hotel sector and the increased demand for affordable housing through the following steps:

- **New Jobs.** Industry data was used to estimate the number of direct jobs that will be created by the new hotel with 180 units. According to the Urban Land Institute the typical hotel employs between 0.5-0.8 employees per hotel room. Using an average value of 0.65 employees per hotel room it is estimated that a hotel with 180 rooms will employ 117 people. The current ratio of jobs per household was used to estimate how many households will be created by this new employment.
- **Households.** Currently there are 37,737 employed civilians aged 16 and over living in the 30,211 total households in Portland. This means that on average there are 1.2 jobs per every household in Portland. Based on this ratio it was estimated that the 117 additional jobs created by a new hotel will create 94 new households in Portland. However, it is assumed employment in these households will be split up between different occupations, such as management, sales, service, and maintenance. Depending on the occupation the wages for each occupation may be higher or lower than the median wage for the hotel industry. Therefore, industry occupation employment and wage data examined from the ACS was used to estimate how many new households will be low income.

EMPLOYED POPULATION PER HOUSEHOLD 2016

	Portland	Cumberland County	Maine
Employed Civilian Population 16+	37,737	155,014	652,638
Total Households	30,211	117,871	551,109
Jobs/Household	1.2	1.3	1.2

Source: American Community Survey 2016 5-year estimate

- **Jobs by Occupation.** Based on industry and occupation employment data from the ACS 64% of jobs in the hotel industry are service occupations, 19% of hotel jobs are management occupations, 13% of hotel jobs are sales and office occupations, and the remainder are maintenance and transportation occupations. The total number of jobs and households that will be created in each occupation was calculated by multiplying the share of hotel employment by occupation by the total number of new hotel jobs created.

NEW JOBS AND HOUSEHOLDS BY OCCUPATION CREATED BY NEW HOTEL EMPLOYMENT

	Share of Hotel Employment	Number of New Jobs	Number of New Households
Service	**64%**	**74**	**60**
Sales and Office	13%	15	12
Transportation	4%	4	3
Maintenance	1%	1	1
Management	19%	22	18
Total - All Occupations	100%	117	94

Source: American Community Survey 2016 5-year estimate; GPCOG Analysis

- **Household Income.** To calculate the household income for each household in each occupation category the median wage by occupation data for Cumberland County from the ACS was used. This calculation assumes 1 person in each new household works full time in the hotel industry and any additional workers in the household earn the area median income.

NEW HOUSEHOLDS AND HOUSEHOLD INCOME BY OCCUPATION

	Number of New Households	Median Wage for Hotel Income Earner	Median Wage for Second Income Earner	Total Household Income
Service	**60**	**$18,109**	**$9,015**	**$27,124**
Sales and Office	12	$30,444	$9,015	$39,459
Transportation	3	$31,695	$9,015	$40,710
Maintenance	1	$33,421	$9,015	$42,436
Management	18	$52,910	$9,015	$61,925

Source: GPCOG Analysis and American Community Survey 2016 5-year estimates

- **Affordability Gap.** These estimates for household income by occupation were compared to affordability data from the Maine State Housing Authority to show the difference between what the new households created by hotel employment earn and the minimum income needed to afford a two-bedroom apartment in Portland. These results show that households with Service or Sales and Office occupations have a household income that is lower than the minimum income needed to afford rental housing in Portland. This household affordability gap is largest ($14,987) for households with Service occupations, which also represent nearly 2/3 of households created by the new hotel employment.

AFFORDABILITY GAP

	Number of New Households	Total Household Income	Income Needed to Afford Rent in Portland	Household Affordability Gap	Total Affordability Gap
Service	**60**	**$27,124**	**$42,111**	**$14,987**	**$892,820**
Sales and Office	**12**	**$39,459**	**$42,111**	**$2,652**	**$32,048**
Transportation	3	$40,710	$42,111	$1,401	$4,856
Maintenance	1	$42,436	$42,111	NA	$0
Management	18	$61,925	$42,111	NA	$0
Total					$929,724

Rental Affordability Source: Maine State Housing Authority, 2017

- **Aggregate Affordability Gap.** Next, the household affordability gap for each occupation was multiplied by the number of households with employment in each occupation to arrive at a total affordability gap of $929,724 per year. This number represents the difference between these households' ability to pay for their housing and the market cost of their housing based on the median monthly rent. In reality these households will face much higher rental housing costs since the current shortage of rental housing in Portland means that rents for new units are significantly higher than the median rent.

- **Final Calculation.** When we divide the affordability gap of $929,724 by the number of new hotel rooms, we get an average affordability gap per room of $5,165, or $7.70 per square foot. Therefore, a fee of just under $8 per square foot would cover a minimum justified

housing affordability gap for the 94 new households created by a new 180 unit hotel employment for one year.

This example estimate represents the full cost of the affordability gap for employment in one hotel for one year based on available data. Multiple industries could potentially affect the demand for affordable housing and the city may determine a higher or lower percentage of this fee based on these variables. Furthermore, this fee could be re-evaluated periodically as circumstances such as inflation, rents, and rental housing supply change.

[i] Portland 2030 Housing Demand, GPCOG 2015
[ii] Data from City of Portland, Department of Planning & Urban Development.
[iii] 2016 median wage data from the US Census American Community Survey (ACS)
[iv] (Source: US Census County Business Patterns, 2016).

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP
Director, Planning & Urban Development Department

Memorandum

To: Housing Committee

From: Jeff Levine, Director

Date: August 29, 2018

Re: Hotel Linkage Update

Since you referred the issue of a proposed hotel linkage program to the Planning Board, staff has had additional internal discussion, as well as a constructive set of meetings with representatives from the hospitality industry to better understand their market. As a result of these discussions, we are bringing this item back to the Housing Committee for an update and potential revised referral.

- Change to the Draft Ordinance: Based on additional conversations with Corporation Counsel – which we mentioned at the previous discussion – we are recommending a revision to the draft ordinance that adopts a methodology similar to the inclusionary zoning ordinance in 14-387. That revision would provide a first option for all hotel uses to provide low-income housing units for sale or rent on-site. Those units would have to be differentiated from the rest of the development through deed restrictions and other requirements to ensure that they would be used for permanent affordable housing.

  If the hotel developer does not want to provide these units on-site, then the option would exist for a fee-in-lieu. That fee-in-lieu, which we think many hotel developers would prefer, would be based on the nexus study. We think these revisions result in a stronger ordinance and tie the goals of the ordinance more closely to the process that would be used to implement it.

- Updated GPCOG Study: We asked the Greater Portland Council of Governments to update their hotel linkage study with additional data we have collected from the Maine Innkeepers Association. They have been kind enough to provide comments on the earlier study and pointed us to additional data sources that we asked GPCOG to incorporate into an updated study. As a result, they have a revised study with a range of possible fees in lieu that could be provided should a hotel development choose not to provide their units on-site. GPCOG's revised range is from $2,622 to $5,165 per room. This range includes a fee-in-lieu of $2,622 based on Maine Department of Labor Data – which is more specific in some ways but does not differentiate between types of employees in the accommodation sector. It also includes a fee-in-lieu of $3,806 if the more differentiated American

Community Survey data is utilized, but an assumption is added that no employee earns less than they would earn at the City's minimum wage at a full-time position. Finally, it includes a fee-lieu number of $5,165 if the original assumptions and methodology is used.

Staff feels that any of these three options are reasonable. However, staff recommends that the ordinance utilize the $3,806 per room fee, as it incorporates the minimum wage requirement in effect, but also retains the diversity of employment types captured in the American Community Survey data.

To: **Jeff Levine, Planning & Urban Development Director**
From: **Stephanie Carver, GPCOG Planning Director**
Date: **8/29/18**
RE: **Proposed Hotel Linkage Fee: Supportable Range**

This memo has been expanded and updated based on additional data provided by the Maine Innkeepers Association.

Introduction

The City of Portland's Department of Planning & Urban Development is examining the feasibility of a proposal for assessing hotel linkage fees that would recover the cost of producing housing that is affordable for hotel employees. The purpose of this memo is to provide information to the City regarding the use of linkage fees for this purpose and outline a potential methodology for the calculation of a fee.

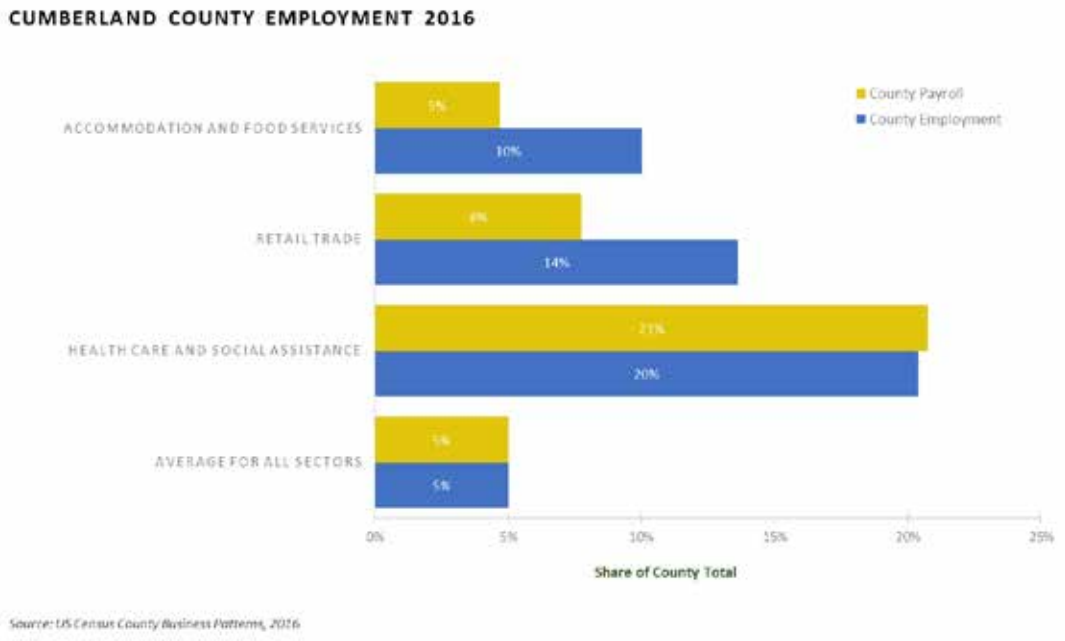
We have used the best available data to demonstrate how this methodology could be used to estimate a potential hotel linkage fee, but this does not constitute a recommendation from GPCOG as to the amount the City of Portland should charge for the hotel linkage fee nor is it a recommendation for the City of Portland to enact a hotel linkage fee ordinance.

Background

Linkage fees are fees that cities may choose to implement to help mitigate the impact of new commercial development on the demand and availability of affordable housing. Prior to implementing a fee policy, communities often conduct a study to identify the connection, or "nexus" between new commercial development and the need for additional affordable housing. It is assumed that new commercial development contributes additional workers to a city's workforce and adds new worker households. In many industries, a percentage of these households do not make enough to live and work in the same city. Looking outside the city to find affordable housing often results in longer commute times and higher transportation costs. If implemented, a linkage fee is typically charged to a developer as a condition of approval and it is assessed based on total square footage or number of units in the development.

The City's Comprehensive Plan identifies the increasing demand for affordable housing as an emerging issue and sets a goal of pursuing "policies to enable people who work in Portland to have the option to live in Portland." To be considered affordable, housing should consume no more than 30% of a household's income including rent, mortgage, utilities and other household related costs. Of the 1,130 housing units that were permitted and/or built in Portland between 2010 to 2014,

including apartments, condominiums and single-family homes, just 29% were offered at a rent or sales price affordable to a household earning the median income[i].



The Maine Office of Tourism estimates over 6 million tourists visited Portland in 2017. Hotel development is steadily increasing, with 1,811,050 square feet of hotel development - representing 2,647 units - currently in operation throughout the City. According to the US Census, the accommodation and food service sector is the third largest share of employment in Cumberland County, representing 10% of the County's workforce but only 5% of the County's payroll.

According to the Maine State Housing Authority the average rent (including utilities) for a two-bedroom apartment in Portland is $1,053 per month, and the household income needed to afford the average rent in Portland is $42,111 per year. However, this is the average rent paid by existing renters in Portland and new households moving to Portland will pay the current market rate, which is generally higher than the average rent. As of June 15, 2018, there are roughly 60 two-bedroom apartments listed for rent in Portland on Zillow, with monthly rents ranging between $1,300-$3,500. One third of those apartments are listed with rents between $1,500 and $2,000, and another third of those apartments are listed for more than $2,000 per month. Therefore, a new household moving to Portland will expect to pay between 120%-330% of the average rent to live in the City.

There are a range of estimates available regarding the average wages of a full-time employee in this sector, and all are well below the household income needed to afford housing in Portland. According to the US Census, the average Cumberland County employee in this sector earns $312 a week or $16,227 per year. The Maine Department of Labor (DOL) estimates the median income for a full-time

Cumberland County employee in this sector to be significantly higher, $24,908 per year. Additionally, as of 2017 the minimum wage in Portland is $10.68/hour, so a full-time employee making this salary would earn an annual income of $22,214. This affordability gap may force accommodation workers employed in Portland to seek housing outside of Portland.

Data

The minimum justified fee per square footage of hotel development outlined in this memo is based on data from both the US Census American Community Survey (ACS), and wage data from the Maine Department of Labor (DOL).

The US Census American Community Survey (ACS) data in this memo was used because it is the most comprehensive and consistent data source for demographic and economic characteristics of the population in GPCOG's service area. However, there are some limitations to the ACS data. First, it is 5-year sample data because this is the only data consistently available at the municipal, county, and state level. The drawback to using data pooled over five years is it averages out any short-term changes in income due to economic cycles or Portland's more recent minimum wage increase. Second, the median earnings reported by the ACS are based on what individuals report for their earnings regardless of whether they work full-time or part-time. As a result, these earnings may be skewed lower by individuals who work part-time, which may be more common for employment in the retail, food service, or accommodation sectors.

To balance these limitations, the median weekly wage data from the Maine DOL was also included in the analysis. The Maine DOL wage data is from the Quarterly Census of Employment and Wages (QCEW), which is based on employment and wage data reported to the Unemployment Insurance (UI) of the United States. The Maine DOL data also has some limitations. First, the data are only available at the industry level, so it is not possible to calculate the affordability gap for different occupations in the hotel sector. Second, the average weekly wage reported by the QCEW also does not differentiate between full-time and part-time employment. As a result, the weekly wage data reported by the Maine DOL may be skewed both by higher wage occupations and by part-time employment. The average weekly wage reported by Maine DOL was used to calculate yearly income based on full-time employment. This also assumes individuals employed in the accommodation sector can work full-time if they are willing and able to[ii].

Methodology

Methodologies used to calculate linkage fees vary, but in most cases the analysis begins with an estimation of the number of new employees associated with a typical development, in this case a hotel. In this methodology, a formula is used to calculate the affordability gap between what workers can afford to pay for housing and the average cost of market rate housing.

In Portland's case, a link is established between the creation of new jobs in the hotel sector and the increased demand for affordable housing through the following steps:

- **New Jobs.** Industry data was used to estimate the number of direct jobs that will be created by a new hotel with 180 units. According to the Urban Land Institute the typical hotel employs between 0.5-0.8 employees per hotel room. Using an average value of 0.65 employees per hotel room, it is estimated that a hotel with 180 rooms will employ 117 people. The current ratio of jobs per household was used to estimate how many households will be created by this new employment.
- **Households.** Currently there are 37,737 employed civilians aged 16 and over within the 30,211 total households in Portland. This means that on average there are 1.2 jobs per every household in Portland. Based on this ratio it is estimated that the 117 additional jobs created by a new hotel will create 94 new households in Portland. However, it is assumed employment in these households will be split up between different occupations, such as management, sales, service, and maintenance. The wages for each specific occupation may be higher or lower than the median wage for the hotel industry. Therefore, industry occupation employment and wage data examined from the ACS was used to estimate how many new households will be low income.

EMPLOYED POPULATION PER HOUSEHOLD 2016

	Portland	Cumberland County	Maine
Employed Civilian Population 16+	37,737	155,014	652,638
Total Households	30,211	117,871	551,109
Jobs/Household	1.2491	1.3151	1.1842

Source: American Community Survey 2016 5-year estimate

- **Jobs by Occupation.** Based on industry and occupation employment data from the ACS 64% of jobs in the hotel industry are service occupations, 19% of hotel jobs are management occupations, 13% of hotel jobs are sales and office occupations, and the remainder are maintenance and transportation occupations. The total number of jobs and households that will be created in each occupation was calculated by multiplying the share of hotel employment by occupation by the total number of new hotel jobs created.

NEW JOBS AND HOUSEHOLDS BY OCCUPATION CREATED BY NEW HOTEL EMPLOYMENT

	Share of Hotel Employment	Number of New Jobs	Number of New Households
Service	**64%**	**74**	**60**
Sales and Office	13%	15	12
Transportation	4%	4	3
Maintenance	1%	1	1
Management	19%	22	18
Total - All Occupations	100%	117	94

Source: American Community Survey 2016 5-year estimate; GPCOG Analysis

- **Household Income**. Median wage by occupation data for Cumberland County from the ACS was used to calculate the household income for each household in each occupation category. This calculation assumes 1 person in each new household works full-time in the hotel industry and any additional workers in the household earn the area median income:

NEW HOUSEHOLDS AND HOUSEHOLD INCOME BY OCCUPATION (ACS DATA)

	Number of New Households	Median Wage for Hotel Income Earner	Median Wage for Second Income Earner	Total Household Income
Service	**60**	**$18,109**	**$9,015**	**$27,124**
Sales and Office	**12**	**$30,444**	**$9,015**	**$39,459**
Transportation	**3**	**$31,695**	**$9,015**	**$40,710**
Maintenance	1	$33,421	$9,015	$42,436
Management	18	$52,910	$9,015	$61,925

Source: GPCOG Analysis and American Community Survey 2016 5-year estimates

Median wage by industry data from the Maine DOL was also used to calculate the average household income for the 94 new households created by hotel employment:

NEW HOUSEHOLDS AND HOUSEHOLD INCOME (MAINE DOL DATA)

	Number of New Households	Median Wage for Hotel Income Earner	Median Wage for Second Income Earner	Total Household Income
Accommodation	**94**	**$24,908**	**$12,164**	**$37,072**

Source: GPCOG Analysis and Maine DOL QCEW 2016

- **Affordability Gap.** These estimates for household income by occupation were compared to housing affordability data from the Maine State Housing Authority to show the difference between what the new households created by hotel employment earn and the minimum income needed to afford a two-bedroom apartment in Portland. These results show that households with Service, Sales and Office, and Transportation occupations have a household income that is lower than the minimum income needed to afford rental housing in Portland. This household affordability gap is largest ($14,987) for households with Service occupations, which also represent nearly 2/3 of households created by the new hotel employment.

AFFORDABILITY GAP ANALYSIS (ACS DATA)

	Number of New Households	Total Household Income	Income Needed to Afford Rent in Portland	Household Affordability Gap	Total Affordability Gap
Service	**60**	**$27,124**	**$42,111**	**$14,987**	**$892,820**
Sales and Office	**12**	**$39,459**	**$42,111**	**$2,652**	**$32,048**
Transportation	**3**	**$40,710**	**$42,111**	**$1,401**	**$4,856**
Maintenance	1	$42,436	$42,111	NA	$0
Management	18	$61,925	$42,111	NA	$0
Total					**$929,724**

Source: Maine State Housing Authority, 2017; American Community Survey 2016 5-year estimates

The household affordability gap using the median wage by industry data from the Maine DOL was also calculated:

AFFORDABILITY GAP ANALYSIS (MAINE DOL DATA)

	Number of New Households	Total Household Income	Income Needed to Afford Rent in Portland	Household Affordability Gap	Total Affordability Gap
Accommodation	**94**	**$37,072**	**$42,111**	**$5,039**	**$472,007**

Source: Maine State Housing Authority, 2017; Maine DOL QCEW 2016

- **Aggregate Affordability Gap.** The household affordability gap for each occupation was multiplied by the number of households with employment in each occupation to arrive at a total affordability gap that ranges between $472,007 and $929,724 per year. This number represents the difference between these households' ability to pay for their housing and the market cost of their housing based on the median monthly rent, for one year. In reality these

households may face higher rental housing costs since current Portland rents for new units are significantly higher than the median rent.

- **Final Calculation.** Dividing the affordability gap by the number of new hotel rooms results in an average affordability gap that ranges between $2,622 and $5,165 per room, or between $3.91 and $7.70 per square foot. Therefore, a fee between ***$3.90-$7.70 per square foot*** would cover a minimum justified housing affordability gap for the 94 new households created by a new 180-unit hotel employment for one year. This methodology assumes the median wage for a hotel income earner in the service industry, including full-time and part-time employees, is $18,109 based on US Census ACS data. If it is instead assumed that hotel service industry employees are working full-time at the City's minimum wage of $10.68/hour and making $22,241 annually, then the minimum justified fee would be between $2,622 and $3,806 per room or ***$3.90-$5.67 per square foot*** of hotel development for one year. However, this assumes individuals working in the service sector are able to procure full-time employment, which is not always the case[ii].

This example estimate represents the full cost of the affordability gap for employment in one hotel for one year as calculated by the proposed methodology. Multiple factors could potentially impact the demand for affordable housing and the City may determine a higher or lower percentage of this fee based on these variables. Furthermore, this fee could be re-evaluated periodically as circumstances such as inflation, rents, and rental housing supply change.

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[i] Portland 2030 Housing Demand, GPCOG 2015

[ii] According to a 2016 study (https://www.epi.org/publication/still-falling-short-on-hours-and-pay-part-time-work-becoming-new-normal/#epi-toc-21) from the Economic Policy Institute the retail trade and leisure and hospitality sectors contributed to 63% of the growth in part-time employment and 54% of the growth in involuntary part-time employment from 2007-2015. Involuntary part-time employment is defined as individuals who are working part time because full time work could not be found or hours were reduced due to economic conditions (slack work).

Sec.14-484. Purpose.
It is in the public interest to promote an adequate supply of affordable housing for the city's residents. The purpose of this division therefore is to offer incentives to developers to include units of affordable housing within development projects or based on demonstrated need caused by creation of new lower-income jobs, thereby mitigating the impact of market rate housing construction on the limited supply of available land for suitable housing, and helping to meet the housing needs of all economic groups within the city. The city believes that this division will assist in meeting the city's comprehensive goals for affordable housing, in the prevention of overcrowding and deterioration of the limited supply of affordable housing, and by doing so promote the health, safety and welfare of its citizens.

Sec. 14-485. Definitions.

…

Hotel Project is any hotel, inn or motel, as defined in this ordinance, consisting of 10 or more rooms for rent. Any such development that expands by 10 or more rooms within any 5 year period will also be considered a Hotel Project.

14-489 Housing Linkage for Hotel Projects

(a) Purpose: This section is based on City analysis, most specifically documented in the Greater Portland Council of Government study "Proposed Hotel Linkage Fee: Supportable Range" dated 8/29/18, that finds that new hospitality developments create a need for new affordable housing. This need is the result of the fact that these uses create a number of jobs that do not pay sufficiently to afford housing provided in the market.

(b) Applicability: This section applies to all Hotel Projects as defined in 14-485 that have not submitted complete applications as of the effective date of this section.

(c) Housing Linkage: All Hotel Projects shall provide one unit of Low Income Housing for Rent in the City of Portland for every [XX] rooms in the Hotel Project. This amount shall be rounded up to the nearest increment of [XX] rooms. These units shall be deed restricted for the longest period permitted by law; shall not be used for Short Term Rentals of less than 30 days; and must be provided with distinct entrances from the street to delineate them from the hotel itself.

DRAFT

(d) Fee in Lieu Alternative: As an alternative to providing units as per (c) above, a Hotel Project may pay a linkage fee of [XX] per room. This amount shall be paid into the City's Housing Trust and used for the purposes set forth in the ordinance and regulations applicable to that trust:

(e) **Annual Adjustments:** The amounts in (d) above shall be adjusted annually in the same way as the fee under Division 29 for Housing Replacement.

(f) **Regulations:** The Planning Board may promulgate implementing regulations based on this ordinance.

Sec. 14-490. Housing trust fund.

DRAFT

PLANNING BOARD REPORT
PORTLAND, MAINE

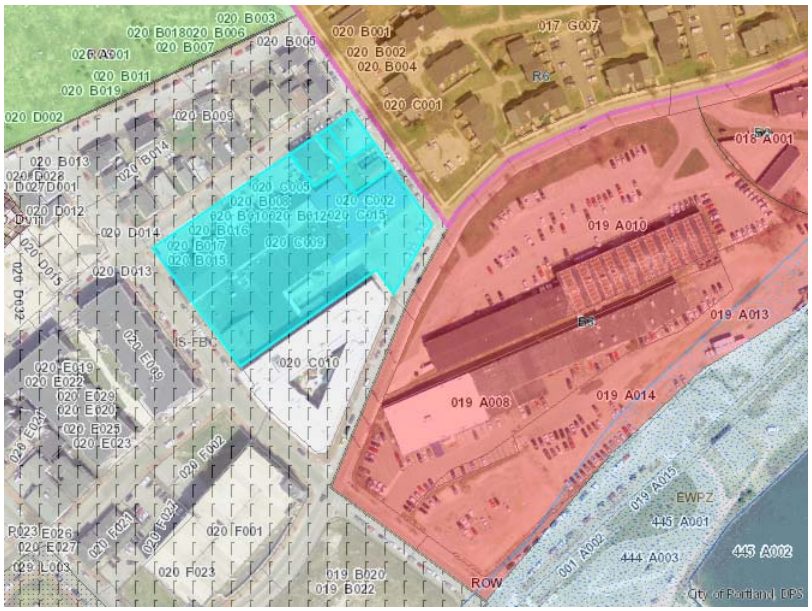
86 Newbury Street
Level III Site Plan/Subdivision; IOZ Conditional Use
#000045-2018 and #CU-000048-2018
86 Newbury Street, LLC, David Bateman, Applicant

Submitted to: Portland Planning Board Public Hearing Date: September 25, 2018	Prepared by: Caitlin Cameron, Urban Designer, Christian Roadman, Planner Date: September 21, 2018

I. INTRODUCTION

86 Newbury Street LLC proposes to redevelop 93,775 square feet of space bounded by Fore, Hancock, Newbury, and Mountfort Streets. The proposed redevelopment site is currently home to Shipyard Brewing Company, which will retain a scaled-down presence on the site. Aside from the Residence Inn at 145 Fore Street (which is not part of this project), the only other building on the block proposed to remain is Shipyard's three-story brick building fronting Hancock Street. The proposed redevelopment includes the following:

office space –89,387 sf
specialty pharmacy – 34,852 sf
technical fulfillment – 44,983 sf
brewery – 9,590 sf
tasting room, retail – 6,298 sf
hotel – 72,797 sf & 105 rooms
residences – 9,060 sf & 10 units across three buildings
structured parking – 372 spaces, four levels
residential parking – 12 spaces



The proposed project is located in the India Street Form-Based Code zone (UN and UT subdistricts) and is within 100 feet of the Abyssinian Meeting House (73 Newbury Street, a historic landmark). Because of this proximity, the Historic Preservation Board reviewed preliminary project designs at its May 16 and June 6 meetings. The applicant team incorporated input from the HP Board meetings into its design review. Subsequent staff design reviews have included HP staff. The workshop was noticed to 230 neighbors and interested parties, and public notice appeared in the *Portland Press-Herald* on September 14th and September 17th, 2018.

The project has had two Planning Board workshops – June 12th and July 24th. Because of the size and complexity of this proposed redevelopment, the large-scale impacts of the new uses, and the concerns from the neighborhood and public comment, the workshops were divided by topic to focus first on architecture and landscape and then on traffic and transportation-related items (especially the two Traffic Demand Management plans required) and also consider how the applicant has addressed the staff and Planning Board comments on the architecture, landscape, and sidewalk design.

Public Comment:
The applicant held a Neighborhood Meeting on May 15, 2018. Since the two Planning Board workshops, the Planning Department received six (6) additional public comments (Attachments PC14 to PC19) expressing concern for the building scale, and the impact of this development on neighborhood character (hotel and office) and traffic (car) congestion. There was also a couple of comments regarding the loss of affordable housing units being demolished on the site. One comment agreed that the utility poles should go underground to improve the quality of the streetscape and service to the neighboring properties. The predominant concern is regarding car traffic increases as a result of this project in a small neighborhood with small streets, confined by the waterfront – **a TDM is required for both the office and hotel in this case which will provide a multi-modal plan for those uses. An area-wide TMP is being pursued to address the staff and public concern about taking a more comprehensive approach to the traffic impacts of new development in this neighborhood.** Several comments indicate a misunderstanding of the project – **no zoning amendment or waiver for height is proposed as part of this project and the number of parking spaces is around 400, not the 1,000 referenced.** The topics of concern from the public comment have remained consistent throughout the project. During the Workshops there were also questions about how to enforce the green roof requirement, how much landscape/trees are being added to the project, how to ensure employees are not parking on-street, how islander parking is impacted, rooftop appurtenances and height/scale concerns.

Applicant: 86 Newbury Street LLC (represented by David Bateman)
Agent / Representative: Gorrill Palmer (Lucas Anthony, P.E.)
Architect: Archetype, P.A. (David Lloyd)

Required reviews and requested waivers:

Applicant's Proposal	Applicable Standards
New construction over 50,000 s.f.	Level III Site Plan Review and ISFBC UN/ UT Design Review
Subdivision (10 dwelling units)	Level III Subdivision Review
Multi-family Residential of 10 units	Inclusionary Zoning Conditional Use
Waiver Requests	**Citation**
Existing utility poles along Newbury Street and Mountfort to remain above ground	Site Plan Ordinance, Section 14-526(c)(3)(b) – Electrical service shall be underground unless otherwise specified for industrial uses, **or if it is determined to be unfeasible due to extreme cost, the need to retrofit properties not owned by the applicant, or complexity of revising existing overhead facilities.** Subdivision Ordinance, Section 14-499(h) – All utility lines shall be placed underground unless otherwise approved by the Planning Board.
Number of Driveways (4 proposed)	City of Portland Tech Manual 1.7.2.8 Number of driveways (limit of 2)
Driveway Location (100 ft. to intersection)	City of Portland Tech Manual 1.7.2.7 Location and spacing of driveways (150 ft. to collector intersect)
Driveway Width (33 ft. proposed)	City of Portland Tech Manual 1.7.2.4 Min. driveway width (24 ft max)
Parking Aisle Width (21 ft. proposed)	City of Portland Tech Manual 1.7.2.3 Min. driveway width (24 ft min)
Front Yard Setback Max 5' (UN – Newbury Street) – Residential Buildings	IS-FBC UN Dimensional Standards – 5' maximum front yard setback; varies from 7' to 12' The applicant received a zoning variance from the Zoning Board of Appeals to exceed the zoning front yard setback maximum.
Frequency of Entries (UN - Newbury Street) – Office Building	IS-FBC UN Dimensional Standards – 1 entry per building (every 35') required; 0 provided
Frequency of Entries (UT - Mountfort Street) – Office Building	IS- FBC UT Dimensional Standards – 2 entries required; 1 provided

PROJECT DATA

SUBJECT	*DATA*
Total Area of the Site	93,774 s.f.
Total Disturbed Area	93,774 s.f.
Existing Zoning	IS-FBC (UT, UN)
Existing Use	industrial & retail (brewery operations, tasting room/shop), surface parking
Proposed Use	office, commercial/ hotel, residential, industrial, retail, parking structure
Impervious Surface Area --Existing --Proposed --Net Change	 90,000 sf. 76,500 sf. 13,500 sf.
Building Footprint --Existing --Proposed --Net Change	 51,812 s.f. ~73,660 s.f. 21,848 s.f.
Building Floor Area --Existing --Proposed -Net Change	 56,489 s.f. ~268,216 s.f. 211,727 s.f.
Proposed Room Mix	(2) studios, (6) one-bedrooms, and (2) two-bedrooms (10 rental units); 105 hotel rooms
Parking Spaces	389 (372 parking garage, 12 below residential units)
Bicycle parking Spaces	38

III. EXISTING CONDITIONS

The site of the proposed development currently includes Shipyard Brewing Company's operations and parking as well as two multifamily buildings. The Shipyard complex spreads across the site (the entire complex touches each street bounding the development: Fore, Hancock, Newbury, and Mountfort). Immediately abutting Shipyard to the southeast is a Residence Inn hotel, the only building on the block that is not part of the proposed redevelopment. That hotel benefits from a loading and access easement off Fore Street and a 10-foot wide no-build easement at its boundary with the project site. The two existing multifamily buildings are located in the northeast area of the project site.

The site slopes downhill from Newbury Street to Fore Street, and the character of its surrounding development varies. Newbury Street falls under the UN – Urban Neighborhood Subdistrict, while Fore, Hancock, and Mountfort Streets fall under the UT – Urban Transitional subdistrict. Across Mountfort Street are the Munjoy South Townhouse apartments. Across Hancock Street is an uninterrupted block of 4 – 5 story condominiums. To the southeast of the site is the aforementioned Residence Inn hotel, and across Fore Street is Hamilton Marine. Across Newbury Street are historic, traditional single-family and multi-family dwellings ranging from 1.5 – 2 stories, as well as limited commercial frontage and the Abyssinnian Meeting House (a local historic landmark).

Within the proposed redevelopment area there are currently six curb cuts/ driveways: one on Fore Street, one on Hancock Street, three on Newbury Street, and one on Mountfort Street. While the project falls under the India Street Form Based Code, it is not part of nor within 100 feet of the India Street Historic District.

IV. PROPOSED DEVELOPMENT

The proposed redevelopment will eliminate all existing buildings except for the three-story brick Shipyard building with frontage on Hancock Street. This building is proposed to house a reduced Shipyard operation (brewing, tasting room, and retail) while the upper floors are repurposed as pharmacy and technical fulfillment. Proposed new buildings include:

- Three (3) residential buildings with ten (10) residential, rental units (two of which are proposed with commercial space on the ground floor)
- Office building (single tenant) of 132,516 square feet stretching from Newbury to Fore Street
- Pharmacy fulfillment – mix of laboratory and warehouse space with truck loading
- 105-room hotel and limited retail space off Hancock Street
- Structured parking with 372 spaces serving both the hotel and the new office / pharmacy / fulfillment spaces.

Additionally, the plan includes an open space/ pocket park across from the Abyssinian meeting house.

The applicant seeks **waivers** from the Technical Manual, Subdivision Ordinance, and Zoning as part of their submission (reference the table above and Attachment D). The applicant provided the following requests:

- Utilities: The applicant offered a response in the July 24th workshop materials. Additional information from the applicant for this request is as follows:
    - The cost to underground the overhead utilities on Newbury Street would be approximately $1.6 million (see attached Exhibit A cost summary);
    - Prior undergrounding efforts on nearby streets have resulted in a concentration of rise poles at the intersection of Newbury and Hancock Street;
    - These rise poles, while unsightly add to the cost and complexity of the undergrounding work;
    - More challenging is the fact that the eleven (11) overhead services to homes and businesses on the opposite side of Newbury Street would also need to be put underground;

- This would require that each of the eleven (11) property owners sign an agreement transferring maintenance responsibility from CMP to the property owner (sample letter attached);
- Gaining approval to convert to underground service and assume maintenance responsibility from all eleven (11) property owners is not feasible;
- Given the above, it was determined that undergrounding the lines on Newbury was not feasible;
- The property frontage on Mountfort Street is a short distance and relocating the lines underground just on Mountfort Street is not feasible due to fusing issues;
- CMP would require that all the frontage along Mountfort and Newbury be undergrounded at the same time;
- CMP also re-confirmed that the eleven (11) property owners on the other side of Newbury Street would need to agree (by signing the attached form, see Exhibit C) to the transfer in maintenance responsibility involved in switching from overhead to underground service.

- Curb Cuts: The applicant seeks to have four driveways as part of the project, which exceeds the Technical Manual's specification of two. "The proposed plan for 4 driveways makes the site considerably less non-conforming than its current condition. The existing site has 7 driveways, many of which are over 40 feet wide. This plan seeks to keep the existing driveway on Fore Street and provide a new driveway that serves the parking garage on Hancock Street. 2 lesser driveways that strictly serve the residential units and Pharmacy Deliveries on Newbury Street are proposed as well. This is a one-way route where vehicles enter on Hancock and leave on Newbury, with a very low number of trips expected per day."

- Driveway Separation: The applicant seeks to retain the existing driveway approximately 95 feet from the intersection of Mountfort and Fore Streets (this does not meet the Technical Manual's specification that driveways be 150 feet from intersections). "We are requesting a waiver to allow the existing entrance on Fore Street to remain. It is approximately 100' from the Fore St/Mountfort St intersection."

- Driveway and Parking Aisle Widths: The applicant seeks dimensions that differ from the Technical Manual: "The parking garage is dimensionally constrained to a width of 114 feet due to the existing "No-Build Easement" adjacent to the Residence Inn and the existing Shipyard Brewing building on the other side. This 114 foot dimension requires that the parking layout consist of 18-foot-deep parking spaces with a 21-foot drive aisle. In addition, we have researched a number of other garages and found examples that support the request."
  "This request for a waiver is to allow an existing non-conforming condition to remain, this is a request for a variance of 3 feet. The existing driveway on Fore Street currently exists as a 33-foot-wide driveway. Historically, this driveway has been used for the shipping/receiving area for Shipyard Brewing and will continue to serve as such for the new development although with less truck traffic. Allowing this driveway to be maintained at its current width serves to facilitate access for large semi trucks. This additional 3-feet of width is beneficial to truck movement onto a busy street in a predominantly urban area. Permitting this waiver will assist in maintaining safe and efficient deliveries to the basement level receiving area,"

- Frequency of Entries: The applicant did not provide a formal justification for the zoning partial waiver requests. See zoning section below.

V. STAFF REVIEW

A. RIGHT, TITLE AND INTEREST

The applicant submitted a copy of the deed as proof of right, title, or interest. The Batemans are acting as an authorized agent of the property owner. A current boundary survey was also submitted.

The property includes two easement agreements with the neighboring Residence Inn property (Attachment P).

- One easement keeps a no-build zone of 10' between the Residence Inn property and the 86 Newbury property – this easement is maintained as noted in the Site Plan (Plan P4).
- The second easement is a loading and access easement to allow for access across the applicant's property to the 10' easement and for maintenance, dumpster, and service parking/loading. For now, the easement area is noted on the Site Plan (Plan P4) and in the access easement drawing (included at the end of Attachment P). The proposed new office building overhangs that area but must maintain the minimum 14' clearance required in the legal document; the parking layout was revised to remove parking spaces from this easement area. The Site Plan and Subdivision approval for the Residence Inn did not make any further requirements regarding this access and loading area.

The City will request an access easement from the applicant for those portions of the sidewalk that cross the property line – this occurs on Mountfort, Newbury, and Fore streets.

B. ADDITIONAL PERMITS

Traffic Movement Permit – Based on the traffic assessment memo, this project will generate greater than 100 trips which will require a Traffic Movement Permit issued by the City under its delegated authority. A permit application was submitted – staff have put review of this application on hold due to the consideration for an area-wide TMP permit. It is possible the TMP for this project will be a condition of approval of this Level III Site Plan/Subdivision. In addition, an area-wide parking study for the Eastern Waterfront was concluded in 2017 and recommendations from that study are being evaluated by the City Council. Bruce Hyman comments further on the status of the area-wide TMP and parking study:

City staff in the Planning and Public Works Departments have initiated discussions with the developers of three sites in the Eastern Waterfront area to collectively define an Eastern Waterfront Transportation District. The concept is to pool and build upon the data and analyses required as part of the TMP process (applicable to developments with peak hour vehicle trip generation of 100 trips, generally).

Under the current review process, each individual site would go through the TMP process accounting for its trips and only for projects previously permitted. Mitigation is then assessed based on that individual sites' impacts to the surrounding transportation system. In contrast under the proposed new concept, by combining these analyses, a better understanding of the cumulative impacts of these larger sites can be determined and more creative and effective mitigation and multi-modal transportation strategies can be devised and implemented. The developers would collectively fund a third-party reviewer to oversee and advance this district-wide TMP work under the direction of City staff.

The City has been in discussions with the MaineDOT about this concept and they are generally supportive. It's anticipated that the City would be the holder of the TMP which would establish a specified vehicle trip threshold for the District and each development site be required to provide mitigation according to their relative share of vehicle trips. This general approach has been done jointly by the cities of Biddeford-Saco.

Currently, we're gathering more information on the administration and structure of this alternative approach, and have additional details to work out with the DOT. We're hoping to move quickly on realizing this new framework and will keep the Board apprised of its progress.

The District is initially thought to be bounded by India St-Federal St-Mountfort St-Fore St-future Thames St Connector-Thames St/Waterfront.

DEP Permitting – The proposed construction will disturb over one acre; a Maine Construction General Permit (CGP) and a Permit by Rule (PBR) applications will be filed with the Maine DEP.

Department of Inland Fisheries and Wildlife – This state department advised the applicant team that protected bat species may occupy structures on the proposed project site (Attachment O). The department recommended "that construction or demolition work on bat-occupied portions of the structure not occur between June 1 and August 15, when young bats are still unable to fly and would likely die without prenatal care." This item was satisfactorily addressed during the demolition permitting phase (permits were granted after August 15).

The applicant should take care to not disturb bat-occupied structures during this window of time with future construction / demolition activity.

Maine Historic Preservation Office (MHPO) – The MHPO sought additional information from the applicant regarding the two buildings proposed for demolition, and raised the possibility of archaeological remains within the overall development site. MHPO recommended a Phase 1 Archaeological Reconnaissance Survey. Independent Archaeological Consulting, LLC of Portsmouth, NH performed this work, which is detailed in an executive summary (Attachment o). Additional excavation recommended by the consultant is expected to occur this month.

ZONING ASSESSMENT

1. General Assessment: The proposed buildings and parking structure are located in the IS-FBC zone application is quite complex and includes multiple buildings and four (4) different street frontages. Newbury Street is the UN subdistrict, Mountfort, Fore, and Hancock streets are all UT subdistricts. The more restrictive UN dimensional requirements apply on that frontage for a depth of 35' after which point the UT standards take over. On UN streets there is a three-story minimum and a four-story, 45' maximum. On UT streets the height maximum is six stories and 65'. The project appears to meet the height and setback requirements. The building on Mountfort/Fore street proposes to take advantage of the ability to

have a height bonus on the UT portions of the building – this takes the building up to seven stories and potentially 77' – additional information is pending to approve this height bonus. The project meets the maximum building length on all streets. The project seeks to use Additional Building Length provisions on Mountfort Street – 200' in length with massing variation and also the hotel building on Hancock Street exceeds the 100' building length – 114' with two modules with active doors and partitions. On Newbury Street, which can allow up to 50' (50' proposed), the project includes three (3) residential buildings and a commercial ground floor in two of those buildings. The Shipyard building remains as existing on Hancock Street; there is an addition to the building on the Newbury Street side but is interior to the lot and meets the exemptions for additions. Most significant is the applicant's request for partial waivers from the Frequency of Entries requirements on Mountfort and Newbury Streets. See the Zoning Checklist for a complete analysis (Attachment 1).

Since the last workshop, the applicant received a zoning variance from the Zoning Board of Appeals regarding the Dimension Requirement of a maximum front yard setback of 5' on Newbury Street (Attachment AA). **The three residential properties therefore are shown on this Site Plan application as not meeting that 5' maximum front yard** – this variance is due to the proximity of the overhead utility lines to the residential buildings.

2. Staff Analysis: The intent of the zone is for new buildings to be human-scaled and contextual – staff feel the intent of the zone and subdistrict purpose statements are being met by the project as currently proposed.

> 14-275.1 Purpose: *The India Street Form-based Code is different than traditional zoning, . . . The intent of the India Street Form-based Code Zone is to establish a zoning district that encourages a vibrant, walkable, mixed-use urban district, preserves and values the existing historic neighborhood fabric, and fosters and supports local businesses and residential areas.*

Specifically, the three small-scale residential buildings on Newbury Street continue the scale, width, and pattern found on the streetscape. The Hancock Street façade incorporates more active commercial ground floors for the hotel, brewery, and potential commercial retail. Fore Street is not anticipated to be an active edge at the ground level – the building interfaces with the street using a widened sidewalk and landscape buffer. **The Planning Board commented in the first workshop on the scale and lack of pedestrian friendliness on this street. The project meets the zoning dimensional standards but these concerns can be addressed through design revisions – see section E. Design Standards for more comment on this topic.** Mountfort Street is a transition edge to the abutting residential zone; the street is small and the proposed building mitigates the scale through massing variation, plane changes, material changes, and a slightly widened sidewalk – **applicant provided additional information on the design of that plaza space.**

The revised zoning (2017) states in the instance of a conflict between building length and front yard setbacks, the building length shall rule – that determines the placement of the office building in relation to Newbury Street in this case which is 200' in length on Mountfort and cannot be brought within 10' of both Fore and Newbury Streets given the lot dimensions. Staff support the placement of the building set back from the residential block across the street to mitigate the scale of the new building.

Height: The applicant resolved the question as to whether the residential building meet the 45' height requirement – average grade should be based on the four corners of those buildings and that diagram was provided to verify the heights. The height bonus on Mountfort Street is contingent on meeting the green roof requirements.

- Green roof diagrams must match landscape plans
- Staff request runoff calculations and finalization of the maintenance agreement.

- Staff suggest that the Subdivision Plat and Condo documents include a stipulation that the 50% pervious surface must be maintained as a condition of approval.

The zoning requirements for parking are met – all parking is provided interior to the block in structured parking with liner buildings.

Waivers:

- Entries: Planning Board indicated support the requested waivers from providing all required entries – this impacts Newbury Street and Mountfort Street. A waiver on Fore Street is no longer needed due to the introduction of a door to the bike room. Partial waivers for frequency of entries are allowed per *Sec. 14-275.2 Applicability and Partial Waivers:*
  - The intent of the zone and subdistricts must still be met
  - The least adjustment necessary to satisfy the needs of the development
  - At least one (1) of the following applies:
    - Newbury Street – There is a legal or practical necessity or unique conditions – The building facing Newbury Street is an upper story and side-façade to the office building and an entry is not practical here given the slopes and uses.
    - Mountfort Street - Unique site factors make the zoning requirement impractical or cost prohibitive – The steep slope of the site make it impractical to provide more than one entry.
    - Fore Street – A bike room entry was added to this façade and the waiver request is withdrawn.
- Front Yard Setback: Front yard setback max is 5' on Newbury Street – residential buildings exceed this setback per variance. The applicant received a zoning variance from the Zoning Board of Appeals to allow front yard setbacks that exceed 5' because of conflicts with the overhead utility lines. If the utilities on Newbury Street are put underground, staff would recommend the three residential buildings be amended to move closer to Newbury Street and meet the front yard maximum zoning.

1 MOUNTFORT STREET ELEVATION
1/16" = 1'-0"

C. SUBDIVISION STANDARDS

(14-497(a). Review Criteria)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's subdivision ordinance. Staff comments are below and in *Attachments 2-4.*

1. Water, Air Pollution

The project is not anticipated to result in undue air or water pollution.

2 & 3. Adequacy of Water Supply

Applicant submitted a revised application for water capacity to the Portland Water District and received the letter for capacity to serve. (Attachment N).

4. Soil Erosion

No unreasonable soil erosion or reduction in the capacity of the land to hold water is anticipated. Site Plan (Plan P4) and Erosion Control Notes and Details (Plan P14) provide information about stabilizing the site during and after construction.

5. Impacts on Existing or Proposed Highways and Public Roads

The applicant provided a full traffic and transportation analysis. The project also requires a TMP permit and two TDM plans (hotel and office). Impacts on the roads/traffic generation is a common concern among the public comment for this project. Tom Errico, the city's consulting traffic engineer made the following comments for the previous workshop:

- *The applicant has conducted a parking demand analysis according to ITE Parking Generation rates adjusted for time-of-day usage, Shared Use Reduction (6% reduction), and Other Modes Reduction (10% for Hotel and 15% for Others). According to the analysis, the proposed land uses will generate a peak parking demand of 354 parking spaces. I generally find the method to be reasonable, but need to review adjustment factors and parking rates in detail.*
- *The construction management plan needs additional detail as it relates to restricted movements (one-way streets) and sidewalk closures. I need to coordinate this item with DPW staff and will provide direction in the future.*

6. Sanitary Sewer/Stormwater Disposal

An updated wastewater capacity application was submitted to the Department of Public Works and was approved (Attachment M).

There is a grease trap for the hotel. No grease trap is proposed for the commercial spaces on Newbury Street – this should be considered given the possibility of retail on Newbury Street.

The green roof is proposed to achieve a height bonus – that green roof will be required to meet Ch 32 and provide stormwater runoff detention. The applicant has provided stormwater management and utility plans as well as information for the green roof. The City's consulting civil engineer makes the following comments (Attachment 2):

- *They have addressed stormwater O&M in their stormwater report, but will be providing a stormwater agreement under separate cover.*
- *Additional design information on the green roof will be provided once building design has been completed.*

Portland Water District will conduct work on the utilities in Newbury Street concurrent with the development of this project.

7. Solid Waste

Applicant responded that trash/solid waste removal is accommodated with trash rooms. Staff observed that only one trash room is indicated at the Fore Street garage level – trash management is needed for the hotel, retail, brewery, and technical fulfillment.

8. Scenic Beauty

This proposal is not deemed to have an adverse impact on the scenic beauty of the area – the project does not encroach on the Mountfort Street corridor views to the waterfront. The project is within 100' of a historic landmark – as such, Newbury Street has been reviewed by the Historic Preservation Board and those comments appear below.

9. Comprehensive Plan

India Street Sustainable Neighborhood Plan

This newly adopted neighborhood plan includes the following goals and principles which are met by this proposal:

- Goal – Vitality – the project adds 10 new residential units, a hotel, and a large office building bringing more people to the neighborhood.

- **Goal – Diversity of building types and residents** – The residential units will potentially be rental properties with at least one workforce housing unit. The project brings a new office building and workers to the neighborhood. Another hotel is not contributing to this goal given the number of hotels already in this neighborhood.
- **Principle 7:** Guided Growth – the project provides small-scale residential development on Newbury Street while filling the interior of the block with the larger scale buildings.
- **Principle 8:** Form of Development – maintaining the pedestrian-scale block on Newbury Street, continuous sidewalks, and street-oriented buildings – these concepts are all included in the project.
- **Principle 13: Responsive to Climate Change** – this will be the third project in the neighborhood to have a green roof and address stormwater runoff.

Incentives for Affordable Housing and *Housing – Sustaining Portland's Future*
The proposed project is required under the newly adopted Division 30, Section 14-487, Ensuring Workforce Housing to provide at least 10% workforce housing units. Housing stock is placed in a multi-modal neighborhood with good connections to several neighborhoods, offices, and services. The IZ Conditional Use application was reviewed by Housing Program Manager Victoria Volent (Attachment 5) – the applicant will provide one (1) workforce housing unit on-site.

10. Financial and Technical Capacity
As noted above, the applicant has provided evidence of financial and technical capacity (Attachment H).

11. Wetland/Water Body Impacts
Project is not located within a watershed of any pond or lake or within 250 feet of any wetland, great pond or river.

12. Groundwater Impacts
There are no anticipated impacts to groundwater supplies.

13. Flood-Prone Area
Per the FEMA flood maps, the site is not located in a flood zone.

14. Wetland/Water Body Impacts
No potential wetlands within the proposed subdivision.

15. Wetland/Water Body Impacts
No river, stream or brook within or abutting the proposed subdivision.

(14-497(c) Conformity with Code) *Any proposed subdivision shall be in conformity with all relevant provisions of this Code.* Project has been reviewed for conformity with the zoning code – see staff analysis below.

D. SITE PLAN STANDARDS

14-526 Site Plan Standards

Traffic - Access, Circulation, Loading and Servicing - Reviewer Tom Errico evaluated the proposal and waiver requests (Attachment 3):

- *The project site exceeds the number of driveways allowed by the City's Technical Standards (Two are permitted and four are proposed). . . . The applicant has noted that the residential driveway will also serve small truck deliveries. Given site operations and the desire for deliveries to take place off-street, I support a waiver from City Technical Standards for the number of driveways.*
- *The location of the driveway on Fore Street does not meet corner clearance to Mountfort Street. Given that this driveway is an existing condition and traffic volumes entering and exiting the site would not be expected to increase significantly, I support a waiver from the City's Technical Standards. . . . The subject driveway is an existing driveway and has not exhibited any safety or operational problems. While traffic activity is expected to increase, I support a waiver from the City's Technical Standards given the area conditions and providing off-street truck loading.*

Sidewalks – Staff comments and revisions have been met regarding curb alignment, pedestrian crossings ramp, street trees, street lighting placement and fixture selection. **Planning Board specifically asked about bike parking locations –** a bike room is provided on Fore Street **and an access door was added directly to Fore Street.** Additional bike storage is provided within the parking structure near Hancock Street that would be accessed through the driveway and within the pocket parks. **Staff coordinated with the applicant for public bike parking locations.** Staff also requested that the special sidewalk paving pattern on Fore Street be continued – this is noted on the landscape plan but not the Site Plan. The City's Transportation Planner had these additional comments that are still relevant:

- *Pedestrian easements are needed for the full width of sidewalk being provided along the Newbury Street and Mountfort Street frontages*
- *The full design of the driveway to be reconstructed on Fore Street is to be shown - a waiver may be required if the driveway width is 33' feet as indicated*

Public Transit Access - No transit shelter is required.

Parking – The parking requirement for this project per Ch 14 Division 20 is as follows:

- Residential (10 units) – 7 spaces required (12 provided); commercial space may require parking if office
- Hotel (105 rooms) – 26 required (30 provided)
- Office (89,387 sf) – 223 required (230 provided)
- Brewery (9,590 sf) – 10 required (12 provided)
- Retail space (above 2000 sf)
    - Retail & Tasting Room (4,300 sf – 2,000sf = 2,300sf) – 11 required (12 provided)
- Technical Fulfillment (44,983 sf) – 45 required (48 provided)
- Pharmacy (34,852 sf) – 35 required (40 provided)

Total is 357 parking spaces required (350 commercial; 7 residential); 384 provided (372 garage; 12 residential) = 27 parking spaces extra

In addition, the project will increase the amount of on-street parking by closing some of the existing curb cuts. Staff request that on-street parking be restricted through either meters or time limits, and with residential parking permits. Site Plan should indicate installation of parking signs on Newbury Street indicating the one-hour time restriction.

Tom Errico provided additional comment on parking demand and design (Attachment 3):

- *Parking Layout: The applicant has provided supporting information for the waiver request. In addition, I conducted a field review of two Portland garages (Gateway and Spring Street) that have reduced parking dimensions as compared to the City Technical Standards. Based upon my review of the project, site limitations, and that many vehicles parking in the proposed garage will be long-duration parkers, I support a waiver from the City Technical Standards. Given my review of existing constrained parking garages, it is recommended that the parking spaces be marked for a 17-foot stall depth, resulting in a 23-foot aisle width.*

- *The proposed parking garage (380 parking spaces) will adequately accommodate the proposed project assuming shared use and multi-modal reductions. I would note that the parking generation assumptions generally were suburban type sites sampled and thus may have included a higher percentage of automobile trips – thus supporting the reduced parking numbers. Additionally, the TDM Plan is intended to aggressively implement measures for reducing vehicle trips, which is consistent with the reductions assumed in the parking demand estimate.*

- *Vehicle Turning: and Sight Distance Measurements: The applicant has provided the requested information and I find conditions to be acceptable.*

- *The applicant has conducted a parking demand analysis according to ITE Parking Generation rates adjusted for time-of-day usage, Shared Use Reduction (6% reduction), and Other Modes Reduction (10% for Hotel and 15% for Others). According to the analysis, the proposed land uses will generate a peak parking demand of 354 parking spaces. I generally find the method to be reasonable, but need to review adjustment factors and parking rates in detail.*

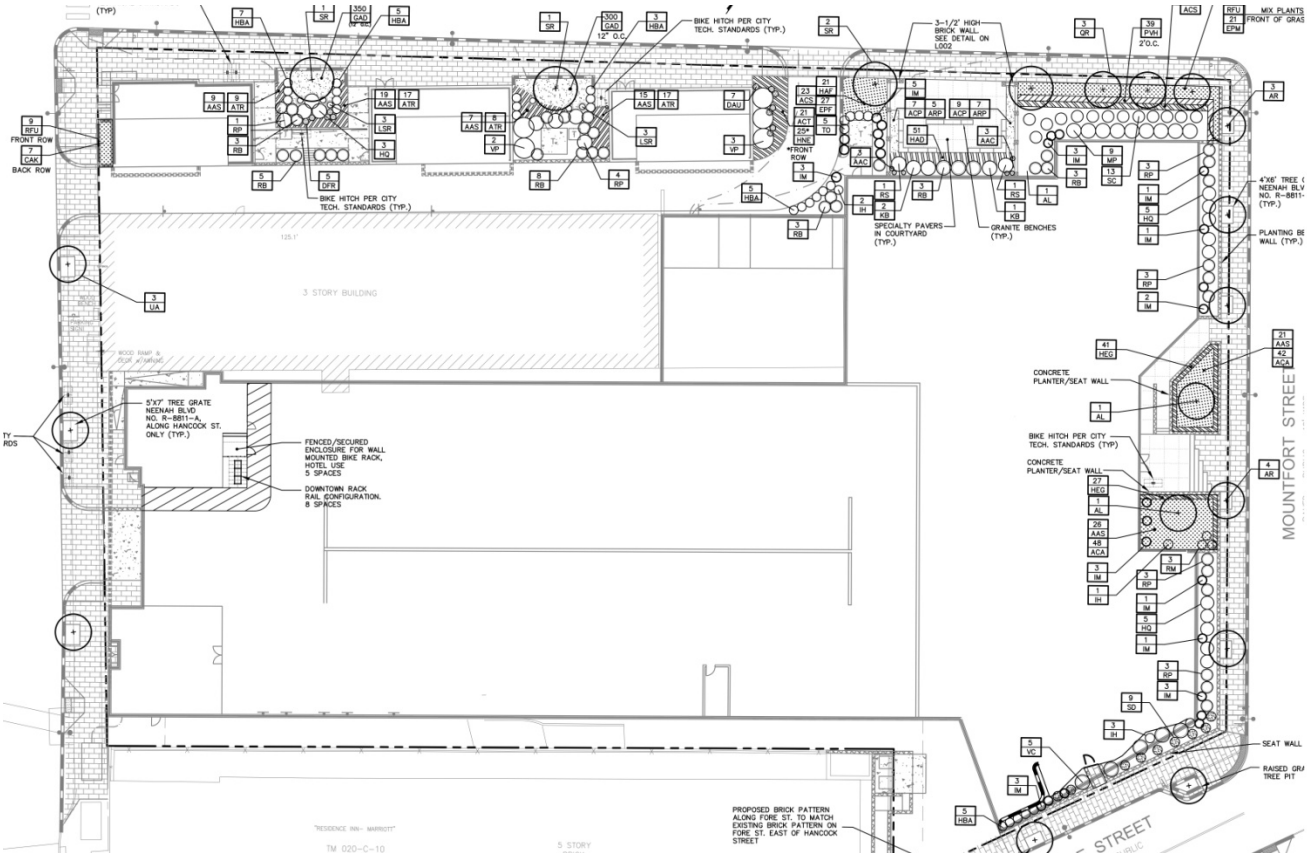
Snow Storage – Applicant proposes to remove snow due to limited storage area on-site.

Transportation Demand Management – Transportation Demand Management plans are required for both the proposed office building and hotel (Attachment X) **Planning Board commented given the scale of development, location of site, and neighborhood concern, expect to see a strong TDM plan.** There is also significant public comment regarding the impact of traffic on this neighborhood emphasizing the importance of strong TDM proposals in this location with small-scale and disconnected streets. Staff find the revised TDM Plan (dated July 31, 2018) is responsive to previous comments from the workshop (included below and Attachment 4):

- *Per the ordinance provisions governing TDM, the draft TDM Plan applies to the Vet's First Choice (VFC) and Cambria Hotel components of the proposed redevelopment of the Shipyard site*
- *The draft TDM Plan provides a good framework for defining the transportation context for the site and mix of uses/tenants, transportation/traffic and parking demand, TDM trip and parking reduction targets and TDM strategies to meet those targets*
- *The draft Plan provides a robust menu of TDM strategies for both employees (VFC and Cambria) and hotel guests*
- *The pricing of parking, and how that is pricing structured and applied, is proven to be one of the most effective ways to influence travel behavior*
    - *it is unclear at this time how parking costs for employees of VFC and Cambria and hotel guests will be applied - there are provisions, for instance, for VFC employees to "cash out" their parking but it is unclear how strong an incentive this will be - it is anticipated that parking will be "free" to VFC employees (as it currently is at its downtown Portland sites) and the "cash out" will be equivalent to the cost to VFC of the parking*
- *The extent of bus transit pass subsidies for VFC and Cambria employees is undecided ("Partial or full subsidy" stated) but transit incentives includes an unknown one-time incentive to give up parking for transit*
- *The current vehicle trip and parking reduction targets are quite modest but call for adjustment after the first year as part of the monitoring program - it is suggested that higher initial targets be established with strengthened pricing strategies*
- *The draft Plan contains a good plan for Monitoring, Data Collection and Reporting*

As stated earlier, the draft TDM Plan provides a solid framework within which to create a strong package of effective strategies to reduce vehicle trips and parking demand but require fine-tuning to match TDM targets to a package of strategies that are geared toward meeting or exceeding those targets.

Landscape Preservation / Site Landscaping and Screening – There are no significant landscape or natural features to preserve. No surface parking is provided – screening not applicable. **Landscape screening is now shown for the transformer proposed at ground level on Newbury Street.**



Landscape Plan – The applicant proposes substantial landscape improvements around the property and includes improvements to the Newbury Street frontage between the residential buildings and across from the Abyssinian on the recommendation of the Historic Preservation Board (Plan P15).

- Applicant made revisions based on City Arborist comments including the placement of street trees on the private property on Newbury and Mountfort Streets.
- A well-defined edge is needed on the west edge of the Abyssinian green space – this should be achieved either with the residential building placement or with a landscape wall. **See Historic Resources and Design Standards sections below.**
- Staff support the landscape buffer between the sidewalk and building on Fore Street – **a seat-height planter wall was added per staff comment.**
- Ten (10) trees are required for the residential use, 12 are provided. In addition, for the commercial uses, street trees are required every 30-45' which is approximately 22 trees required. **A contribution to the Street Tree Fund will be required = 22 + 10 = 32 required; 18 provided; 14 trees x $400 = $5,600**

Water quality, Stormwater Management and Erosion Control - See comments from Civil Engineer (Attachment 2). The project proposes to achieve a height bonus by providing 50% pervious lot coverage and a green roof. Additional calculations are needed to show the runoff detention of the green roof meeting the expected public benefit in exchange for the height increase; design details are also required. The green roof must meet Chapter 32 and provide a Stormwater Maintenance Agreement. The applicant provided a diagram demonstrating how the 50% pervious lot coverage is met – staff recommend that the 50% pervious lot coverage be included in the Subdivision Plat and Condo docs to ensure this requirement is upheld.

Public Safety - The Crime Prevention through Environmental Design (CPTED) standards in the site plan ordinance address the principles of natural surveillance, access control and territorial reinforcement so that the design of developments enhance the security of public and private spaces and reduce the potential for crime.

- *This proposal includes many recessed entries and private open spaces making CPTED principles critical.*
- *The lighting levels are one strategy to ensure safety and visibility.* ***The lighting on the alley between the residential properties and Shipyard was revised to meet Technical Manual standards*** – Planning Board commented on the safety in the alley.
- *The entrances to the residential properties should be made more legible from the street – in some cases, the entrance should be on Newbury Street, in others, the path and canopy to those side entries should be more apparent.* The residential buildings have entrances facing the street in some cases. Where the entrance is set back from the street there is direct sidewalks, lighting, and canopies closer to the street. With exception to the trees, the landscape here is understory and visibility through the courtyards is fair.
- *What strategies are employed on Fore Street garage entrance to prevent unwanted behavior/hidden corners?* The applicant will use building lighting in this location. The setback area is restricted with a fence.

Fire Prevention and Public Utilities – The water and sewer capacity letters were received. The Fire Department has the following comments/ concerns:

- Each building must have its own address
- Each residential building will require its own sprinkler riser
- The alley as shown on Plan C101 does not meet the clearance requirements of 16' width and 13'6" height – the plans must be revised as a condition of approval.
- Fire access to the office building on Mountfort Street is impacted by the existing overhead utility lines – the lines must either go underground or moved across the street.

Planning Board and staff commented on the importance of minimizing and undergrounding the overhead utilities as required by the ordinances and the applicant agrees it would be preferable to underground but has requested waivers from the undergrounding requirements on both Mountfort and Newbury Streets. The overhead utilities do create certain conflicts and issues:

- Fire and emergency access is impeded by the overhead lines on Mountfort – these poles must either be moved or put underground.
- The overhead utilities on Newbury Street interfere with the placement of the three residential buildings. The buildings must be set back a certain amount from these lines – this has resulted in the buildings not meeting the zoning setbacks and created awkward overhangs/massing for these buildings. This further impedes the alley behind these buildings which must have 16' width and 13'6" clearance for emergency vehicles. Moving the utilities across the street on Mountfort is feasible but will result in the loss of several street trees and will add the future burden of undergounding if the neighboring property is redeveloped.

The applicant provided sufficient evidence that the waiver criteria are met in cost, affect on neighboring properties, and complexity. Staff propose a waiver that is conditional on the applicant working with the City, Central Maine Power, neighboring property owners, and other utilities to explore a more comprehensive, cooperative solution to underground the utilities in this area given there are multiply properties in this location undergoing redevelopment. The applicant is open to this condition but if no feasible, cost-sharing solution can be found to underground here they would like to receive the waiver after 10 months to keep the overhead utilities on Newbury Street and to move the overhead lines on Mountfort Street.

Massing, Ventilation and Wind Impact and Shadows: Generally addressed in the Design Review. The project is on the edge of the zone and should thoughtfully transition to the scale of the neighboring residential properties on Mountfort Street. The project is currently meeting the zoning height requirements with the condition that the additional green roof requirements are met – stormwater calculations, stormwater maintenance agreement.

Historic Resources – The project is within 100' of a historic landmark – the Abyssinian Meeting House. Therefore, the project has received advisory design review from the Historic Preservation Board on May 16, 2018 and continues to include Historic Preservation staff review.

Previous review comments from the Historic Preservation advisory review:

- *Further differentiate design of the three residential buildings (to read less like one development) – this could be through materials, entrance locations, plane changes*
- *Make residential entrances more legible – either on the street or with canopies extended to street*
- *The corner building was revised to differentiate planes of the gabled and flat-roofed sections*
- *Revise strorefront design to meet best practices for the elements of storefront design*
- *Introduce a stronger edge to the proposed pocket park that reflects the scale of the Abyssinian building*

Exterior Lighting including Street Lighting – Staff evaluated the photometric plan – the minimum and maximum light levels are met in most cases. Lighting is provided by a combination of street lights, building lights and pole lights. **Lighting for the alley between Shipyard and the residential buildings was revised to meet the Technical Manual standards (requirement is min .2 fc max 5 fc).** Most of the building entrances for this project are recessed away from the street – for this reason, building and site lighting levels is very important for safety reasons. The building and pole lighting must be cutoff lights. Street lights are required along all frontages in the ROW, including Fore Street and are indicated on the Utility and Lighting plans. The lights need to meet the Technical Standards for street lighting and match the lights installed elsewhere in the India Street neighborhood (Eastern Waterfront medium) – in this case, lights should all be medium scale, black, LED, and 3000 K color temperature – add the appropriate detail to Sheet C402.

Noise and Vibration – The revised submission indicates where the HVAC will be located and how it will be screened from the public ROW and neighboring residential properties even if the exact specifications are submitted later. HVAC units on the residential buildings are now located on the back side of the building which staff prefer.

Construction Management Plan – Applicant shall be required to submit a final plan and narrative for review prior to issuance of a building permit.

E. DESIGN STANDARDS

The site is located within the IS-FBC zone with Newbury a UN street and the remaining three streets as UT. Preliminary design reviews concluded that the building designs generally meet overall intent of the zone with a few outstanding points regarding materials selection, residential building façade design, signage plan. Design checklist see (Attachment 1).

Revisions: Applicant made revisions to the residential buildings – the façade design, entrance placement, roofline, and footprint of buildings (note the overhangs now at the alley). Additional revisions include landscape and sidewalk details. The curtain wall was also revised somewhat on the office building to reflect comments about articulation and building termination. The Hancock Street elevations remain mostly the same.

Staff Analysis + Planning Board Comments:

Response to Planning Board comment:

- Newbury/Hancock Street

  PB comment: Scale is contextual, fitting – supportive of the direction. What materials are proposed – did you consider a brick base? Facades are reading flat. Is mixed-use viable for the 2nd building? More definition of the residential entries.

  Applicant response: Storefronts were revised; Applicant revised Building 1 to have plane change between gable and flat roof mass; Building 3 was revised to have street-facing entry. Buildings 2 and 3 now have simple, flat roofs and bay windows; storefront design was revised; landscape areas in front of buildings were removed.

  Staff comment: The overhead utilities have caused the residential buildings to be shifted back away from the street – this has necessitated a zoning variance as well as created awkward massing for the buildings with overhangs at the back (which also creates clearance issues for the alley way) – an ideal solution would underground these utilities and allow the residential buildings to shift towards the street and not include these overhangs. Staff are supportive of the street-facing entry on all buildings; Storefronts were revised per staff comment and are now acceptable except for the commercial entrance on Building 2 – this should be more commercial in character, right now same as residential entrance on Building 3. Similarly, the commercial entrance on Building 1 might benefit from a canopy or similar articulation element. Staff support the roof lines as shown; Articulation was addressed with bay windows - Panels or other details to improve the proportions of the window/solid ratio on the bay windows. Residential entries are unchanged on Buildings 1 and 2 – side entry near the rear – these are marked with porch/canopies at the street and paved path. Clarify what is meant by "patio/balcony" noted on the Site Plan c100 – these are not shown as balconies on the elevations. It appears all hvac and mechanical units have been placed on the rear sides of the building – staff do not support rooftop units on these buildings and if future rooftop appurtances are anticipated then the parapets should be increased to serve as a screen.

- Public Domain

  PB comment: Design should make clear what is public and what is private domain; Provide diagram/clarity on circulation and entry points. Board supported building placement that creates strong street wall.

  Applicant response: Applicant indicates entry points on the floorplans. Pocket park, lighting, entrances revised – door added on Fore Street to the bike room.

  Staff comment: Further comment regarding the pocket park below. Generally, staff want to make sure all the ground level transformers are placed in ways that are inconspicuous at the street and include screening – these are placed mostly on Newbury Street and occupy the courtyard areas for the residential buildings. Staff are satisfied with the entrance locations and level of activity except for:

  - The distance and legibility of the residential entrances on Building 1 and 2

2 NEWBURY STREET ELEVATION
1/16" = 1'-0"

2 NEWBURY STREET ELEVATION
1/16" = 1'-0"

- Fore Street Façade

  PB comment: Biggest concern is large scale and lack of articulation on the Fore Street building façade. This corner should be considered a **key focal point**. There were also questions about the level of reflectivity and tint to the windows; request for consideration of worker comfort and passive solar/solar gain. Suggestions included sun shading to address exposure/office comfort as well as the articulation/scale concerns; Generally reconsider the level of articulation.

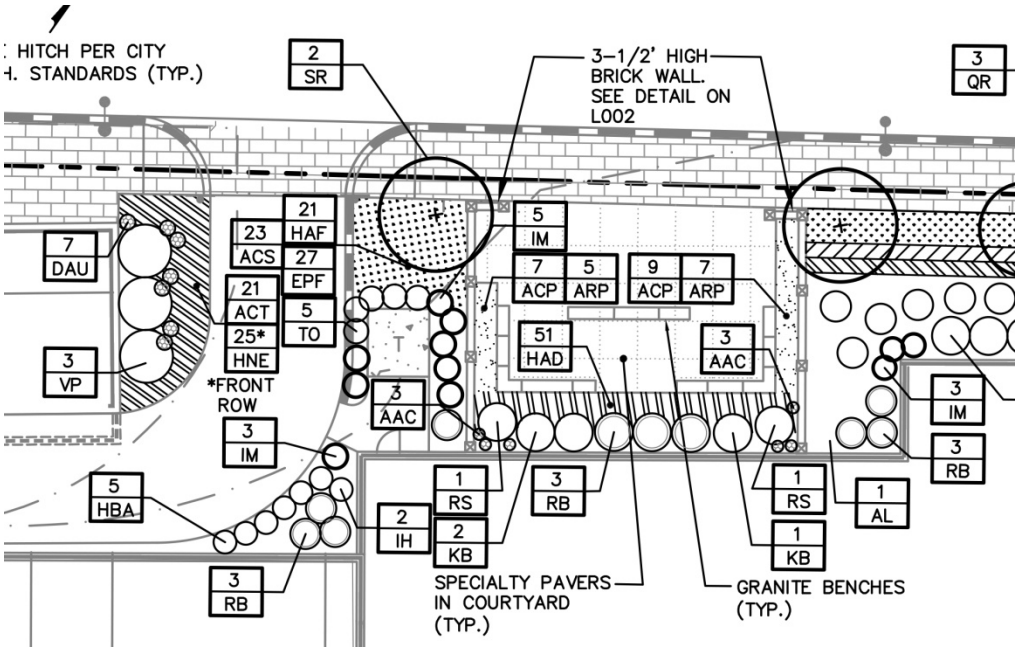
  Applicant response: The spandrel at the floor plates has a texture/reveal proud of the glass; an overhanging cornice line was added at the 6th and 7th levels with brackets to add articulation and bring a sense of termination to the roof lines. Signage is also proposed on the Fore Street façade.

  Staff comment: Staff support the proposed elements to differentiate the floors, bring visual interest and dimension to the tall façade, pedestrian enclosure and comfort, a terminus for the roofline. What is the proposed material at the spandrel? What level of reveal will there be at the spandrel/floor plates? More information should be provided (wall section?) of the curtain wall system, level of reveal, etc. Staff do not support the size and placement of the signage as shown in these renderings.

- Fore Street Pedestrian Interface
  PB comment: Large scale and lack of pedestrian friendliness of the Fore Street building interface with the sidewalk. This pedestrian experience should be improved. Suggestions included adding street trees; reducing the overhang or appearance of looming building; reconsider the amount of landscape at ground level.
  Applicant response: Ground floor building façade is now indented with clerestory windows; landscape area between building and sidewalk with planter at seating wall height. A door to the bike room was added directly accessible from the street.
  Staff comment: Support general approach of the indented building with landscape, planter/seating wall – provides a sense of enclosure at the pedestrian level at this tall façade. Landscape softens the edge and the seating wall height provides some amenity and scale. Street trees were revised to be placed per City Arborist direction.

- Mountfort Street Entrance Design:
  PB comment: Clarify and provide more detail on the office entry plaza – grades, landscape, interface with sidewalk. Scale of entry needs to be commiserate with the scale of the building. Use plaza to provide an amenity for workers – ie seating, shade, etc.
  Applicant response: See renderings provided above. Grades were revised, planter seating walls provided; entrance canopies and fenestration enlarged
  Staff comment: Staff are satisfied with these improvements as both indicating the entry at a scale commiserate with the scale of the façade and with providing amenity to office workers. Bike parking was revised per staff comment. There should be signage – either on the canopy or monument sign – at the Mountfort Street entrance as the main entrance for the building.

- Abyssinian Relationship/Open Space Design
  PB comment: Provide more detail on the landscape design on Newbury Street. There should be a direct relationship between the open space and the Abyssinian building; Hold the edge of the space with building or wall; Given the north-facing open space, what will be successful plantings there? How dark will it be?
  Applicant response: More detailed design of pocket park provided; the edges were revised to align with the Abyssinian building; features include brick wall, trees, benches, understory plantings. The transformer pad, bike parking, and building door were moved to be outside the plaza area.
  Staff comment: The space directly across from the Abyssinian is an amenity for the neighborhood residents and visitors as well as providing a point from which to appreciate the Abyssinian Meetinghouse – the Historic Preservation Board and staff feel that the western and eastern edges of that space are now better defined with a landscape wall and appropriately aligned with the building and defined by a wall and trees. Staff support the move of the transformer, bike parking, and door to be outside of this space. This space should also be distinct in character from the other landscape areas on Newbury Street – staff have further revisions and would like further information about the details of the wall (height and thickness), the benches, the paver materials and request these details be finalized with staff as a condition of approval.



Additional Staff Comment: The design priorities for new construction in this neighborhood are buildings that maintain the urban street wall, engage the public realm, and respect and fit into the established context. The hotel and existing Shipyard building continue the more active frontage that is being established on Hancock Street. Generally, staff feel to be contextual, new design in this neighborhood should be simple and consistent and use massing and articulation to provide human scale. The three residential buildings on Newbury Street are contextually sensitive in scale and provides an active ground floor with commercial use. Staff are especially interested in mitigating scale and impact of the large office building on the surrounding residential blocks. The design successfully creates interesting forms and massing, and maintains the street walls. The building is setback from the street edge on Newbury Street to provide buffer to the small-scale residential across the street. The main entry to the office is on Mountfort Street and is occurs at a massing indentation/plaza in the building. Visual interest is brought through massing variation, façade plane changes of the bay windows, and varied roof lines. There is a regular pattern of vertical proportioned windows, consistent with the traditional patterns.

Outstanding Concerns and Proposed Conditions:

- Revisions to the details of entrances, bay design on residential buildings
- Rooftop Appurtenances – Future rooftop appurtenances on the residential buildings shall not be approved as part of this application and would require an amendment. If rooftop appurtenances are anticipated then the parapet designs should be revised now to act as screens integrated with the overall building design and roof forms as required by the *IS-FBC Building Design Standards*.
- Newbury Street: Staff would like final review and approval of landscape design details (benches, wall, pavers) for the plaza across from Abyssinian given the sensitivity for this historic landmark
- Material selection – EIFS and thin brick are examples of materials that would not be considered to meet the standards around quality and durability. Staff seek a condition of approval that removes these kinds of materials from the approved elevations.
- Sign Master Plan – Applicant did not provide a sign master plan. Signs for the hotel and office are indicated in some renderings. Staff are okay with the hotel signs scale and location. Staff do not support the office building signage as proposed – the context and predominant characteristics for signs in Portland are pedestrian scale-oriented and minimal. There should be signage – either on the canopy or monument sign – at the Mountfort Street entrance as the main entrance for the building and the Fore Street sign should be smaller and moved to a lower level.

VI. HOUSING REPLACEMENT DETERMINATION

The site of this application currently includes nine (9) residential units that are proposed to be demolished. Per the Housing Replacement Ordinance, the applicant is required to replace those nine (9) units or pay a replacement fee.

The purpose of Sec. 14-483 Housing preservation and replacement of the Land Use Code is:

1) *To promote and facilitate an adequate supply of housing, particularly affordable housing for all economic groups;*
2) *To limit the net loss of housing units in the city;*
3) *To preserve housing in zones where housing is permitted for in the city for all residents in order to promote the health, safety, and welfare of its citizens.*

The applicant intends to replace the nine (9) existing residential units on this site within the proposed three (3) residential buildings (ten (10) units total) on Newbury Street. The applicant was subject to the performance guarantee for the nine (9) residential units to be demolished which was paid prior to issuance of demolition permit. These two buildings have since been demolished.

VII. INCLUSIONARY ZONING CONDITIONAL USE

Because the proposal includes ten (10) residential units, the applicant is required by Division 30, Section 14-487 to provide at least one (1) workforce, one-bedroom housing unit (on-site or off-site) or pay the fee-in-lieu. The applicant proposes to include one (1) workforce, two-bedroom housing unit on-site to satisfy the requirements. The IZ Conditional Use application was reviewed by Victoria Volent (Attachment 5).

VIII. STAFF RECOMMENDATIONS

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed subdivision, site plan, and conditional use for the development.

IX. PROPOSED MOTIONS

A. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on September 25, 2018 for application #000045-2018 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing:

1. The Planning Board **[finds/does not find]** that there are unfeasible or extreme costs, the need to retrofit properties not owned by the applicant, or complexity of revising existing overhead facilities as described by *Site Plan Ordinance, Section 14-526(c)(b)* and *Subdivision Ordinance, Section 14-499(h).* The Planning Board **[waives/does not waive]** the Chapter 14 standard s (*Ch.14 Sec. 14-526(c)(b) and Ch.14 Sec. 14-499(h)*) requiring electrical services and overhead utilities be put underground with the condition that the Applicant shall work with the City of Portland to attempt a comprehensive underground design during the ten (10) months following approval.
2. The Planning Board [**finds/does not find**] that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual Section 1.7.2.8 number of driveways*. The Planning Board [**waives/does not waive**] the *Technical Manual* standard (Technical Manual Section 1.7.2.8) to allow four driveways to serve the new development as shown on Plan C101.
3. The Planning Board [**finds/does not find**] that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual Section 1.7.2.7 Location and spacing of driveways.* The Planning Board [**waives/does not waive**] the *Technical Manual* standard (Technical Manual Section 1.7.2.7) to allow a driveway on Fore Street to be closer than 150' from the intersection as shown on Site Plan C101.
4. The Planning Board [**finds/does not find**] that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual Section 1.7.2.4 Maximum driveway width.* The Planning Board [**waives/does not waive**] the *Technical Manual* standard (Technical Manual Section 1.7.2.4) to allow a driveway width of 33', as shown on Site Plan C100.

5. The Planning Board [**finds/does not find**] that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual Section 1.7.2.3 Min. driveway width.* The Planning Board [**waives/does not waive**] the *Technical Manual* standard (Technical Manual Section 1.7.2.3) to allow a parking aisle width of 21', as shown on Site Plan C100, with the recommendation that spaces be striped with a depth of 17'.
6. The Planning Board **[finds/does not find]** that the partial waiver criteria is met as described in *Sec. 14-275.2 Applicability and Partial Waivers* regarding frequency of entries on the office building façade on Newbury Street. The Planning Board **[partially waives/does not partially waive]** the *Ch 14 Sec. 14-275 .7 Subdistrict Dimensional Requirements – Urban Neighborhood (UN) Subdistrict Building Entries Frequency at frontage* to allow the office building façade facing Newbury Street to have fewer than one (1) entry.
7. The Planning Board **[finds/does not find]** that the partial waiver criteria is met as described in *Sec. 14-275.2 Applicability and Partial Waivers* regarding frequency of entries on the office building façade on Mountfort Street. The Planning Board **[partially waives/does not partially waive]** the *Ch 14 Sec. 14-275 .7 Subdistrict Dimensional Requirements – Urban Transitional (UT) Subdistrict Building Entries Frequency at frontage* to allow the office building façade facing Mountfort Street to have fewer than two (2) entries.

B. INCLUSIONARY ZONING

The Planning Board finds that the proposed development **[is/is not]** in conformance with the standards of the land use code and **approves/does not approve** the application subject to the following conditions:

PRIOR TO ISSUANCE OF BUILDING PERMIT

1. That the Applicant and the City enter into an agreed upon Affordable Housing Agreement (AHA) as described in the memorandum from the Housing Program Manager dated August 2, 2018;

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY

2. That the Affordable Housing Agreement (AHA) be filed as covenant to the 86 Newbury Street property's deed with the Cumberland County Registry of Deeds.

C. SUBDIVISION

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on September 25, 2018 for application #000045-2018 relevant to the subdivision regulations; and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan **[is/is not]** in conformance with the subdivision standards of the land use code and **[approves/does not approve]** the application, subject to the following conditions of approval:

PRIOR TO RECORDING THE SUBDIVISION PLAT

1. **Stormwater Maintenance Agreement:** A Stormwater Maintenance Agreement for the stormwater drainage system and green roof shall be submitted for review by Planning Staff and Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the recording of the subdivision plat. Please submit final copies to the Department of Planning.
2. **Easements and Licenses:** That other easements and licenses shall be finalized to the satisfaction of the Planning Authority, Department of Public Works, and Corporation Counsel prior to the recording of the subdivision plat:
    a. Public pedestrian access easement for the areas of the sidewalk that are not in the public right-of-way;
    b. Revocable license for any footings or canopies that occupy the public right-of-way.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY

3. **Condominium Association Documents**: That the Condominium Association documents shall be finalized to the satisfaction of the Planning Authority, Department of Public Works, and Corporation Counsel.

D. SITE PLAN

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on September 25, 2018 for application #000045-2018 relevant to the site plan regulations; and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan **[is/is not]** in conformance with the site plan standards of the land use code and **[approves/does not approve]** the application, subject to the following conditions of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The final plans shall be revised to reflect staff comment regarding clearance requirements for the alley.
2. Applicant shall submit to the Planning Authority for review and approval final design details of the landscape area across from the Abyssinian Meeting House.
3. Applicant shall submit to the Planning Authority for review and approval final plans showing that 50% of the lot area is pervious and 50% of the roof area is green roof, as well as details and stormwater calculations for the green roof in compliance with Chapter 32 Stormwater..
4. The final architectural drawings shall be revised per Planning Board discussion and staff comment and to eliminate materials such as EIFS and thin brick which are not found to meet the standards of quality and durability.

PRIOR TO THE ISSUANCE OF A BUILDING PERMIT

5. Due to site constraints preventing the planting of required street trees in the right of way, the thirty-two street trees as required in Section 14-526(2)(b)(iii) of the Site Plan Ordinance cannot be met; the applicant shall contribute to the tree fund $400 per tree for fourteen (14) trees for a total of $5,600.
6. Applicant shall submit to the Planning Authority and Building Authority for review and approval the final Construction Management Plan (CMP).

PRIOR TO THE ISSUANCE OF CERTIFICATE OF OCCUPANCY

7. Applicant shall submit to the Planning Authority for review and approval a parking management plan.
8. **Traffic Movement Permit:** Applicant shall receive approval for the Traffic Movement Permit submitted as an area-wide application. Fees to mitigate impacts may be assessed as part of that review.

ON-GOING

9. **Stormwater Management:** The developer/contractor/subcontractor must comply with conditions of the stormwater management plan and sediment and erosion control plan based on City standards and state guidelines. The owner/operator of the approved stormwater management system, and all assigns, shall comply with the conditions of Chapter 32 Stormwater including Article III, Post Construction Management, which specifies the annual inspections and reporting requirements.

ATTACHMENTS:

Attachments to Report – Staff Comment

1. Zoning and Design Checklist
2. Civil and Stormwater
3. Traffic/Transportation
4. TDM Review
5. IZ Conditional Use

Public Comments (since workshops)

PC14 Leon Wilson 7-10-18

PC15 Kate Philbin 7-24-18
PC16 Barry Manter 7-24-18
PC17 William Campbell 7-24-18
PC 18 Diane Stoller 7-26-18
PC19 Carol Connor 7-25-18

Applicant's Submittal

A. Cover and Cover Letter
B. Table of Contents
C. Level III Checklist
D. Waiver Narrative & Related Attachments
E. Agent Authorization
F. Maps
G. Narrative 05-30-2018
H. Technical and Financial Capacity Letter
I. Photo Sheet
J. Traffic Assessment with Attachments
K. Stormwater Management Report & Draft Maintenance Agreement
L. Erosion Control Report
M. Wastewater Capacity Application & Authorization
N. Utility Ability to Serve Requests & Responses Provided
O. Resource Protection Responses & Archaeological Executive Summary
P. Title-Right-Interest and Easements
Q. Fire Code Summary
R. Zoning Analysis Table
S. Neighborhood Meeting Documents
T. Combined Light Fixture Cut Sheet
U. Glazing Comp Chart – SB60 vs SB70XL (clear vs tinted)
V. Parking Generation Tables 6-25-2018
W. TMP Application 06-11-18
X. Shipyard TDM Plan – 180731
Y. Comment Response Tables
Z. Turning Templates
AA. ZBA Approval Documents

Plans

P1. Cover
P2. Existing Conditions Survey
P3. Demolition
P4. Site Plan
P5. Utility Insets
P6. Grading
P7. Site Details
P8. Site and Lighting Details
P9. Lighting
P10. Drainage & Utility Details
P11. Focal Point and Detention Pond Details
P12. Focal Point Details
P13. Subslab Drainage
P14. Erosion Control Notes and Details

P15. Elevations
P16. Floor Plans
P17. Landscape
P18. Landscape Details
P19. Utility Plan
P20. Grading Insets
P21. Subdivision Plan
P22. Subdivision Notes and Details
P23. Parking Garage
P24. Site Plan - Basement
P25. Average Grade, Green Roof, & Parking Allocation Diagrams
P26. Perspectives & Renderings
P27. Construction Management

Development Review Checklist

IS-FBC

Level I / Level II / Level III / Master Plan
Project Name:__Shipyard_____
Address:__86 Newbury Street_____
Description: Alteration / Addition / New Construction
Date Received:__7/3/18_____ Prelim / Final
Planner:__Caitlin Cameron_____
Subdistrict UN / UT / UA

	Complies	More Info	Does Not Comply	N/A	Comments
PURPOSE					
General Guiding Principles	☒	☐	☐	☐	
Subdistrict Intent	☒	☐	☐	☐	UT Hancock, Fore, Mountfort; UN Newbury
GENERAL DEV. STANDARDS					
(a) Prohibited Uses	☒	☐	☐	☐	
(b) Siting Standards					
Mid-Block Permeability	☐	☐	☐	☒	
Frontage Req. – Additional Building Length	☒	☐	☐	☐	UT Mountfort = 200' with massing variation UT Hancock = 114' Hotel with 2 modules
Setbacks	☒	☐	☐	☐	
Small Lot < 35'	☐	☐	☐	☒	
Side Yard less than 5'	☐	☐	☐	☒	
Special corner treatment	☐	☐	☐	☒	
Attached Buildings	☐	☐	☐	☒	
Landscaping & Screening					
Surface Parking	☐	☐	☐	☒	
1st Lot Layer - Height	☐	☐	☐	☒	
1st Lot Layer – Perm.	☐	☐	☐	☒	
Other Lot Layer - Height	☐	☐	☐	☒	
	Complies	**More Info**	**Does Not Comply**	**N/A**	**Comments**
(c) Height Standards					

Height Bonus - Eligible?	☒	☐	☐	☐	UT eligible streets – 1 bonus story allowed; Height not to exceed 77' from average grade
Height Bonus – Conditions Green Roof + Pervious = 50% lot	☐	☒	☐	☐	Staff request additional info – revise diagram 50% pervious lot area to accurately reflect the landscape plan and staff request to remove the landscape areas on Newbury Street, Ch 32 compliance and calculations, details, and green roof maintenance agreement. Applicant will need to submit Building Permit drawings that show the 50% requirements are met. 50% Lot Area = 46,887sf req 50% Roof Area = 35,631sf req; 33,009sf proposed
(d) Parking Standards	☒	☐	☐	☐	No surface parking, no garage doors facing street
SUBDISTRICT DIMS REQ.					
Siting Standards					
Orientation	☒	☐	☐	☐	Buildings on Hancock and Mountfort streets have a principal façade oriented to the street. Office building oriented to Mountfort Street. Hotel oriented to Hancock Street. Residential buildings are oriented to Newbury Street and principal entries added.
Corner Condition	☒	☐	☐	☐	UN is dominant subdistrict on Newbury Street; UN/UT streets, applicant is allowed to decide building orientations.
Lot Coverage	☒	☐	☐	☐	Under 90% required
Frontage Requirements					
Building Length	☒	☐	☐	☐	UN – residential buildings all 50' UT Fore – less than 100' Shipyard building to remain as existing length
Additional Bldg Length	☒	☐	☐	☐	UT Mountfort – 200' with massing variation UT Hancock – less than 200' with 2 modules with active doors.
Fenestration Req. (UA)	☐	☐	☐	☒	
Setbacks					
Principal Building					

Front Yard	☒	☐	☐	☐	5’ max for UN street; 10’ max for UT streets; staff suggest extending sidewalks into front yard where feasible. Front yard max of 5’ is exceeded for residential buildings – zoning variance from ZBA; front yard max of 10’ is exceeded on Newbury Street for office; building because building has met 200’ max building length.
Side Yard	☒	☐	☐	☐	At least 10’ on all side yards.
Side Yard	☒	☐	☐	☐	
Exceptions?	☐	☐	☐	☒	
Rear Yard	☐	☐	☐	☒	No rear yards
	Complies	**More Info**	**Does Not Comply**	**N/A**	**Comments**
Building Entries					
Frequency	☐	☐	☒	☐	Newbury = 1 required per residential building; 3 buildings provided; 1 required for office building; 0 provided (waiver request) Mountfort = 2 required; 1 provided (waiver request) Fore = 1 required; 1 provided Hancock = 1 required for residential building; 1 provided; 2 required for Hotel, 2 provided
Principal Entry Orientation	☒	☐	☒	☐	Each street has a principal entry except Newbury Street (waiver request)
Principal Entry Elevation	☒	☒	☐	☐	All entries appear to be at grade except the commercial entrance on Hancock/Newbury.
Height Standards					
Principal Building					
Height	☒	☐	☐	☐	Newbury = UN 45’max Hancock, Mountfort, Fore = UT 65’ max
Stories	☒	☒	☐	☐	3 stories on Newbury; 7 stories on Mountfort/Fore (more info needed for bonus story); 6 stories on Hancock
Stepbacks (UT, bonus)	☒	☐	☐	☐	15’ stepbacks provided for bonus floor
Accessory Building(s)	☐	☐	☐	☒	

Parking Standards					
Surface Parking Location	☐	☐	☐	☒	No surface parking
Garage Door Setback	☒	☐	☐	☐	No doors, opening set back from front façade on Hancock and Fore streets
Garage Door Opening	☒	☐	☐	☐	Opening on Hancock is 40' but not a door

IS-FBC: Building Design Standards (BDS)

	Complies	More Info	Does Not Comply	N/A	Comments
BUILDING DESIGN STANDARDS (BDS)					Review (9/17/18) Caitlin Cameron, Deb Andrews, Christian Roadman; HP Advisory review on 5/16/18 and 6/6/18
1. Neighborhood Context					
Intent	☒	☐	☐	☐	Be mindful of the transitional nature of the site – especially on Newbury and Mountfort streets. The large office building needs to be contextual with the small-scale, residential streets and blocks that surround it. The façade composition and material placement can be used to transition this office use and larger scale – Planning Board and staff request that the scale of the Fore St building be mitigated with articulation. Newbury Street residential buildings will be good scale for transition from residential buildings across the street. Hancock Street is mostly mid-rise buildings – hotel is appropriate scale and has active frontage.
Guidelines	☒	☐	☐	☐	Generally, staff are satisfied by the proposal. Staff and HP board had additional suggestions for the residential buildings – differentiate the commercial entrances from the residential design; better proportions of solid to void on the bays with design detail/panels.
2. Massing & Proportion					

Intent	☒	☐	☐	☐	Office building uses massing variation to moderate the scale in relationship with the smaller scale residential buildings surrounding. Residential buildings vary in roofline, form, plane changes.
Guidelines	☒	☐	☐	☐	
Standard 2.1	☒	☐	☐	☒	2 modules on Hancock for hotel building
3. Articulation & Composition					
Intent	☒	☐	☐	☐	Met on Hancock Street. Planning Board and staff commented on the lack of articulation on Fore St – addressed through floor delineation, shading and brackets; buildings add scale and activity with storefronts, entries.
Guidelines	☒	☐	☐	☐	Façade plane changes, overhanging cornices, massing variation. For the residential buildings with retail below – retail treatment revised; Residential articulation provided through bays, storefront
Standard 3.1: 3 required	☒	☐	☐	☐	Hotel: expression of structure, material changes; canopy at entry; lintels, trim, cornice Shipyard: windows added; expression of structure; emphasis on door Residential 1: façade plane change; expression of structure at ground floor; trim and cornice line Residential 2: bay window; expression of structure at ground floor; trim and cornice line – more bays added. Residential 3: covered entry; trim and cornice line , bays Office Mountfort: recessed entry, canopy, expression of structure, changes in material type, patterns in material Office Fore:
Standard 3.2	☐	☒	☐	☐	
Standard 3.3: Blank Wall	☒	☐	☐	☐	UN: 15’ max. length UT: 30’ max. length
4. Fenestration					

Intent	☒	☐	☐	☐	Regular pattern of windows, consistency
Guidelines	☒	☐	☐	☐	
Standard 4.1 (UA only)	☐	☐	☐	☒	
Standard 4.2	☒	☐	☐	☐	
Standard 4.3	☒	☐	☐	☐	.61 VT required' met
Standard 4.4	☒	☐	☐	☐	Spandrel provided within curtain wall at floors – sun shading or other articulation measures added.

	Complies	More Info	Does Not Comply	N/A	Comments
5. Building Materials					
Intent	☒	☐	☒	☐	In the case of the residential and hotel buildings and brick portions of the office building – these intent statements are met. Quality and scale intent is not met with EIFS.
Guidelines	☒	☒	☒	☐	Hotel building has appropriate mix of brick and industrial references. What kind of clapboard is proposed for residential buildings? Concern about fiber cement clapboard durability close to the ground. EIFS does not meet the standards for quality and durability. Extent of curtain wall was scaled back – articulation provided with cornice line/bracket details and delineation of floors with spandrel – what is spandrel material and what level of reveal? What is the level of reveal and detail on the hotel fadade?
6. Building Entries					
Intent	☒	☐	☐	☐	Most facades include active entries.
Guidelines	☒	☐	☐	☐	Some revisions requested regarding residential entries – prominent and legible from the street. This was accomplished in Building 3. Commercial entries should differ in character from the residential entries.

Standard 6.1	☒	☐	☒	☐	Principal entry for hotel on Hancock, for office on Mountfort, for residential buildings on Newbury. Fore Street does not have an entrance and would require a waiver. Office entry was revised to be more in scale with the building/more emphasis with canopies, glazing.
Standard 6.2 (UA only)	☐	☐	☐	☒	
Standard 6.3	☐	☒	☐	☐	
Standard 6.4	☒	☐	☐	☐	Met on the hotel/retail façade; Brewery; office building; Residential buildings now all have a direct entrance facing the street. Side residential doors are connected to sidewalk with paths.
Standard 6.5	☒	☐	☐	☐	
Standard 6.6	☒	☐	☐	☐	Slight setback; No garage doors
Standard 6.7: Frequency	☐	☐	☐	☐	See zoning checklist and waiver requests; HP and staff review find that the residential buildings would benefit from entries on the street or that are much more legible from the street. Building 3 was revised to bring entrance facing the street.
7. Roof Lines					
Intent	☒	☐	☐	☐	Roof forms are now simple on the residential buildings – any future rooftop appurtenances will require an amendment and will need to meet the standards for integration of building systems.
Guidelines	☒	☐	☐	☐	Applicant responded to HP board request to vary the residential roof forms and introduce a front-end gable to relate to the buildings across the street. Staff feel that flat roofs are appropriate for multi-family buildings.
Standard 7.1	☒	☐	☐	☐	Rooftop systems cannot be treated as an afterthought. Residential mechanical systems were moved to the side/rear of building. If future rooftop appurtenances are proposed, the parapet should be raised to integrate the screening/form.
Standard 7.2	☒	☐	☐	☐	

8. Structured Parking					
Intent	☒	☐	☐	☐	The impact of the garage is minimized because it is internal to the lot and concealed by active building uses.
Guidelines	☒	☐	☐	☐	The structured parking is buried behind other buildings. Garage uses precast siding material to coordinate with the building base.
Standard 8.1	☒	☐	☐	☐	
Standard 8.2	☒	☐	☐	☐	
Standard 8.3	☒	☐	☐	☐	
Standard 8.4	☒	☐	☐	☐	

Portland Maine | Yes. Google's good here.

Christian Roadman <croadman@portlandmaine.gov>

86 Newbury Street

Lauren Swett <lswett@woodardcurran.com> Wed, Sep 12, 2018 at 10:14 AM
To: Caitlin Cameron <ccameron@portlandmaine.gov>, Christian Roadman <croadman@portlandmaine.gov>

Hi Caitlin and Christian,

I have looked at their most recent submissions. They have addressed my prior comments. The outstanding items are:

- Final PWD ability to serve
- Final stormwater maintenance agreement (they've submitted a draft)

I discussed the project with one of our electrical engineers about underground electrical lines. Based on the limited info, he couldn't really say whether they could or could not go underground – he said it is dependent on what else is around the project. He noted that it looks like there are a lot of other overhead services across the street from the project that would need to be addressed. He also confirmed that when the electrical line is put underground at the street, there are three poles required in order to do that.

If you have any questions, let me know.

Thanks,

Lauren

Lauren Swett, P.E.*

Technical Manager

Woodard & Curran

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Portland Maine | Yes. Google's good here.

Christian Roadman <croadman@portlandmaine.gov>

86 Newbury Street - Final Site Plan Traffic Comments

Tom Errico <thomas.errico@tylin.com> Wed, Sep 19, 2018 at 3:51 PM
To: Caitlin Cameron <ccameron@portlandmaine.gov>
Cc: Christian Roadman <croadman@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

Hi Caitlin – I have reviewed the application materials and offer the following final traffic comments regarding site plan details.

- The project site exceeds the number of driveways allowed by the City's Technical Standards (Two are permitted and four are proposed). I generally support the waiver but would like specific details on the truck delivery requirements (including vehicle turning templates for the proposed configuration between Hancock Street and Newbury Street) that warrant the one-way two driveway configuration for the residential units.

Status: The applicant has noted that the residential driveway will also serve small truck deliveries. Given site operations and the desire for deliveries to take place off-street, I support a waiver from City Technical Standards for the number of driveways.

- The location of the driveway on Fore Street does not meet corner clearance to Mountfort Street. Given that this driveway is an existing condition and traffic volumes entering and exiting the site would not be expected to increase significantly, I support a waiver from the City's Technical Standards.

Status: The subject driveway is an existing driveway and has not exhibited any safety or operational problems. While traffic activity is expected to increase, I support a waiver from the City's Technical Standards given area conditions and providing off-street truck loading.

- The parking garage parking layout requires a waiver for aisle width. The City standard is 24 feet and the project is proposing 21 feet. The applicant provided a generic letter noting the adequacy of this proposed layout. I would suggest that the applicant provide specific site examples (in Maine or nearby) for review. Additionally, I will conduct a review of parking facilities in the area to assess adequacy of the project and dimensions.

Status: The applicant has provided supporting information for the waiver request. In addition, I conducted a field review of two Portland garages (Gateway and Spring Street) that have reduced parking dimensions as compared to City Technical Standards. Based upon my review of the project, site limitations, and that many vehicles parking in the proposed garage will be long duration parkers, I support a waiver from City Technical Standards. Given my review of existing constrained parking garages, it is recommended that the parking spaces be marked for a 17-foot stall depth, resulting in a 23-foot aisle width.

- The applicant has conducted a parking demand analysis according to ITE Parking Generation rates adjusted for time-of-day usage, Shared Use Reduction (6% reduction), and Other Modes Reduction (10% for Hotel and 15% for Others). According to the analysis, the proposed land uses will generate a peak parking demand of 354 parking spaces. I generally find the method to be reasonable, but need to review adjustment factors and parking rates in detail.

Status: The proposed parking garage (380 parking spaces) will adequately accommodate the proposed project assuming shared use and multi-modal reductions. I would note that the parking generation assumptions generally were suburban type sites sampled and thus may have included a higher percentage of automobile trips – thus supporting the reduced parking numbers. Additionally, the TDM Plan is intended to aggressively implement measures for reducing vehicle trips, which is consistent with the reductions assumed in the parking demand estimate.

- The applicant should provide dimensional details and vehicle turning templates for the Fore Street driveway. Additionally, vehicle turning templates for truck movements internal to the site and details on management of deliveries should be provided.

Status: The applicant has provided the requested information and I find conditions to be acceptable. I have no further comment.

- Sight distance measurements from the proposed driveways should be provided.

Status: The applicant provided the requested information and I have no further comment.

- The construction management plan needs additional detail as it relates to restricted movements (one-way streets) and sidewalk closures. I need to coordinate this item with DPW staff and will provide direction in the future.

Status: I suggest a condition of approval be included that the details of the construction management plan be provided for review and approval prior to the issuance of any City permits.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
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"One Vision, One Company"

Portland Maine | Yes. Google's good here.

Christian Roadman <croadman@portlandmaine.gov>

Final Comments -Re: PL-45-2018: Shipyard Redevelopment: DRAFT Transportation Demand Management Plan

1 message

Bruce Hyman <bhyman@portlandmaine.gov> Thu, Sep 13, 2018 at 4:20 PM
To: Caitlin Cameron <ccameron@portlandmaine.gov>, Christian Roadman <croadman@portlandmaine.gov>

Good afternoon, Caitlin and Christian,

I find that the revised TDM Plan (dated July 31, 2018) is responsive to my comments submitted prior to the Planning Board workshop. I will look to the information that is provided relative to the request for parking allocations amongst tenant uses to see how the peak parking demand estimates in the TDM Plan align with the parking supply.

Please don't hesitate to contact me if you require additional information or review comments.

Best regards,

Bruce

On Fri, Jul 20, 2018 at 10:50 AM, Bruce Hyman <bhyman@portlandmaine.gov> wrote:

> Good morning, Caitlin and Christian,
>
> The following are my comments on the DRAFT TDM Plan dated July 6, 2018:
>
> - Per the ordinance provisions governing TDM, the draft TDM Plan applies to the Vet's First Choice (VFC) and Cambria Hotel components of the proposed redevelopment of the Shipyard site
> - The draft TDM Plan provides a good framework for defining the transportation context for the site and mix of uses/tenants, transportation/traffic and parking demand, TDM trip and parking reduction targets and TDM strategies to meet those targets
> -
> - The draft Plan provides a robust menu of TDM strategies for both employees (VFC and Cambria) and hotel guests
> - The pricing of parking, and how that is pricing structured and applied, is proven to be one of the most effective ways to influence travel behavior in
>   - it is unclear at this time how parking costs for employees of VFC and Cambria and hotel guests will be applied - there are provisions, for instance, for VFC employees to "cash out" their parking but it is unclear how strong an incentive this will be - it is anticipated that parking will be "free" to VFC employees (as it currently is at its downtown Portland sites) and the "cash out" will be equivalent to the cost to VFC of the parking
>   -
> - The extent of bus transit pass subsidies for VFC and Cambria employees is undecided ("Partial or full subsidy" stated) but transit incentives includes an unknown one-time incentive to give up parking for transit
> -
> - The current vehicle trip and parking reduction targets are quite modest but call for adjustment after the first year as part of the monitoring program - it is suggested that higher initial targets be established with strengthened pricing strategies
> - The draft Plan contains a good plan for Monitoring, Data Collection and Reporting
>
> As stated earlier, the draft TDM Plan provides a solid framework within which to create a strong package of effective strategies to reduce vehicle trips and parking demand but require fine-tuning to match TDM targets to a package of strategies that are geared toward meeting or exceeding those targets.

Please don't hesitate to contact me if you or the Board have any questions.

Best regards,

Bruce

--
Bruce Hyman
Transportation Program Manager
Transportation Division

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

--
Bruce Hyman
Transportation Program Manager
Transportation Division

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

Portland, Maine | Yes. Life's good here.

Planning & Urban Development Department

To: Caitlin Cameron, Urban Designer, Planning & Urban Development Department

From: Victoria Volent, Housing Program Manager, Housing & Community Development Division

Date: August 2, 2018

Subject: 86 Newbury Street – Inclusionary Zoning Conditional Use

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All developments of ten (10) units or more are conditional uses subject to Planning Board review on the condition that they comply with the requirements set forth in Division 30, Section 14-487 of the Zoning Ordinance.

Division 30, Section 14-487, Ensuring Workforce Housing, requires at least ten percent (10%) of the dwelling units in the development shall meet the definition of Workforce Housing units for sale or for rent. The ordinance under Section 14-487 e 3 also requires the number of bedrooms in the workforce units shall be at least 10% of the total number of bedrooms in the development.

The development located at 86 Newbury Street proposes the creation of 10 rental units consisting of two (2) studio units, six (6) one-bedroom units, and two (2) two-bedroom units. As dwelling units for rent, the designated Workforce Unit will be restricted to households earning up to 100% of Area Median Income (AMI). Based on the requirements outlined in Section 14-487, the development is required to provide a minimum of one (1) workforce unit with one (1) bedroom. The Applicant has elected to provide one (1) Workforce Unit, on-site, consisting of one (1) two-bedroom unit to satisfy the ordinance's minimum requirements. As such, the project has met the minimum requirements set forth in Section 14-487.

Staff recommends the Board Approve this Conditional Use provided the Applicant and the City enter into an agreed upon Affordable Housing Agreement (AHA) before a Building Permit may be issued. The Affordable Housing Agreement will outline the details of the affordability restrictions placed on the Workforce Unit and will be filed as covenant to the property's deed with the Cumberland County Registry of Deeds before a Certificate of Occupancy may be issued.

Sincerely,

Victoria Volent
Housing Programs Manager

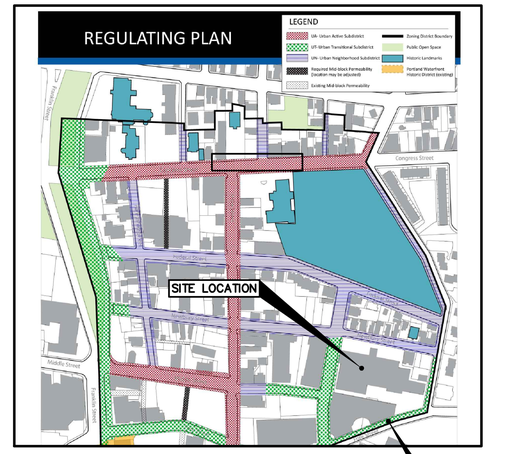
SHIPYARD REDEVELOPMENT

NEWBURY STREET
PORTLAND, MAINE

PROJECT PARCEL SITE
PORTLAND ASSESSOR'S MAP & LOT NUMBERS

MAP	LOT
020	C001, C002
020	C005, C009, C015

Applicant:
86 NEWBURY STREET, LLC
470 FORE STREET, PORTLAND ME 04101
CLIENT PHONE #: (207) 772-2992



LOCATION MAP
N.T.S.
FROM CITY OF PORTLAND DIVISION 15.2

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BUILDING	
	RIGHT OF WAY	
	PROPERTY LINE	
	BUILDING SETBACK	
	ZONE LINE	
	WETLAND BOUNDARY	
	GUIDE RAIL	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL DRIVE	
100	GRADING CONTOUR LINE	100
X 226.4	SPOT ELEVATION	100.31
	TREELINE	
	TREES & HEDGES	
	POLE WITH LIGHT FIXTURE(S)	
	UTILITY POLE	
	FREESTANDING SIGN	
	PAINTED DIRECTIONAL TRAFFIC ARROW	
OE	OVERHEAD ELECTRIC/TELEPHONE	OHE/T
UE	UNDERGROUND ELECTRIC/TELEPHONE	UGE/T
W	WATER LINE	8"W
D	STORM DRAIN LINE	18"SD
	CULVERT	18"CULVERT
	HYDRANT	
WV	WATER GATE VALVE	
	WATER SHUT OFF VALVE	
	MANHOLE	
	CATCH BASIN	
	TEST PIT	
	IRON ROD (SET)	
	IRON ROD (FOUND)	
	MONUMENT	
	RIPRAP	
	SILT FENCE – PERIMETER	
	STONE SEDIMENT BARRIER	
X X	FENCE	
N	WELL	

GENERAL NOTES

1. TOPOGRAPHIC DATA AND EXISTING CONDITIONS WAS PREPARED BY OWEN HASKELL OF FALMOUTH, MAINE ON FEBRUARY 14, 2017

2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

3. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTIONS OF THE OWNER, THE CITY OF PORTLAND OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.

4. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.

5. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, AND/OR CITY OF PORTLAND SPECIFICATIONS.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A SITE PLAN APPROVAL FROM THE CITY OF PORTLAND. THE CONSTRUCTION WILL BE GOVERNED BY THE CITY OF PORTLAND ZONING ORDINANCE WHICH IS AVAILABLE FOR VIEWING AT THE OFFICE OF THE ENGINEER OR THE MUNICIPAL OFFICE.

2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.

LAYOUT NOTES

1. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB.

2. OFFSETS TO CATCH BASINS AND MANHOLES ARE TO THE CENTER OF THE FRAME.

3. PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE-HALF OF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.

4. PROPERTY LINE AND R.O.W. MONUMENTS SHALL NOT BE DISTURBED BY CONSTRUCTION. IF DISTURBED, THEY SHALL BE RESET TO THEIR ORIGINAL LOCATIONS AT THE CONTRACTOR'S EXPENSE, BY A MAINE LICENSED LAND SURVEYOR.

5. PROPOSED RIGHT OF WAY MONUMENTS AND PROPERTY LINE PINS SHALL BE INSTALLED UNDER THE DIRECTION OF A MAINE LICENSED LAND SURVEYOR.

6. CURB RADII UNLESS OTHERWISE NOTED ON THE PLAN SHALL BE A MINIMUM OF 3'.

UTILITY NOTES

1. ALL WATER UTILITY MATERIALS AND INSTALLATION METHODS SHALL CONFORM TO PORTLAND WATER DISTRICT STANDARDS. ALL WATER DISTRIBUTION PIPING SHALL BE CLASS 52 DUCTILE IRON PIPE, DOUBLE CEMENT LINED AND BITUMINOUS COATED CONFORMING TO AWWA/ANSI C104/A21.4. DISINFECTION OF WATER LINES SHALL CONFORM TO AWWA STANDARD C651, LATEST REVISION.

2. THE LOCATION OF THE PROPOSED UNDERGROUND ELECTRICAL SERVICE IS APPROXIMATE AND THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION WITH CENTRAL MAINE POWER COMPANY.

3. THRUST BLOCKS OR LOCKING RETAINER GLANDS SHALL BE PLACED ON THE WATER DISTRIBUTION LINES AT ALL BENDS, TEES, VALVES, CHANGES IN DIRECTION, ETC. THE THRUST BLOCKS OR LOCKING RETAINER GLANDS SHALL MEET THE REQUIREMENTS OF THE PORTLAND WATER DISTRICT STANDARDS.

4. TEST PITS AT ALL UTILITY CROSSINGS SHALL BE COMPLETED TWO WEEKS IN ADVANCE OF THE START OF CONSTRUCTION OR ORDERING OF MATERIALS. TEST PIT INFORMATION SHALL BE PROMPTLY PROVIDED TO ENGINEER FOR REVIEW.

GRADING AND DRAINAGE NOTES

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS SECTION 603-- PIPE CULVERTS AND STORM DRAINS, LATEST REVISION WITH THE EXCEPTION THAT THE ONLY ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:

REINFORCED CONCRETE PIPE, CLASS III
POLYVINYL-CHLORIDE (PVC) PIPE
SMOOTH BORE POLYETHYLENE - ADS OR HANCOR

2. TOPSOIL STRIPPED IN AREAS OF CONSTRUCTION THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED ON SITE AT A LOCATION TO BE DESIGNATED BY THE OWNER. UNSUITABLE SOIL SHALL BE SEPARATED, REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION OFF SITE.

3. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

EROSION CONTROL NOTES

1. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.

2. PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE CONSTRUCTION ENTRANCE.

3. ALL GROUND AREAS DISTURBED FOR CONSTRUCTION WILL BE GRADED, LOAMED AND SEEDED AS SOON AS POSSIBLE. PERMANENT SEED MIXTURE SHALL CONFORM TO THE SEEDING PLAN CONTAINED IN THE EROSION CONTROL NOTES INCLUDED ON SHEET C406.

4. PRIOR TO PAVING, THE CONTRACTOR SHALL FLUSH SEDIMENT FROM ALL STORM DRAIN LINES, REMOVE ACCUMULATED SEDIMENT FROM SUMPS AND INVERTS AND PROPERLY DISPOSE OF.

5. ALL CATCH BASINS WITH OUTLET PIPES 18" DIAMETER OR LESS SHALL BE PROVIDED WITH A "SNOUT" SEDIMENTATION HOOD PER DETAIL.

6. SILT FENCES SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES.

7. THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCE AS IT BECOMES SATURATED WITH MUD TO ENSURE THAT IT WORKS AS PLANNED DURING CONSTRUCTION.

8. SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO IT FOR LATER USE IN LANDSCAPING OPERATIONS.

9. EROSION CONTROL NOTES ACCOMPANY THIS PLAN SET AND ARE CONTAINED ON DRAWING C405 OF THIS PLAN SET.

10. THE MAINTENANCE SCHEDULE FOR THE CATCH BASIN SEDIMENT SUMPS IS CONTAINED IN THE EROSION CONTROL NOTES INCLUDED ON SHEET C405.

11. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION/SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS BASED UPON ANY THIRD PARTY REVIEW (ie MDEP) MAY RESULT IN MONETARY PENALTIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.

12. ALL NON-PAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE LOAMED AND SEEDED, UNLESS OTHERWISE DIRECTED BY THE OWNER.

13. ALL DISTURBED AREAS ARE TO RECEIVE A MINIMUM OF 4" OF TOPSOIL PRIOR TO PERMANENT SEEDING.

PERMITS

TYPE OF PERMIT	GOVERNING BODY	STATUS
LEVEL III SITE PLAN AND SUBDIVISION APPLICATION	CITY OF PORTLAND PLANNING DEPARTMENT 389 CONGRESS STREET PORTLAND, MAINE 04101 (207) 874-8719	SUBMITTED: APRIL 2018
TRAFFIC MOVEMENT PERMIT	CITY OF PORTLAND PLANNING DEPARTMENT 389 CONGRESS STREET PORTLAND, MAINE 04101 (207) 874-8719	ANTICIPATED SUBMITTAL: TBD
PRACTICAL DIFFICULTY VARIANCE APPLICATION	CITY OF PORTLAND ZONING BOARD OF APPEALS 389 CONGRESS STREET PORTLAND, MAINE 04101 (207) 874-8719	SUBMITTED: AUGUST 17, 2018
CONSTRUCTION GENERAL PERMIT/ PERMIT BY RULE	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION 312 CANCO ROAD PORTLAND, ME 04103 (207) 822-6300	SUBMITTED: AUGUST 2018

UTILITIES

WATER:
PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PORTLAND, MAINE 04102
(207) 761-8300
CONTACT: JAY ARNOLD

SEWER:
DEPARTMENT OF PUBLIC SERVICES
55 PORTLAND STREET
PORTLAND, MAINE 04101-2991
(207) 874-8832
CONTACT: BRAD ROLAND

ELECTRIC:
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
(207) 828-2882
CONTACT: JAMES COUGH

TELEPHONE:
FAIRPOINT
5 DAVIS FARM ROAD
PORTLAND, MAINE 04103
(207) 797-1842
(207) 712-1063 (C)
CONTACT: BRIAN BOUCHARD

CABLE:
SPECTRUM
118 JOHNSON ROAD
PORTLAND, MAINE 04102
(207) 253-2222

GAS:
UNITIL
376 RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE 04103
(207) 541-2543
CONTACT: SCOTT CARPENTER

INDEX

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C004	DEMOLITION PLAN
C100	SITE PLAN – BASEMENT
C101	SITE PLAN – FIRST FLOOR
C102	UTILITY PLAN
C103	UTILITY INSETS
C104	GRADING, DRAINAGE & EROSION CONTROL PLAN
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C404	FOCAL POINT AND DETENTION POND DETAILS
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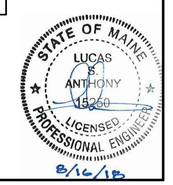
C407	SUBSLAB DRAINAGE PLAN & DETAILS
C408	EROSION CONTROL NOTES & DETAILS
L001	LANDSCAPE PLAN
L002	LANDSCAPE DETAILS
E0.00	PHOTOMETRIC LIGHTING PLAN

CALL BEFORE YOU DIG
1-888-344-7233



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: NTS	Job No.: 3184
File Name: 3184-COVER.dwg		

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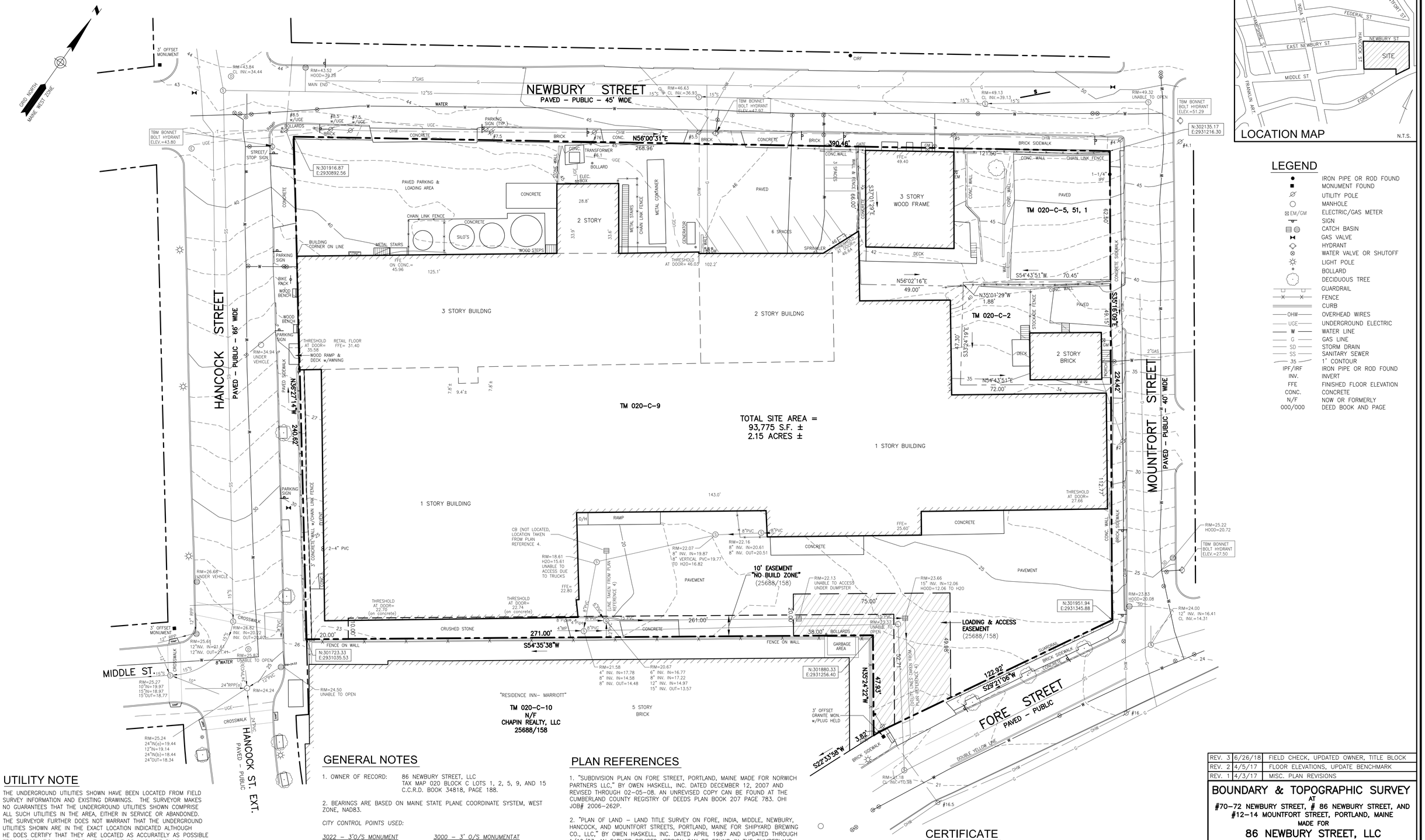
Drawing Name: COVER SHEET, GENERAL NOTES & LEGEND
Project: Shipyard Redevelopment
Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC
470 Fore Street, Portland, ME 04101

Drawing No. C001

U:\3184_Shipyard Brewing\Z - CAD\DWG\3184-COVER.dwg 8/20/2018 11:54 AM



LEGEND

●	IRON PIPE OR ROD FOUND
■	MONUMENT FOUND
⌀	UTILITY POLE
○	MANHOLE
⊠ EM/GM	ELECTRIC/GAS METER
	SIGN
	CATCH BASIN
	GAS VALVE
	HYDRANT
	WATER VALVE OR SHUTOFF
	LIGHT POLE
	BOLLARD
	DECIDUOUS TREE
	GUARDRAIL
	FENCE
	CURB
OHW	OVERHEAD WIRES
UGE	UNDERGROUND ELECTRIC
W	WATER LINE
G	GAS LINE
SD	STORM DRAIN
SS	SANITARY SEWER
35	1' CONTOUR
IPF/IRF	IRON PIPE OR ROD FOUND
INV.	INVERT
FFE	FINISHED FLOOR ELEVATION
CONC.	CONCRETE
N/F	NOW OR FORMERLY
000/000	DEED BOOK AND PAGE

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1–888–DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

GRAPHIC SCALE

0 10' 20' 40' 80'

GENERAL NOTES

1. OWNER OF RECORD: 86 NEWBURY STREET, LLC
TAX MAP 020 BLOCK C LOTS 1, 2, 5, 9, AND 15
C.C.R.D. BOOK 34818, PAGE 188.

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD83.

CITY CONTROL POINTS USED:

3022 – 3'O/S MONUMENT HANCOCK/THAMES	*3000 – 3' O/S MONUMENTAT AT HANCOCK/FORE*
N:301388.62	*N:301536.15*
E:2931424.18	*E:2931222.69*

3. ELEVATIONS ARE BASED ON CITY OF PORTLAND VERTICAL DATUM. BENCHMARK USED IS A USC&GS DISK AT 17 COMMERCIAL STREET ELEVATION=14.50.

4. STREET LINES REPRODUCED FROM MARKERS FOUND AS SHOWN ON PLAN REFERENCE 3.

PLAN REFERENCES

1. "SUBDIVISION PLAN ON FORE STREET, PORTLAND, MAINE MADE FOR NORWICH PARTNERS LLC," BY OWEN HASKELL, INC. DATED DECEMBER 12, 2007 AND REVISED THROUGH 02–05–08. AN UNREVISED COPY CAN BE FOUND AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 207 PAGE 783. OHI JOB# 2006–262P.

2. "PLAN OF LAND – LAND TITLE SURVEY ON FORE, INDIA, MIDDLE, NEWBURY, HANCOCK, AND MOUNTFORT STREETS, PORTLAND, MAINE FOR SHIPYARD BREWING CO., LLC," BY OWEN HASKELL, INC. DATED APRIL 1987 AND UPDATED THROUGH 1/10/03. AN EARLIER REVISED VERSION CAN BE FOUND IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 195 PAGE 398. OHI JOB# 95217P

3. "PLAN OF LAND – STANDARD BOUNDARY SURVEY ON FORE, INDIA, MIDDLE, NEWBURY, HANCOCK, AND MOUNTFORT STREETS, PORTLAND, MAINE FOR AMERICAN HOIST & DERRICK CO." BY OWEN HASKELL, INC. DATED APRIL 1987 AND REVISED THROUGH 2/13/92. OHI JOB# 86193P.

4. "SITE PLAN WITH PARKING GARAGE SHIPYARD BREWERY PORTLAND, MAINE FOR SEA DOG REALTY" DATED 3–16–2011 BY ATTAR ENGINEERING INC.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE. WITH THE EXCEPTION OF MARKERS SET AT ALL CORNERS.

6/26/2018
DATE

SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE SAMUEL D GLIDDEN 2520 REGISTERED LAND SURVEYOR

REV.		
REV. 3	6/26/18	FIELD CHECK, UPDATED OWNER, TITLE BLOCK
REV. 2	4/5/17	FLOOR ELEVATIONS, UPDATE BENCHMARK
REV. 1	4/3/17	MISC. PLAN REVISIONS

BOUNDARY & TOPOGRAPHIC SURVEY

AT

#70–72 NEWBURY STREET, # 86 NEWBURY STREET, AND #12–14 MOUNTFORT STREET, PORTLAND, MAINE

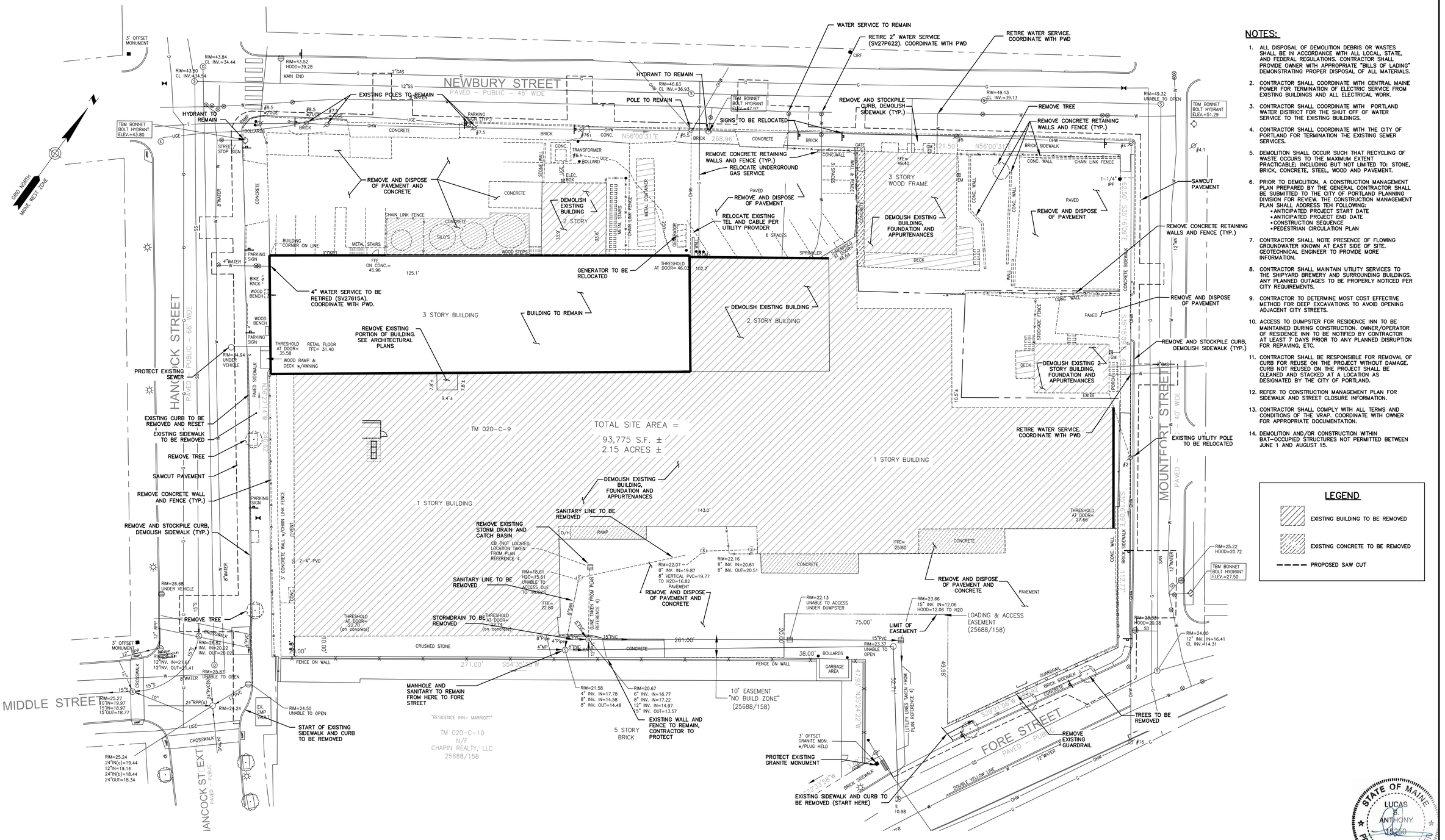
MADE FOR

86 NEWBURY STREET, LLC

86 NEWBURY STREET, PORTLAND, MAINE

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. ROUTE ONE, FALMOUTH, ME 04105 (207)774–0424

Drawn By SDG	Date	Job No.
Trace By JLW	FEBRUARY 14, 2017	2017–010P
Check By JWS	Scale	Drwg. No.
Book No. 1155	1" = 20'	1



NOTES:

1. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTES SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
2. CONTRACTOR SHALL COORDINATE WITH CENTRAL MAINE POWER FOR TERMINATION OF ELECTRIC SERVICE FROM EXISTING BUILDINGS AND ALL ELECTRICAL WORK.
3. CONTRACTOR SHALL COORDINATE WITH PORTLAND WATER DISTRICT FOR THE SHUT OFF OF WATER SERVICE TO THE EXISTING BUILDINGS.
4. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTLAND FOR TERMINATION THE EXISTING SEWER SERVICES.
5. DEMOLITION SHALL OCCUR SUCH THAT RECYCLING OF WASTE OCCURS TO THE MAXIMUM EXTENT PRACTICABLE; INCLUDING BUT NOT LIMITED TO: STONE, BRICK, CONCRETE, STEEL, WOOD AND PAVEMENT.
6. PRIOR TO DEMOLITION, A CONSTRUCTION MANAGEMENT PLAN PREPARED BY THE GENERAL CONTRACTOR SHALL BE SUBMITTED TO THE CITY OF PORTLAND PLANNING DIVISION FOR REVIEW. THE CONSTRUCTION MANAGEMENT PLAN SHALL ADDRESS TEH FOLLOWING:
   - ANTICIPATED PROJECT START DATE
   - ANTICIPATED PROJECT END DATE
   - CONSTRUCTION SEQUENCE
   - PEDESTRIAN CIRCULATION PLAN
7. CONTRACTOR SHALL NOTE PRESSENCE OF FLOWING GROUNDWATER KNOWN AT EAST SIDE OF SITE. GEOTECHNICAL ENGINEER TO PROVIDE MORE INFORMATION.
8. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO THE SHIPYARD BREWERY AND SURROUNDING BUILDINGS. ANY PLANNED OUTAGES TO BE PROPERLY NOTICED PER CITY REQUIREMENTS.
9. CONTRACTOR TO DETERMINE MOST COST EFFECTIVE METHOD FOR DEEP EXCAVATIONS TO AVOID OPENING ADJACENT CITY STREETS.
10. ACCESS TO DUMPSTER FOR RESIDENCE INN TO BE MAINTAINED DURING CONSTRUCTION. OWNER/OPERATOR OF RESIDENCE INN TO BE NOTIFIED BY CONTRACTOR AT LEAST 7 DAYS PRIOR TO ANY PLANNED DISRUPTION FOR REPAVING, ETC.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF CURB FOR REUSE ON THE PROJECT WITHOUT DAMAGE. CURB NOT REUSED ON THE PROJECT SHALL BE CLEANED AND STACKED AT A LOCATION AS DESIGNATED BY THE CITY OF PORTLAND.
12. REFER TO CONSTRUCTION MANAGEMENT PLAN FOR SIDEWALK AND STREET CLOSURE INFORMATION.
13. CONTRACTOR SHALL COMPLY WITH ALL TERMS AND CONDITIONS OF THE VRAP. COORDINATE WITH OWNER FOR APPROPRIATE DOCUMENTATION.
14. DEMOLITION AND/OR CONSTRUCTION WITHIN BAT-OCCUPIED STRUCTURES NOT PERMITTED BETWEEN JUNE 1 AND AUGUST 15.

LEGEND

- EXISTING BUILDING TO BE REMOVED
- EXISTING CONCRETE TO BE REMOVED
- PROPOSED SAW CUT

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S. ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH | Draft: CG | Date: JUL 2018
Checked: LSA | Scale: 1"=20' | Job No.: 3184
File Name: 3184-DEMO.dwg

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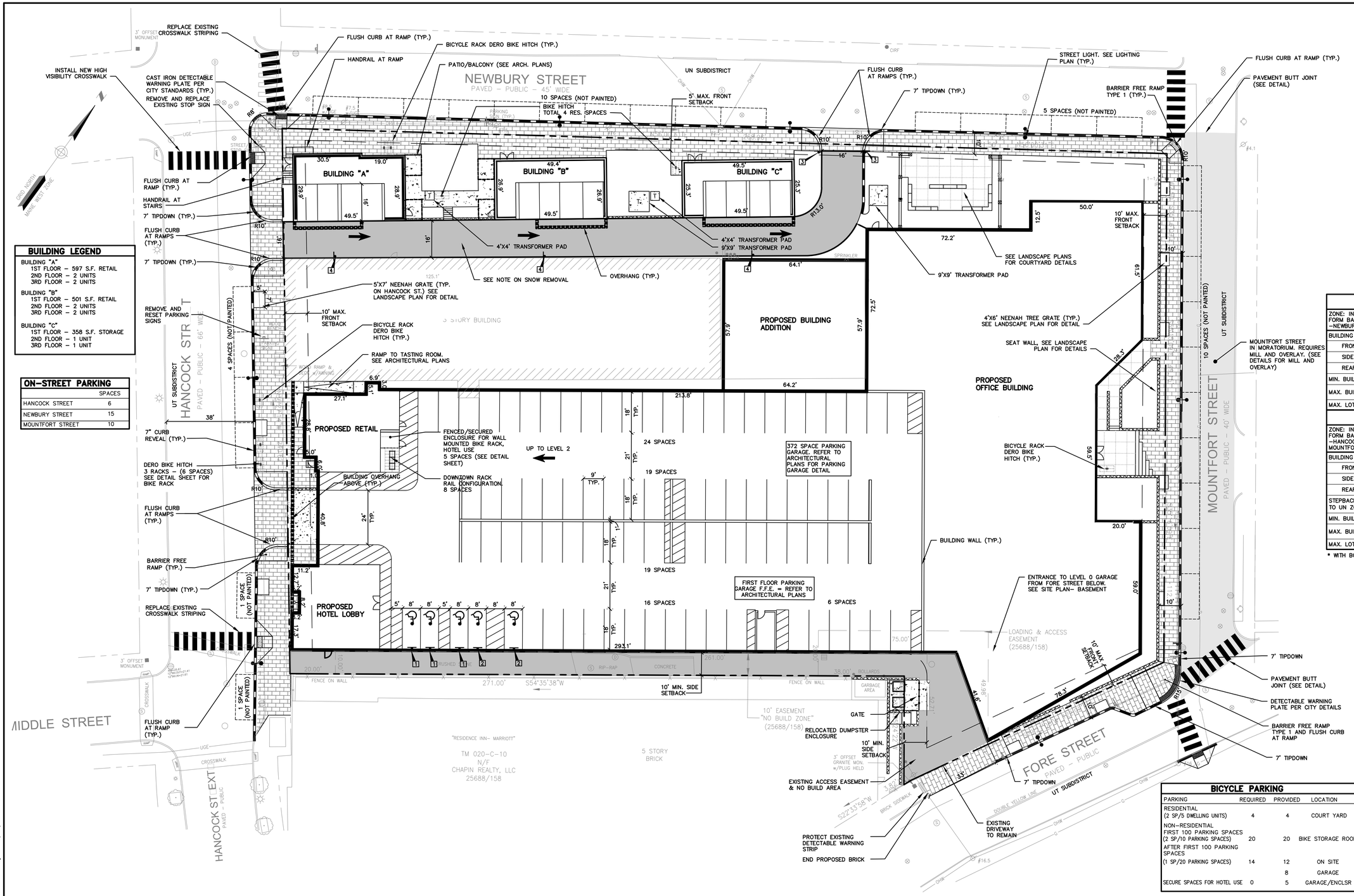
Drawing Name: DEMOLITION PLAN
Project: Shipyard Redevelopment, Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC, 470 Fore Street, Portland, ME 04101

Drawing No. C004

U:\3184_Shipyard Brewing\2 - CAD\DWG\3184-DEMO.dwg 8/20/2018 11:55 AM



BUILDING LEGEND

BUILDING "A"
- 1ST FLOOR – 597 S.F. RETAIL
- 2ND FLOOR – 2 UNITS
- 3RD FLOOR – 2 UNITS

BUILDING "B"
- 1ST FLOOR – 501 S.F. RETAIL
- 2ND FLOOR – 2 UNITS
- 3RD FLOOR – 2 UNITS

BUILDING "C"
- 1ST FLOOR – 358 S.F. STORAGE
- 2ND FLOOR – 1 UNIT
- 3RD FLOOR – 1 UNIT

ON–STREET PARKING

	SPACES
HANCOCK STREET	6
NEWBURY STREET	15
MOUNTFORT STREET	10

SITE DATA

ZONE: INDIA STREET FORM BASED CODE

SITE AREA 93,775 S.F. = 2.15 ACRES

BUILDING AREA:	
RETAIL 1	597 S.F.
RETAIL 2	501 S.F.
RETAIL 3	2,700 S.F.
TASTING	2,500 S.F.
BREWERY	9,590 S.F.
OFFICE	89,387 S.F.
PHARMACY	34,852 S.F.
TECH. FULLFILLMENT	44,983 S.F.
HOTEL (105 ROOM)	72,797 S.F.
RESIDENTIAL (10 UNITS)	9,060 S.F.

PARKING	REQUIRED	PROVIDED
HOTEL (1 SP/4 GUEST ROOMS)	27	30
OFFICE (1 SP/400 SF)	224	230
PHARMACY (1 SP/1000 SF)	35	40
TECH. FULLFILLMENT (1 SP/1000 SF)	45	48
BREWERY (1 SP/1000 SF)	10	12
TASTING ROOM (1 SP/200 SF 2,000 SF EXEMPT)	3	6
RETAIL 1 (1 SP/200 SF 2,000 SF EXEMPT)	0	0
RETAIL 2 (1 SP/200 SF 2,000 SF EXEMPT)	0	0
RETAIL 3 (1 SP/200 SF 2,000 SF EXEMPT)	4	6
TOTAL GARAGE PARKING	348	372
BARRIER FREE	8	8
RESIDENTIAL (1 SP/UNIT AFTER 3 UNITS)	7	12 BELOW UNITS

SPACE AND BULK STANDARDS

ZONE: INDIA STREET FORM BASED CODE –UN –NEWBURY STREET	REQUIRED	PROVIDED
BUILDING SETBACKS		
FRONT (MAX.)	5 FT.	>5 FT.
SIDE (MIN.)	5 FT.	N/A
REAR (MIN.)	10 FT.	N/A
MIN. BUILDING HEIGHT	25 FT. (2 STORIES)	45 FT.
MAX. BUILDING HEIGHT	45 FT. (4 STORIES)	45 FT.
MAX. LOT COVERAGE	90%	75%

SPACE AND BULK STANDARDS

ZONE: INDIA STREET FORM BASED CODE– UT –HANCOCK, FORE & MOUNTFORT STREETS	REQUIRED	PROVIDED
BUILDING SETBACKS		
FRONT (MAX.)	10 FT.	10 FT.
SIDE (MIN.)	10 FT.	>10 FT.
REAR (MIN.)	10 FT.	>10 FT.
STEPBACK (ADJACENT TO UN ZONE)	35 FT. MIN. AFTER 45' HEIGHT	35 FT.
MIN. BUILDING HEIGHT	3 STORIES	65 FT.
MAX. BUILDING HEIGHT*	77 FT. (7 STORIES)	77 FT.
MAX. LOT COVERAGE	90%	75%

* WITH BONUS STORY

PAVEMENT/LANDSCAPE LEGEND

- BITUMINOUS CONCRETE
- PORTLAND CEMENT CONCRETE
- BRICK
- MILL AND OVERLAY (SEE NOTE 2)

SEE LANDSCAPE PLAN FOR PLANTING DETAIL

CURBING LEGEND

- VERTICAL GRANITE CURB

STRIPING LEGEND

SIGNAGE, STRIPING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGARDING SIZE, INSTALLATION, LOCATION & REFLECTIVITY.

12"SL – 12" WIDTH STOP LINE

SIGN LEGEND

R7–8 12"x 18"	R7–8 12"x 18"	R5–1 30"x 30"	R6–1 6"x 18"
RESERVED PARKING	RESERVED PARKING VAN ACCESSIBLE	DO NOT ENTER	ONE WAY
1	2	3	4

BICYCLE PARKING

PARKING	REQUIRED	PROVIDED	LOCATION
RESIDENTIAL (2 SP/5 DWELLING UNITS)	4	4	COURT YARD
NON–RESIDENTIAL FIRST 100 PARKING SPACES (2 SP/10 PARKING SPACES)	20	20	BIKE STORAGE ROOM
AFTER FIRST 100 PARKING SPACES (1 SP/20 PARKING SPACES)	14	12	ON SITE
		8	GARAGE
SECURE SPACES FOR HOTEL USE	0	5	GARAGE/ENCLSR

NOTES:
1. SNOW WILL BE REMOVED DUE TO LIMITED STORAGE AREA ONSITE.
2. MILL MOUNTFORT STREET 1 1/2" DEPTH AND OVERLAY WITH SURFACE COURSE HOT MIX (12.5MM)

20 0 10 20 40
1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE · LUCAS S ANTHONY · 15250 · LICENSED PROFESSIONAL ENGINEER · 8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–SP_L1.dwg		

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Drawing Name: SITE PLAN – FIRST FLOOR

Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME

Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. C101

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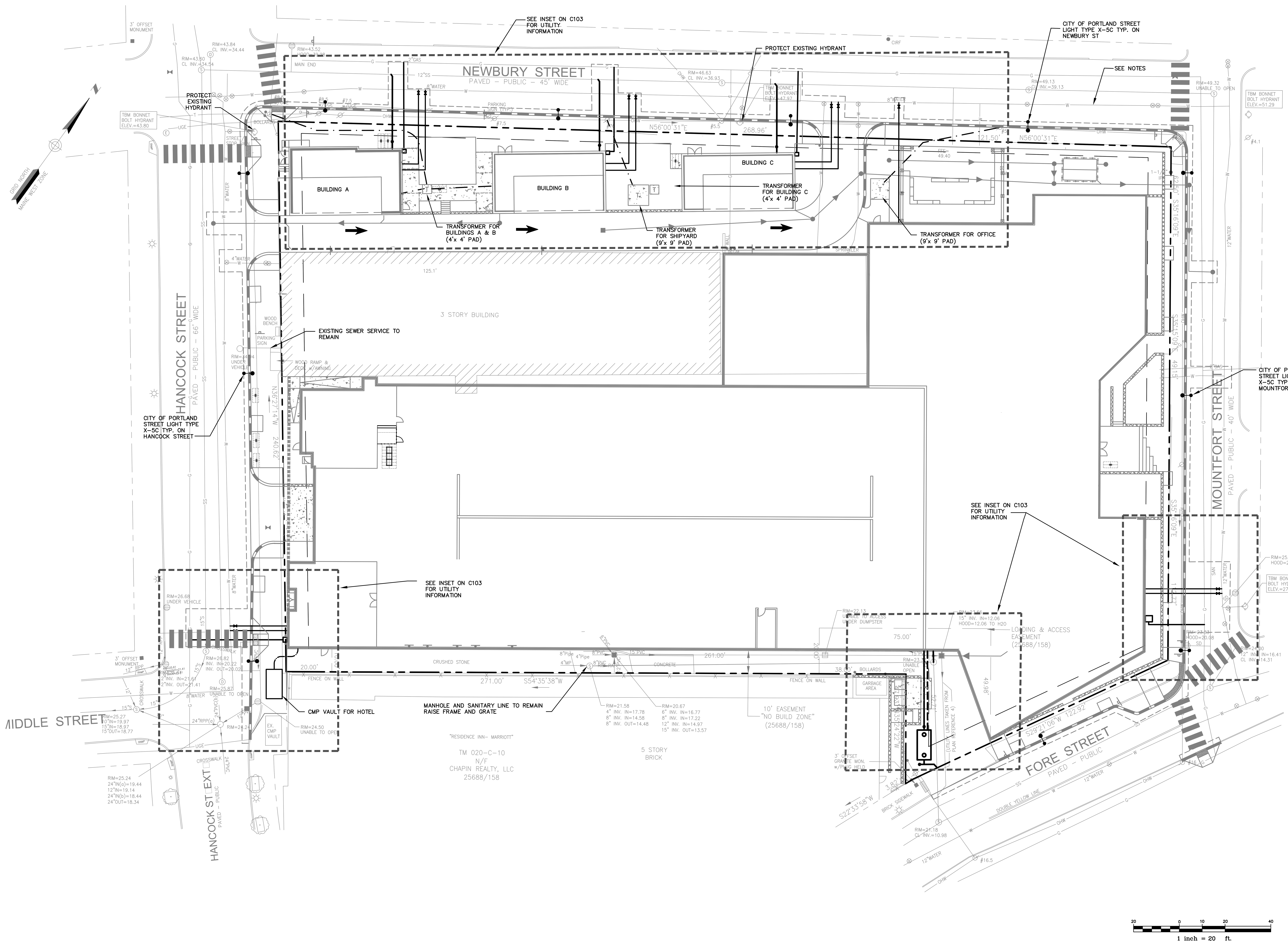

NOTES:

1. WATER MAIN IN NEWBURY STREET TO BE REPLACED BY PORTLAND WATER DISTRICT (PWD). CONTRACTOR TO COORDINATE WITH PWD PRIOR TO INSTALLING NEW WATER SERVICE CONNECTIONS ON NEWBURY STREET.
2. GREASE TRAP SIZING TO BE DETERMINED DURING BUILDING DESIGN BASED ON ANTICIPATED LOADING.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S. ANTHONY
15260
LICENSED
PROFESSIONAL ENGINEER
8/16/18

Rev.	Date	Revision
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Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018	
Checked: LSA	Scale: 1"=20'	Job No.: 3184	
File Name: 3184-SP_L1.dwg			

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Drawing Name: UTILITY PLAN
Project: Shipyard Redevelopment
Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC
470 Fore Street, Portland, ME 04101

Drawing No. C102

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NOTES:
1. PER THE CITY OF PORTLAND'S TECHNICAL STANDARD, THE CURBING ALONG ALL STREETS SHALL HAVE A 7" REVEAL.

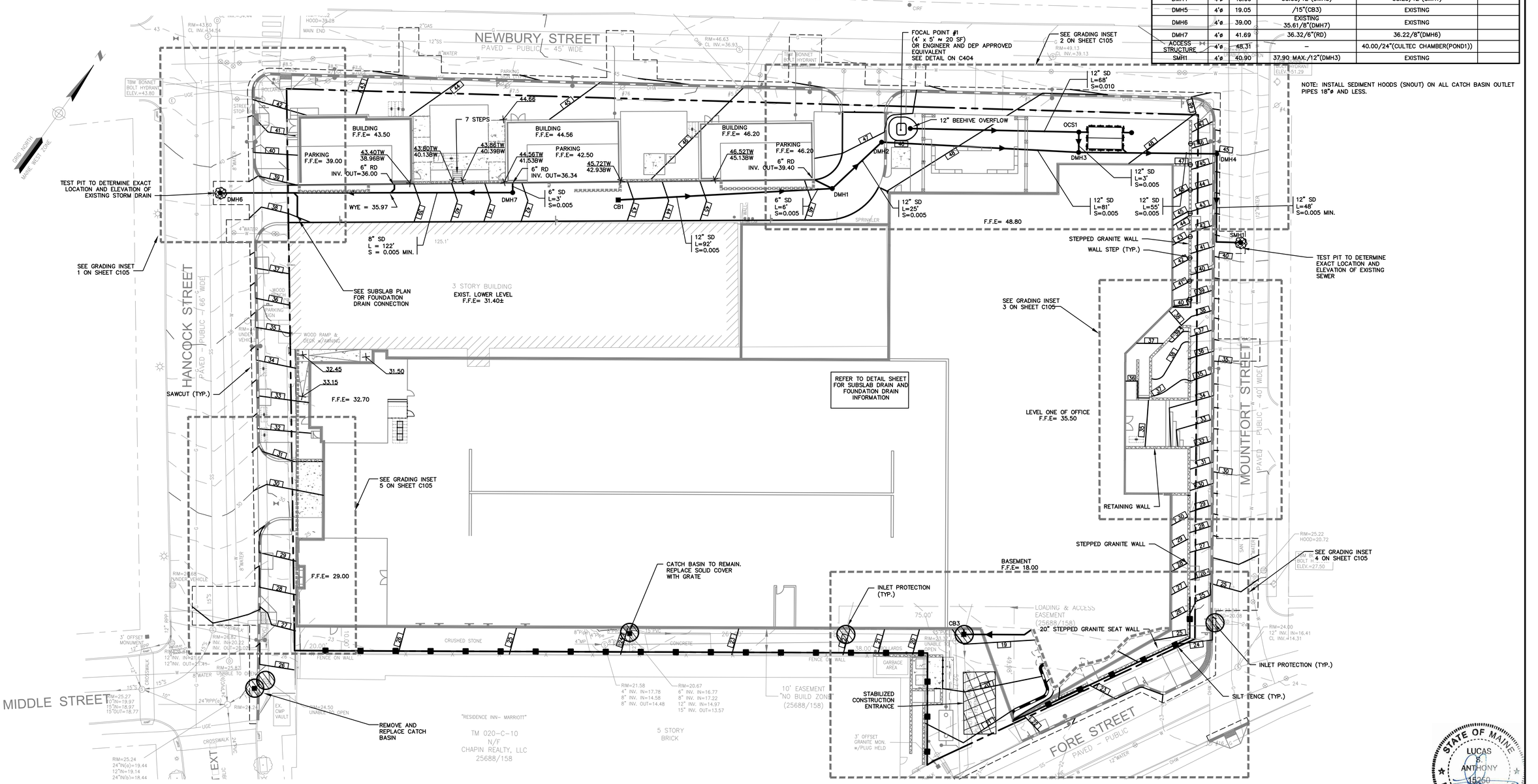
2. A FOUNDATION DRAIN SHALL BE INSTALLED AROUND THE BUILDING PERIMETER AND OUTLET INTO THE STORM DRAIN SYSTEM AS SHOWN. REFER TO SUBSLAB DRAINAGE PLAN FOR DETAILS.

3. A SUB SLAB DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH SUBSLAB DRAINAGE PLAN. THE 6" SUBSLAB DRAIN SHALL OUTLET AT THE FOUNDATION DRAIN LOCATION INTO THE STORM DRAINAGE SYSTEM AS SHOWN ON C407.

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
OCS1	6'ø	48.40	42.21/6"(BEEHIVE OVERFLOW)	42.11/24"(CULTECT CHAMBER(POND1)) 38.63/12"(DMH3)	FIELD INLET
BEEHIVE OVERFLOW	1'ø	46.85	43.00/6"(FOCAL POINT 1)	42.90/6"(OCS1)	
CB1	4'ø	42.84	–	39.84/12"(DMH1)	
CB3	4'ø	18.45	12.06/15"(EXIST.) 13.00/12" (ROOF DRAIN) 13.00/8" (SUBSURFACE DRAIN)	11.96/15"(DMH5)	EX. HOOD. VERIFY INVERT OUT
DMH1	4'ø	46.54	39.34/12"(CB1) 39.34/6" (RD)	39.24/12"(DMH2)	
DMH2	4'ø	47.18	39.12/12"(DMH1)	39.02/12"(DMH3)	
DMH3	4'ø	48.53	38.62/12"(DMH2) 38.62/12"(OCS1)	38.52/12"(DMH4)	
DMH4	4'ø	45.00	38.35/12"(DMH3)	38.25/12"(SMH1)	
DMH5	4'ø	19.05	/15"(CB3)	EXISTING	
DMH6	4'ø	39.00	EXISTING 35.61/8"(DMH7)	EXISTING	
DMH7	4'ø	41.69	36.32/6"(RD)	36.22/8"(DMH6)	
ACCESS STRUCTURE	4'ø	48.31	–	40.00/24"(CULTEC CHAMBER(POND1))	
SMH1	4'ø	40.90	37.90 MAX./12"(DMH3)	EXISTING	

NOTE: INSTALL SEDIMENT HOODS (SNOUT) ON ALL CATCH BASIN OUTLET PIPES 18"ø AND LESS.



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STATE OF MAINE
LUCAS S ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

Rev.	Date	Revision
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Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–GRADING.dwg		

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Drawing Name: GRADING, DRAINAGE, & EROSION CONTROL PLAN
Project: Shipyard Redevelopment
Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC
470 Fore Street, Portland, ME 04101

Drawing No. C104

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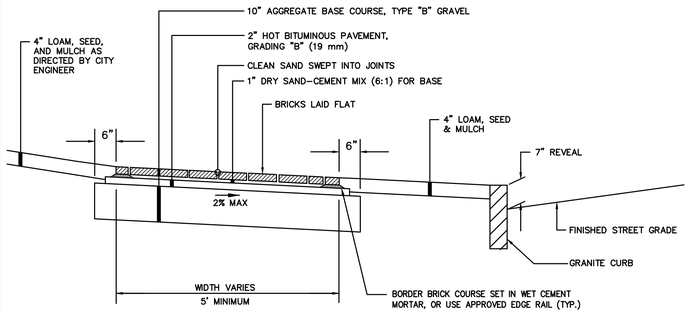
BRICKS TO BE USED:

NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA.
LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR /MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS.
SPECIFICATION NUMBER:
"VERMONT BACKER BRICK",
ITEM NUMBER # VBBB

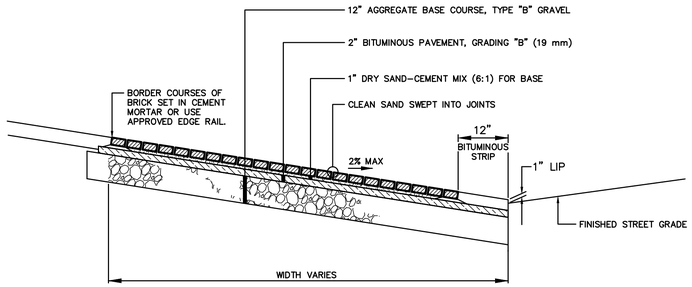


BRICK SIDEWALK WITH BITUMINOUS BASE
NOT TO SCALE

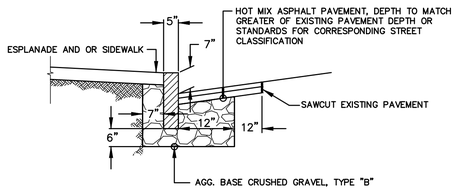
BRICKS TO BE USED:

NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA.
LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

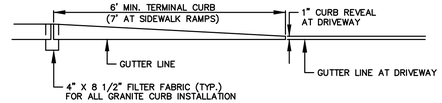
REPAIR /MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS.
SPECIFICATION NUMBER:
"VERMONT BACKER BRICK",
ITEM NUMBER # VBBB



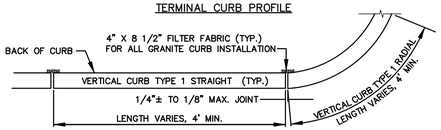
BRICK DRIVEWAY APRON WITH BITUMINOUS BASE
NOT TO SCALE



VERTICAL GRANITE CURB CROSS SECTION

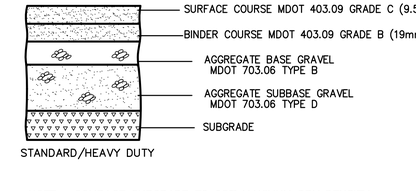


TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW

VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS
NOT TO SCALE

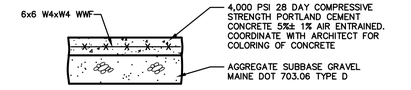


STANDARD/HEAVY DUTY

NOTE: COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557

THICKNESS OF LAYERS	
LAYERS	
SURFACE COURSE MDOT 403.210 (12.5mm)	1 1/2"
BINDER COURSE MDOT 403.210 (19mm)	2 1/2"
AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B	3"
AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D	21"

BITUMINOUS PAVEMENT SECTION
N.T.S.



NOTE:
COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557

THICKNESS OF LAYERS	
STANDARD	LAYERS
5 1/2"	PORTLAND CEMENT CONCRETE
9"	AGGREGATE SUBBASE GRAVEL MAINEDOT 703.06 TYPE D

NOTE:

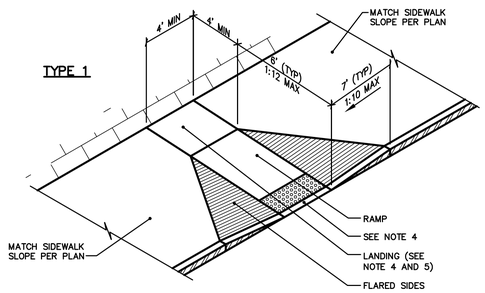
WHERE NON-FROST SUSCEPTIBLE SOILS (I.E. LESS THAN 10% PASSING THE NO. 200 SIEVE) ARE FOUND NOT TO BE PRESENT BENEATH THE BOTTOM OF THE PAVEMENT SECTION, THEN THESE SOILS SHOULD BE REPLACED WITH NON-FROST SUSCEPTIBLE SOILS TO A MINIMUM DEPTH OF 18 INCHES BELOW DESIGN SOIL SUBGRADE.

COMPACTOR PAD SECTION
NOT TO SCALE

NOTE:

1. CURB RAMP LENGTHS ARE BASED ON SEVEN (7) INCH CURB REVEAL HEIGHT AND NO RUNNING SLOPE. RAMP LENGTHS SHALL BE ADJUSTED AS NECESSARY TO ACCOMMODATE VARYING CURB REVEAL HEIGHTS AND TO MATCH RUNNING SLOPES OF ADJACENT ROADWAY AND SIDEWALK SLOPES TO MAINTAIN A RAMP THAT DOES NOT EXCEED THE MAXIMUM RAMP SLOPE OF 1:12.
2. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES AND SHALL HAVE A BASE DIAMETER OF 0.9 INCHES (23 mm) MINIMUM AND 1.4 INCHES (36 mm) MAXIMUM; A TOP DIAMETER OF 50 PERCENT OF THE BASE DIAMETER MINIMUM TO 65 PERCENT OF THE BASE DIAMETER MAXIMUM AND A HEIGHT OF 0.2 INCHES (5.1 mm), A CENTER-TO-CENTER SPACING OF 1.6 INCHES (41mm) MINIMUM AND 2.4 INCHES (61mm) MAXIMUM; AND A BASE-TO-BASE SPACING OF 0.65 INCHES (17mm) MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.
3. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT.
4. ALL ACCESSIBLE ROUTE SIDEWALKS INTERSECTING ROADWAYS, DRIVEWAYS, OR OTHER VEHICULAR CROSSINGS REQUIRE DETECTABLE WARNINGS. DETECTABLE WARNING ZONES SHALL BE INSTALLED SEVEN (7) INCHES (OR THE HORIZONTAL THICKNESS OF THE ADJACENT CURB) FROM THE FLOW LINE OF THE CURB, EXTEND INTO THE SIDEWALK FOR A 24" DEPTH, AND COVER THE COMPLETE WIDTH OF THE SIDEWALK OR RAMP AREA. DETECTABLE WARNING ZONES SHALL CONFORM TO THE SLOPE REQUIREMENTS OF THE RAMP, LANDING, OR ACCESSIBLE ROUTE AS DEFINED IN THE SPECIFIED DETAIL. DETECTABLE WARNINGS SHALL NOT BE INSTALLED IN FLARED SIDES, IF THE RAMP INCLUDES FLARED SIDES.
5. ALL LANDING AREAS SHALL BE 4 FEET WIDE BY 4 FEET LONG (MINIMUM DIMENSIONS). THE SLOPE OF THE LANDING AREA SHALL NOT EXCEED A 1:48 IN ANY DIRECTION.
6. ALL ACCESSIBLE ROUTE SLOPES ADJOINING THE LANDING AREA, EXCLUDING THE CURB RAMP, SHALL NOT EXCEED A SLOPE OF 1:20 UNLESS OTHERWISE NOTED.

TYPE 1



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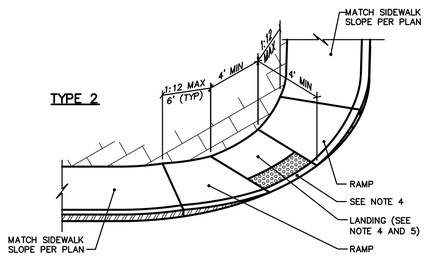

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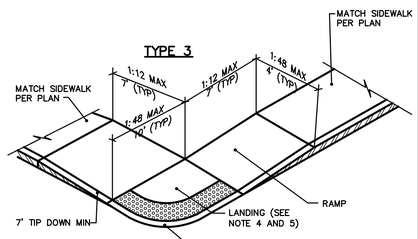
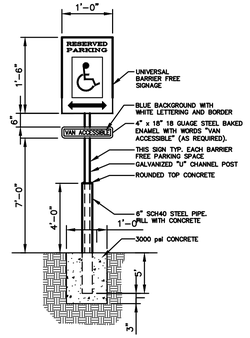
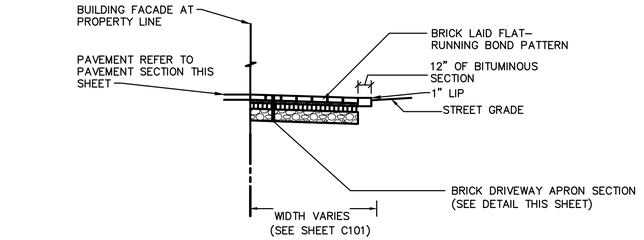


BARRIER FREE RAMP
N.T.S.

INTERNATIONAL BARRIER FREE SYMBOL
NOT TO SCALE



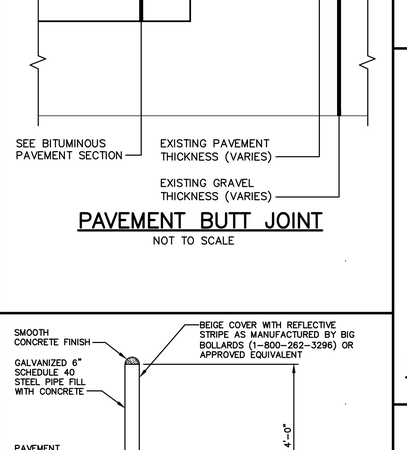
BARRIER FREE PARKING SIGN
NOT TO SCALE



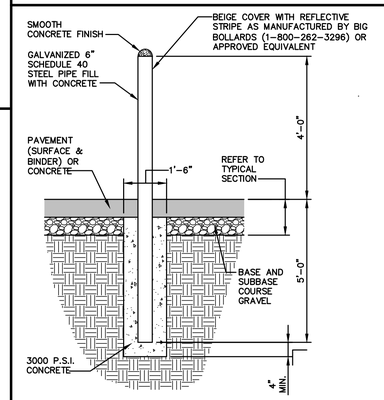
BRICK/ASPHALT JOINT
N.T.S.

NOTE:

1. GRIND EXISTING PAVEMENT, TO 1 1/2" DEPTH.

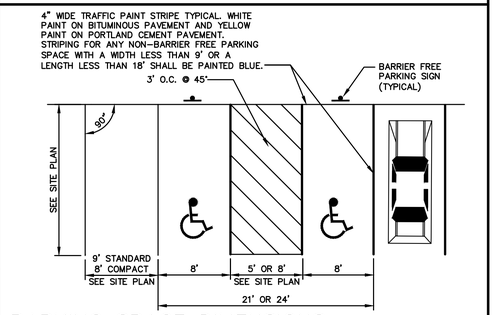


PAVEMENT BUTT JOINT
NOT TO SCALE

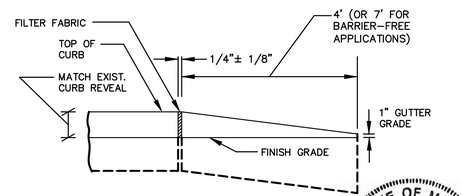


GUARD POST
NOT TO SCALE

4" WIDE TRAFFIC PAINT STRIPE TYPICAL. WHITE PAINT ON BITUMINOUS PAVEMENT AND YELLOW PAINT ON PORTLAND CEMENT PAVEMENT. STRIPING FOR ANY NON-BARRIER FREE PARKING SPACE WITH A WIDTH LESS THAN 9' OR A LENGTH LESS THAN 18' SHALL BE PAINTED BLUE.



PARKING SPACE DIMENSIONS
NOT TO SCALE



TYPICAL TIPDOWN CURB INSTALLATION
N.T.S.

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STATE OF MAINE
LUCAS S. ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

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Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: NTS	Job No.: 3184
File Name: 3184-DETAILS.dwg		

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Drawing Name: SITE DETAILS
Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME
Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. C401

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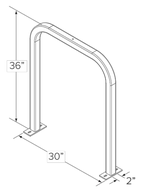
DOWNTOWN RACK
Submittal Sheet

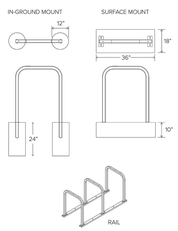


CAPACITY 2 Bikes

MATERIALS
- ☐ **Standard** 2" x 2" x .188" square tube - mild steel 2" x 2" x .120" square tube - stainless steel
- ☐ **Lightweight** *Powder coat or galvanized only* 2" x 2" x .083" square tube - mild steel

FINISHES
- ☐ **Galvanized** An after fabrication hot dipped galvanized finish is our standard option.
- ☐ **Powder Coat** Our powder coat finish assures a high level of adhesion and durability by following these steps: 1. Sandblast 2. Epoxy primer electrostatically applied 3. Final thick TGIC polyester powder coat
- ☐ **Thermoplastic** In addition to an increased thickness (8-10mils), the thermoplastic finish covers a galvanized layer and offers superior impact resistance over powder coating.
- ☐ **PVC Dip** (plastisol) Other colors available by special order (minimum orders apply)
- ☐ **Stainless** Stainless Steel: 304 grade stainless steel material finished in either a high polished shine or a satin finish.

MOUNT OPTIONS



- ☐ **In-ground** In ground mount is embedded into concrete base. Specify in ground mount for this option.
- ☐ **Surface** Foot Mount has two 2.5"x6"x.25" feet with two anchors per foot. Specify foot mount for this option.
- ☐ **Rail** Rail Mounted Downtown Racks are bolted to two parallel rails which can be left freestanding or anchored to the ground. Rails are heavy duty 3"x1.4"x3/16" thick galvanized mounting rails. Specify rail mount for this option.

OPTIONAL LEAN BAR
- ☐ **Add Lean Bar**

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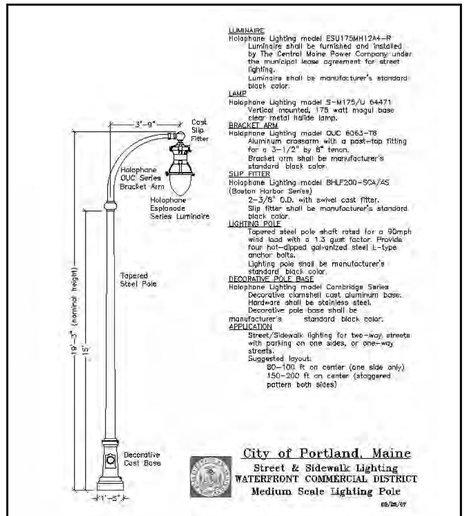


DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	MUNICIPAL STREET LIGHTING STANDARDS SECTION X	FIGURE: X-5C
REVISED:	EASTERN WATERFRONT DISTRICT MEDIUM SCALE LIGHTING POLE		

180

DATE: OCTOBER 2017
REVISED:

SIDEWALK RAMP DETECTABLE WARNING PANEL

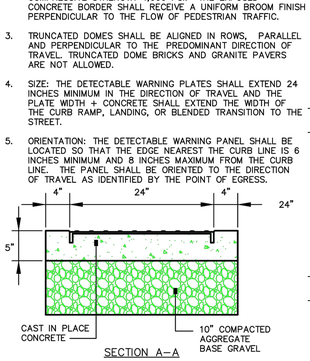
CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL

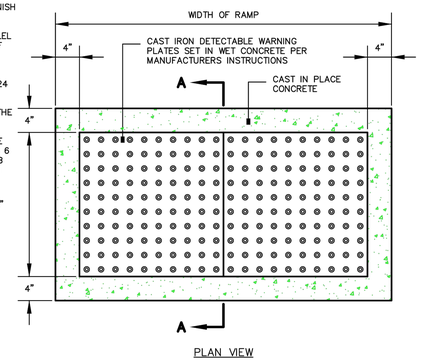
TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I

FIGURE: I-7

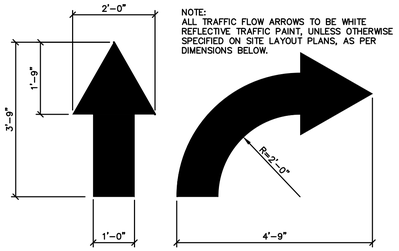
NOTES:

1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE PLATE WIDTH + CONCRETE SHALL EXTEND THE WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.

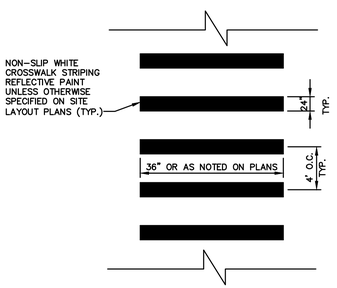




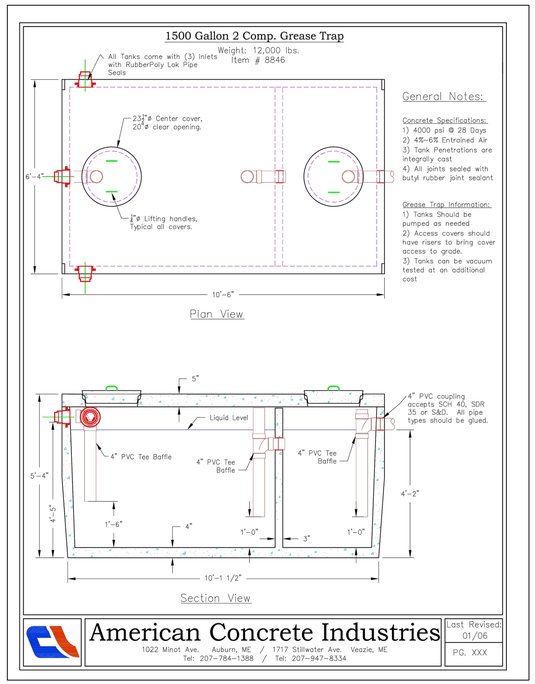
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE



TRAFFIC FLOW ARROW
N.T.S.

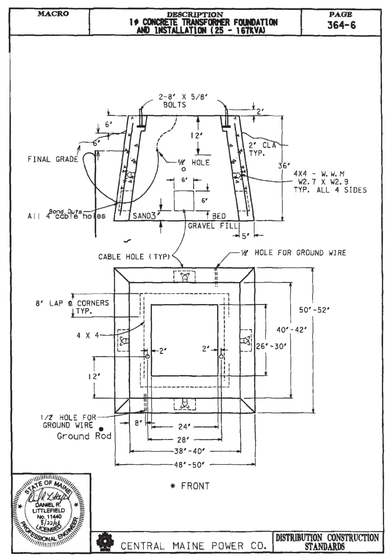


CROSSWALK STRIPING
NOT TO SCALE



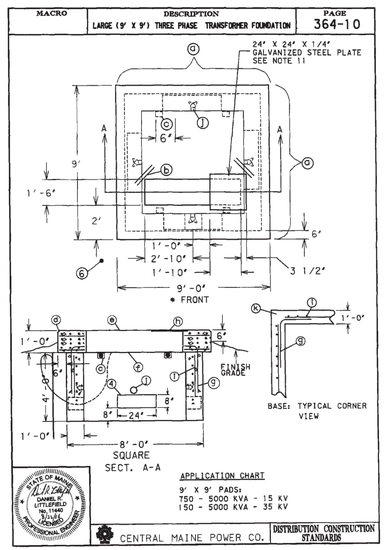
XII. ILLUSTRATION No. 23

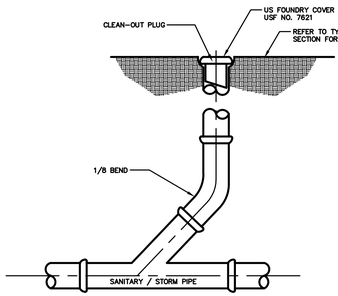
MACRO	DESCRIPTION	PAGE
	1Φ CONCRETE TRANSFORMER FOUNDATION AND INSTALLATION (25 - 167KVA)	364-6



XII. ILLUSTRATION No. 25

MACRO	DESCRIPTION	PAGE
	LARGE (9' X 9') THREE PHASE TRANSFORMER FOUNDATION	364-10





6" CLEANOUT
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE LUCAS S ANTHONY 15250 LICENSED PROFESSIONAL ENGINEER 8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: NTS	Job No.: 3184
File Name: 3184-DETAILS.dwg		

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Drawing Name:	SITE AND LIGHTING DETAILS
Project:	**Shipyard Redevelopment** Newbury Street, Portland, ME
Client:	**86 Newbury Street, LLC** 470 Fore Street, Portland, ME 04101

Drawing No. C402

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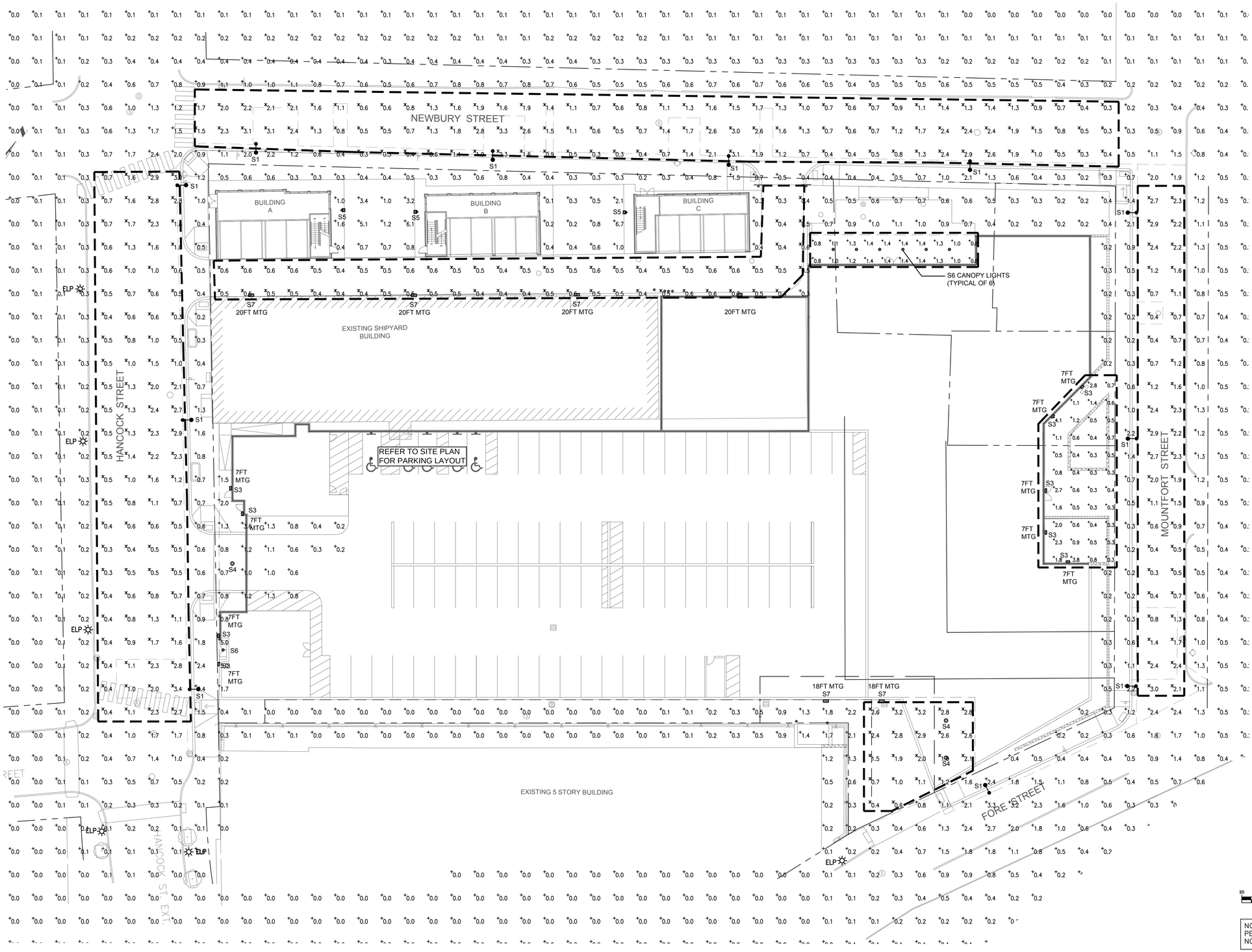
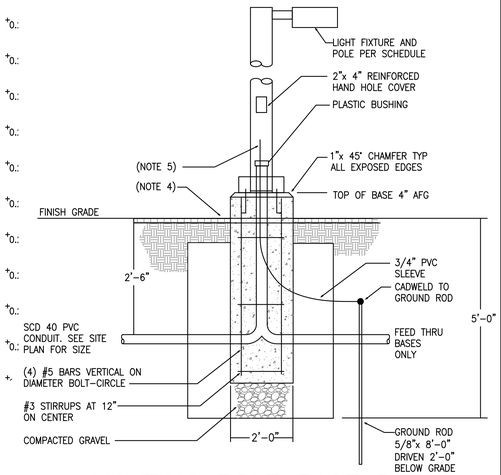


GENERAL NOTES:

1. CALCULATIONS REPRESENT MAINTAINED FOOTCANDLE LEVELS AT GRADE.
2. LIGHT LOSS FACTOR USED IN CALCULATION: 0.9.
3. LIGHTING FIXTURES:
   - TYPE S1 STANDARD CITY OF PORTLAND STREET LIGHT, TYPE X-5C HOLOPHANE #ESL2 P10S 30K AS BK TG 3 P R (FIXTURE) HOLOPHANE #OUC 6060-T6 (BRACKET ARM) HOLOPHANE #BHLF200-5CA/AS (SPLIT FITTER) HOLOPHANE CAMBRIDGE SERIES (SECORATIVE BASE) HOLOPHANE TAPED STEEL 19'-3" POLE
   - TYPE S3 CAMMAN LIGHTING #OW650-11-LN-35K-1-WA-PAL DECORATIVE WALL MOUNTED MOUNTED LED FIXTURE ALUMINUM HOUSING AND TRIM AND WHITE ACRYLIC DIFFUSER. FINISH: ALUMINUM PAINT. 0% UPLIGHT DISTRIBUTION
   - TYPE S4 McGRAW EDISION #TT-C2-LED-E1-DL-DP-7050 PARKING GARAGE LED LIGHT WITH ALUMINUM HOUSING ACRYLIC LENS AND DRIVE LANE DISTRIBUTION OPTICS. FINISH: DARK PLATINUM.
   - TYPE S5 BEGA #99 868 BLK SMALL DECORATIVE WALKWAY LIGHT WITH TEMPERED GLASS LENS MOUNTED ON A 89.5" TALL POLE. FINISH: BLACK 0% UPLIGHT DISTRIBUTION
   - TYPE S6 HALO #SMD6R6935WHDM LOW PROFILE DIRECT MOUNT DOWNLIGHT WITH POLYCARBONATE FRAME AND HIGH IMPACT DIFFUSE LENS. FINISH: WHITE
   - TYPE S7 McGRAW EDISION #ISC-AF-450-LED-E1-RW-BK-7050 DECORATIVE WALL MOUNTED LED LIGHT WITH ALUMINUM HOUSING AND RECTANGULAR WIDE OPTICAL DISTRIBUTION. FINISH: BLACK 0% UPLIGHT DISTRIBUTION
4. CALCULATED GRID STATISTICS
   - GRID A – BACK ALLEY AVE: 0.5 MAX: 0.7 MIN: 0.3 MAX:MIN 2.3:1 AVE:MIN 1.7:1
   - GRID B – HANCOCK ST AVE: 1.2 MAX: 3.4 MIN: 0.3 MAX:MIN 11.3:1 AVE:MIN 4.0:1
   - GRID C – MOUNTFORT ST AVE: 1.5 MAX: 3.0 MIN: 0.3 MAX:MIN 10.0:1 AVE:MIN 5.0:1
   - GRID D – NEWBURY ST AVE: 1.3 MAX: 3.3 MIN: 0.3 MAX:MIN 11.0:1 AVE:MIN 4.3:1
   - GRID E – OFFICE BUILDING ENTRANCE AVE: 1.0 MAX: 4.1 MIN: 0.3 MAX:MIN 13.7:1 AVE:MIN 3.3:1
   - GRID F – OFFICE BUILDING CANOPY ENTRANCE AVE: 1.2 MAX: 1.4 MIN: 0.8 MAX:MIN 1.8:1 AVE:MIN 1.5:1
   - GRID G – FORE ST GARAGE ENTRANCE ENTRANCE AVE: 2.0 MAX: 3.2 MIN: 0.4 MAX:MIN 8.0:1 AVE:MIN 5.0:1

LIGHTING POLE BASE DETAIL NOTES:

1. POLE BASE MAY BE PRECAST.
2. PAINT EXPOSED CONCRETE WITH (2) TWO COATS OF BRONZE MASONRY PAINT.
3. CONCRETE WITH AIR ENTRAINED AGENT. 4000 P.S.I. AFTER 30 DAYS.
4. COORDINATE TYPES AND REQUIREMENTS OF SIDEWALKS WITH GENERAL CONTRACTOR.
5. #4 BARE COPPER GROUND WIRE. ATTACH TO POLE PER MANUFACTURES INSTRUCTIONS.
6. BOLT COVER, BOLT PATTERN TEMPLATE, ANCHOR BOLTS, NUTS, WASHERS AND SHIMS BY POLE SUPPLIER.



2 / E0.00 LIGHTING POLE BASE DETAIL

SCALE: NOT TO SCALE

1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

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STATE OF MAINE — STEVEN L. MCMAHON #8468 — LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
2	5/30/18	REVISED PER CITY STAFF COMMENTS
1	5/14/18	REVISED PER UPDATED ARCHITECTURAL PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	4/10/18	LSA

Design: CEH	Draft:	Date: APR 2018
Checked: LSA	Scale:	Job No.: 3184
File Name: 4215 E0.0 & E0.1.dwg		

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Drawing Name:	SITE LIGHTING PHOTOMETRIC PLAN
Project:	Shipyard Redevelopment Newbury Street, Portland, ME
Client:	86 Newbury Street, LLC 470 Fore Street, Portland, ME 04101

Drawing No. E0.0

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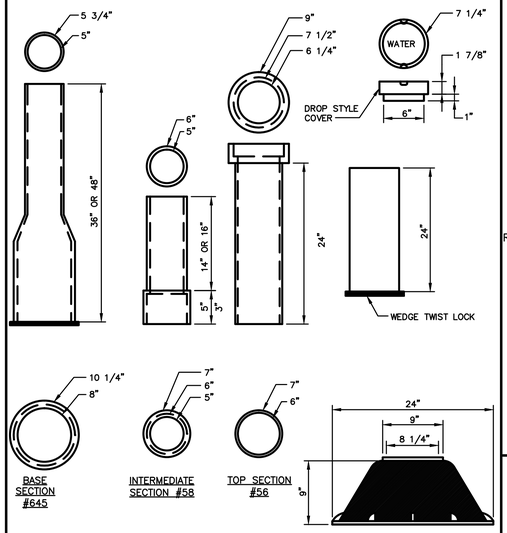
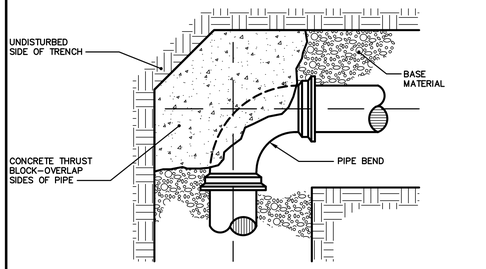


NOTE:
BUFFALO VALVE BOXES
NUMBERS ARE FOR 5.25"

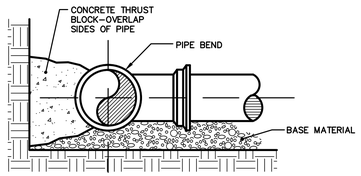
VALVE BOXES

N.T.S.



NOTE: KEEP CONCRETE CLEAR OF PIPE JOINT, NUTS AND BOLTS

PLAN VIEW



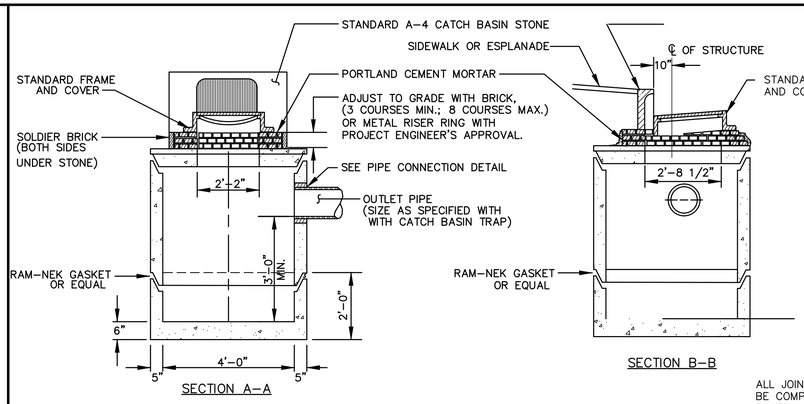
SECTION

THRUST/RETAINER GLAND SCHEDULE		
1/4 BEND	(90°)	USE POURED–IN–PLACE THRUST BLOCK w/RETAINERS
1/8 BEND	(45°)	THRUST BLOCK w/RETAINERS
1/16 BEND	(22 1/2°)	THRUST BLOCK
1/32 BEND	(11 1/4°)	THRUST BLOCK

THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON–SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.

THRUST BLOCK PLACEMENT ON BENDS

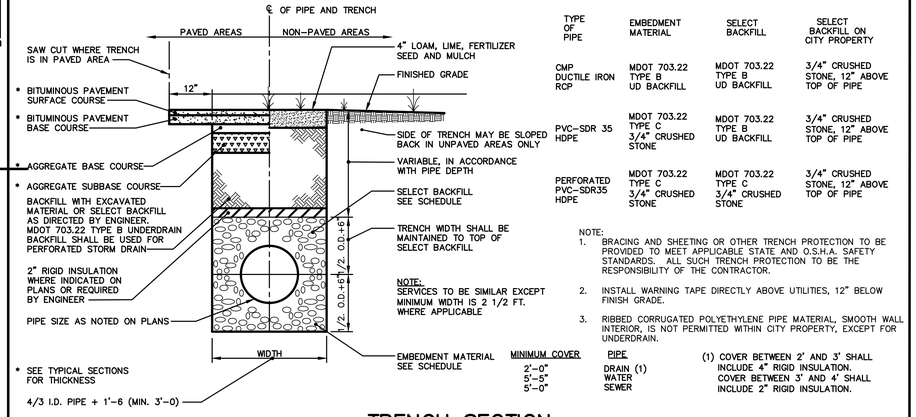
N.T.S.



PRECAST CONCRETE CATCH BASIN – TYPE "E"

NOT TO SCALE

BRICK/JOINT DETAIL



TRENCH SECTION

NOT TO SCALE

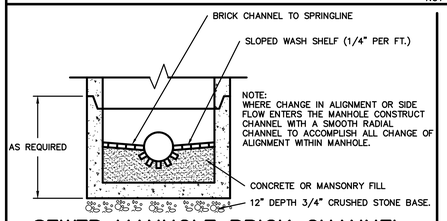
SCHEDULE OF TRENCH BACKFILL

TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL	SELECT BACKFILL ON CITY PROPERTY
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL	3/4" CRUSHED STONE, 12" ABOVE TOP OF PIPE
PVC–SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL	3/4" CRUSHED STONE, 12" ABOVE TOP OF PIPE
PERFORATED PVC–SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	3/4" CRUSHED STONE, 12" ABOVE TOP OF PIPE

NOTE:
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.
3. RIBBED CORRUGATED POLYETHYLENE PIPE MATERIAL, SMOOTH WALL INTERIOR, IS NOT PERMITTED WITHIN CITY PROPERTY, EXCEPT FOR UNDERDRAIN.

PIPE	MINIMUM COVER
DRAIN (1)	2'–0"
WATER	5'–5"
SEWER	5'–0"

(1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.



SEWER MANHOLE BRICK CHANNEL

N.T.S.

THE BEARING SURFACE OF THE THRUST BLOCK SHALL BE THE SURFACE AREA OF THE THRUST BLOCK WHICH IS CAST AGAINST THE TRENCH WALL. THE BEARING SURFACE SHALL NOT EXCEED THE FOLLOWING LOADINGS:

IN–SITU CONDITION	ALLOWABLE
BEDROCK	3,000 psf
SAND OR OUTWASH DEPOSITS	1,500 psf
OTHER SOILS	1,000 psf

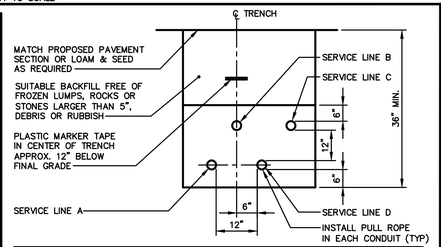
THE THRUST SHALL BE COMPUTED ON THE BASIS OF 150 psi x THE CROSS SECTIONAL AREA OF THE PIPE. FOR EXAMPLE, A THRUST BLOCK FOR A 1/4 BEND ON AN 8" WATER MAIN BEARING AGAINST CLAY WOULD REQUIRE A BEARING SURFACE OF 7.5 s.f.

$$\frac{150 \text{ psi} \times 50 \text{ sq. in.}}{1{,}000 \text{ psf}} = 7.5 \text{ s.f.}$$

INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.

THRUST BLOCK NOTES

N.T.S.



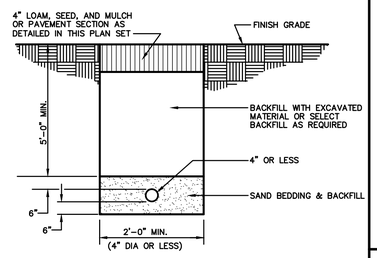
CONDUIT TYPE SCHEDULE

SERVICE	CONDUIT SIZE	GRASS & PAVED AREAS	UTILITY	REMARKS
A	2–5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTES
B	2–4"	SCHEDULE 40	TELEPHONE	SEE NOTES
C	2–4"	SCHEDULE 40	CABLE	SEE NOTES
D	2–4"	SCHEDULE 40 PVC ELECTRICAL GRADE	SPARE	SEE NOTES

NOTES:
1. ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10" ABOVE GRADE AT POLE WITH STAND–OFF BRACKETS.
2. MAXIMUM PULLING DISTANCE BETWEEN HANDHOLES IS 600'. FOR CONDUIT D INSTALL KEVLER PULL STRING BETWEEN ALL HANDHOLES.
3. FOR CONDUIT D THERE SHALL BE 5–1" RIGID INNER–DUCTS INSTALLED, SMOOTH WALL OR CORRUGATED INNER–DUCTS ARE ACCEPTABLE.

UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE

NOT TO SCALE



SEE NOTE 3 IN THRUST BLOCK NOTES DETAIL

WATER SERVICE TRENCH SECTION

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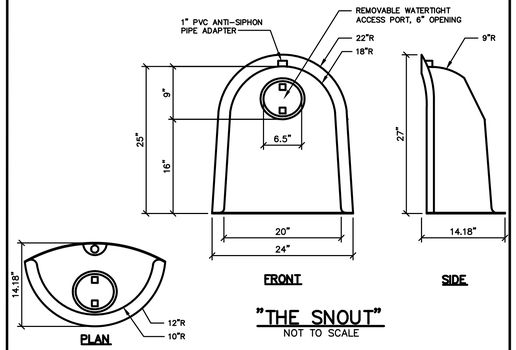
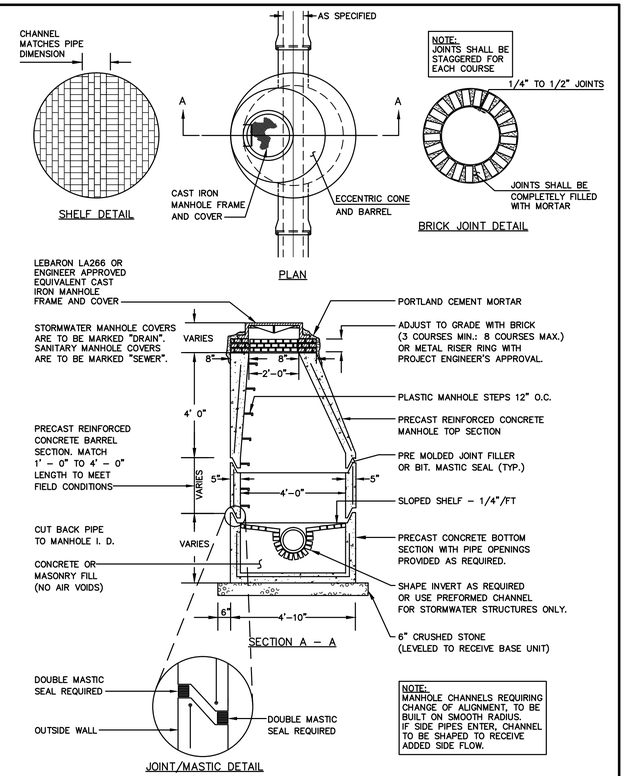


"THE SNOUT"

NOT TO SCALE



PRECAST CONCRETE MANHOLE

NOT TO SCALE

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVED EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C–32–63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CASCO TRAP. SEE FIGURE II–09.

STATE OF MAINE
LUCAS S ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: NTS	Job No.: 3184
File Name: 3184–DETAILS.dwg		

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Drawing Name:	DRAINAGE & UTILITY DETAILS
Project:	Shipyard Redevelopment Newbury Street, Portland, ME
Client:	86 Newbury Street, LLC 470 Fore Street, Portland, ME 04101

Drawing No.
C403

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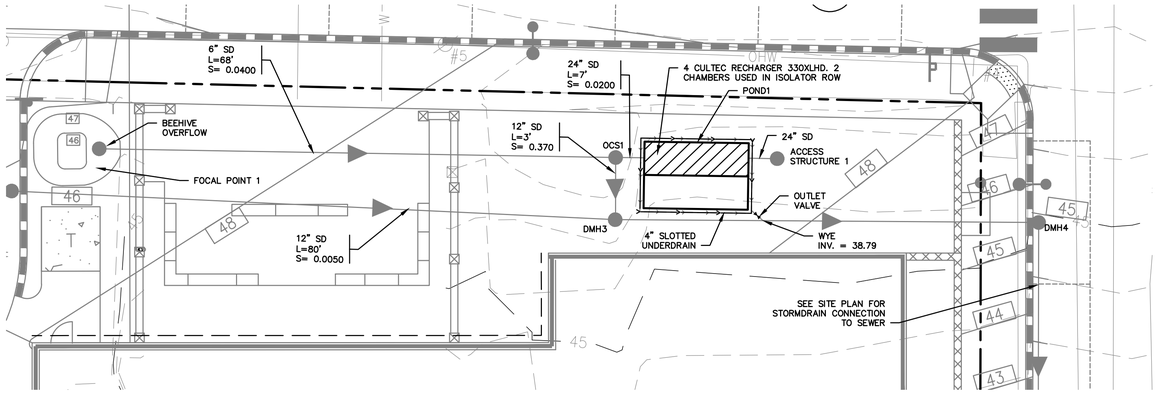


SUBSURFACE CULTEC PLAN

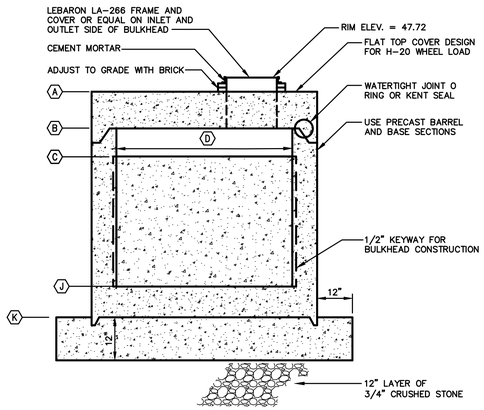
SCALE: 1" = 10'

CONSTRUCTION OVERSIGHT

1. THE FOCAL POINT SYSTEM SHALL BE INSTALLED UNDER THE SUPERVISION OF A MANUFACTURERS REPRESENTATIVE.
2. ALL PLANT MATERIAL SHALL BE APPROVED BY THE FOCAL POINT REPRESENTATIVE.
3. CONTRACTOR SHALL FLOOD POND1 TO ELEVATION 42.7 WITH OUTLET VALVE CLOSED, AND THEN ADJUST OUTLET VALVE TO ACHIEVE A 24–48 HOUR RELEASE RATE.

DRAINAGE STRUCTURE SCHEDULE

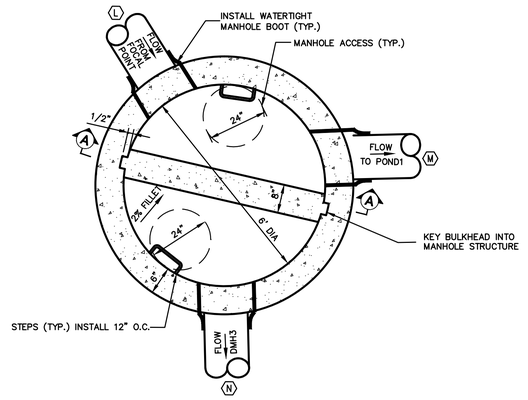
STRUCTURE	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
CULTECT CHAMBER (POND1)	330XLHD	–	40.00/24"(OCS1) 40.00/24"(ACCESS STRUCTURE 1)	39.50/4"(12"SD)	4 CHAMBERS– 2 CHAMBERS REQUIRED FOR ISOLATOR ROW
OCS1	6'ø	48.40	42.21/6"(BEEHIVE OVERFLOW)	42.11/24"(CULTECT CHAMBER(POND1)) 38.63/12"(DMH3)	SEE DETAILS
BEEHIVE OVERFLOW	1'ø	46.85	43.00/6"(FOCAL POINT 1)	42.90/6"(OCS1)	1'DIA. NYLOPLAST STRUCTURE
DMH3	4'ø	48.53	39.62/12"(DMH2) 39.62/12"(OCS1)	39.52/12"(DMH4)	4' PRECAST CONCRETE MANHOLE
DMH4	4'ø	45.00	38.35/12"(DMH3)	38.25/12"(SMH1)	4' PRECAST CONCRETE MANHOLE
ACCESS STRUCTURE	4'ø	48.87	–	40.00/24"(CULTEC CHAMBER(POND1))	4' PRECAST CONCRETE MANHOLE



SECTION A–A

OUTLET CONTROL STRUCTURE 1 (OCS1)

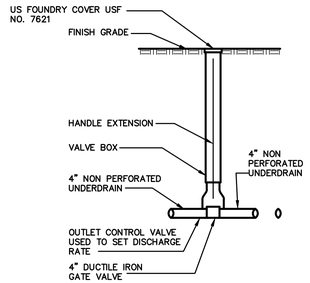
NOT TO SCALE



PLAN VIEW

6' OUTLET CONTROL STRUCTURE 1 (OCS1)

NOT TO SCALE

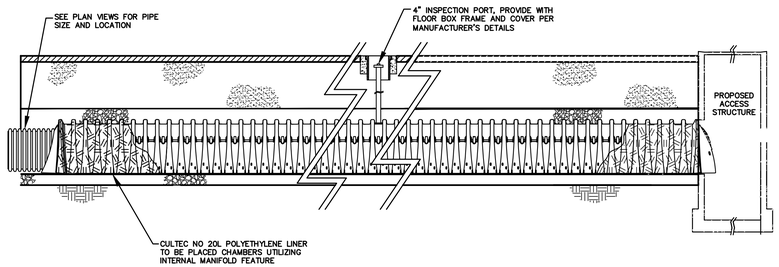


OUTLET VALVE

NOT TO SCALE

OUTLET CONTROL STRUCTURE 1

	Item Description	Elevation
		OCS 1
A	TOP OF STRUCTURE	47.22
B	UNDERSIDE TOP SLAB	46.55
C	TOP CONCRETE BULKHEAD	41.1
D	WEIR LENGTH	6'
J	MANHOLE INVERT	38.29
K	BOTTOM OF STRUCTURE	37.29
L	PIPE DIAMETER	6"
	INVERT IN	42.21
M	PIPE DIAMETER	12"
	INVERT OUT	40.14
N	PIPE DIAMETER	12"
	INVERT OUT	38.63

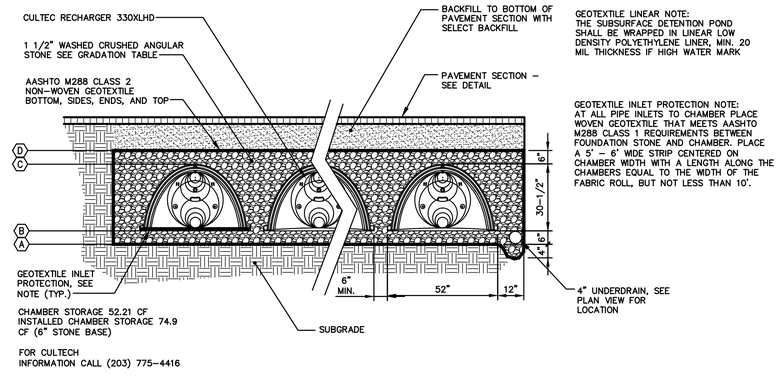


CHAMBER ISOLATOR ROW

Chambers

Structure	ELEVATION			
POND	A	B	C	D
1	39.5	40	42.54	43.04

SUBSURFACE DETENTION SYSTEMS MAY BE SUBSTITUTED WITH AN ENGINEER APPROVED EQUAL WHICH PROVIDES EQUAL DETENTION STORAGE AND WATER QUALITY TREATMENT



CHAMBER CROSS SECTION

NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE LUCAS S ANTHONY 15250 LICENSED PROFESSIONAL ENGINEER 8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH | Draft: CG | Date: JUL 2018
Checked: LSA | Scale: NTS | Job No.: 3184
File Name: 3184 – DRAINAGE DETAILS.dwg

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Drawing Name: FOCAL POINT AND DETENTION POND DETAILS
Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME
Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. C404

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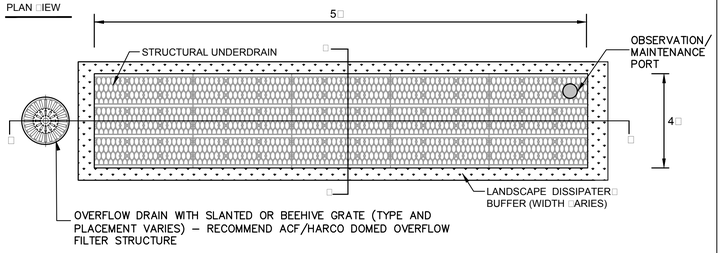
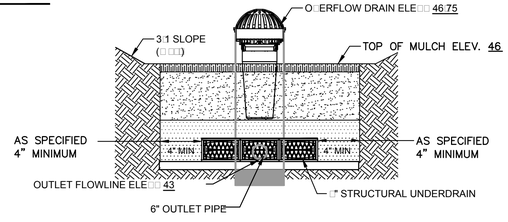
PLAN □IEW

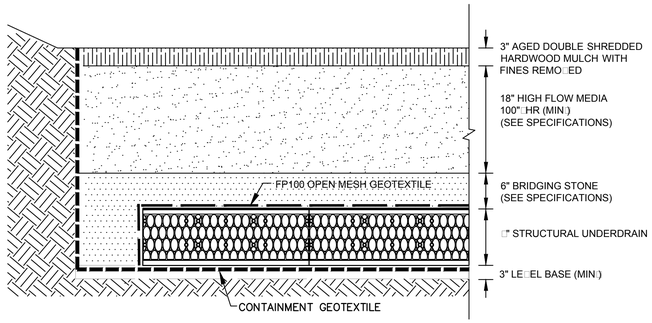


SECTION Y□Y



1

FOCALPOINT CONSTRUCTION GUIDE



FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA

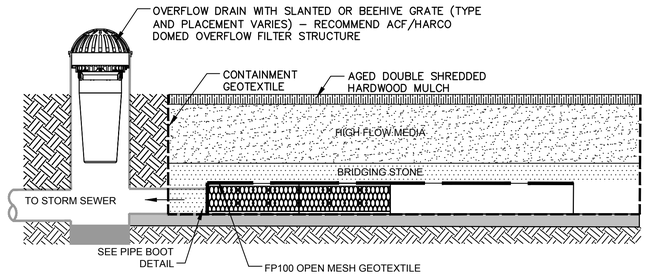
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100"PER HOUR INFILTRATION RATE.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

2

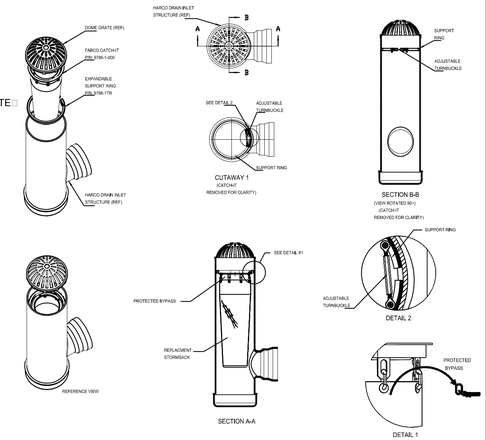
FOCALPOINT DETAILED CROSS SECTION



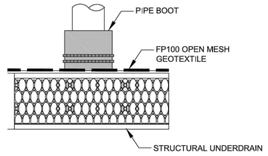
3

NOTES□
1□STORMSACK WEIGHT (EMPTY)□12 LB MAX
2□MATERIAL□
A) SHROUD□ HIGH DENSITY POLYETHYLENE (TYPICAL WALL THICKNESS □125")
B) SUPPORT HUB□CRS□ POWDER COATED
C) STORMSACK□WO□EN POLYPROPYLENE GEOTEXTILE (GEOTEX 117F)
D) HARDWARE□ALUMINUM POP□RI□ETS
3□RECOMMENDED MINIMUM □AULT DEPTH□2□IN BELOW CARTRIDGE
4□TYPICAL INSTALLATION□RAISE STORM GRATE□PUSH CATCH□IT SHROUD DOWN ON FRAME SUPPORT LEDGE UNTIL LOCKING□CLIPS CLICK IN PLACE□LOWER STORM GRATE□
5□USE ONLY WITH FABCO REPLACEABLE STORMSACK□

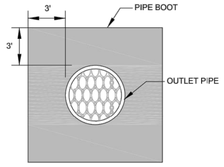
STRUCTURE DIAMETER (INCHES)	DEBRIS CAPACITY (CF)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)	TOTAL SYSTEM FLOWRATE (CFS)
12	0.77	2.2	1.2	3.4
18	1.65	2.5	1.0	3.5



OBSERVATION/ MAINTENANCE PORT CONNECTION

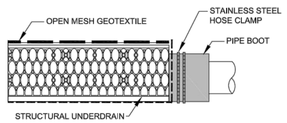


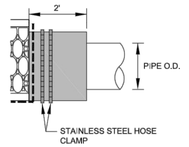
PIPE BOOT DETAIL



FRONT VIEW

OUTLET/ INLET PIPE CONNECTION





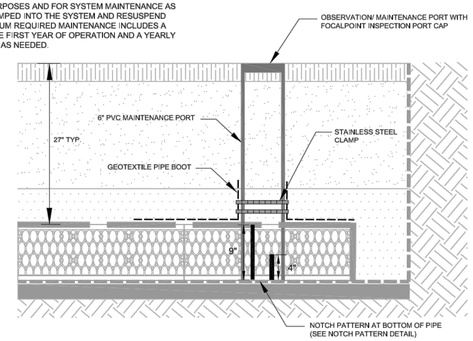
SIDE VIEW

4

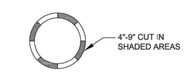
FOCALPOINT PIPE CONNECTION DETAIL

OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



PIPE NOTCH PATTERN DETA□L



5

FOCALPOINT OBSERVATION PORT DETAIL

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S. ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

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2	8/20/18	REVISED PER CITY COMMENTS
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Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH | Draft: CG | Date: JUL 2018
Checked: LSA | Scale: NTS | Job No.: 3184
File Name: 3184 – DRAINAGE DETAILS.dwg

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Drawing Name: FOCAL POINT DETAILS
Project: **Shipyard Redevelopment** Newbury Street, Portland, ME
Client: **86 Newbury Street, LLC** 470 Fore Street, Portland, ME 04101

Drawing No. C406

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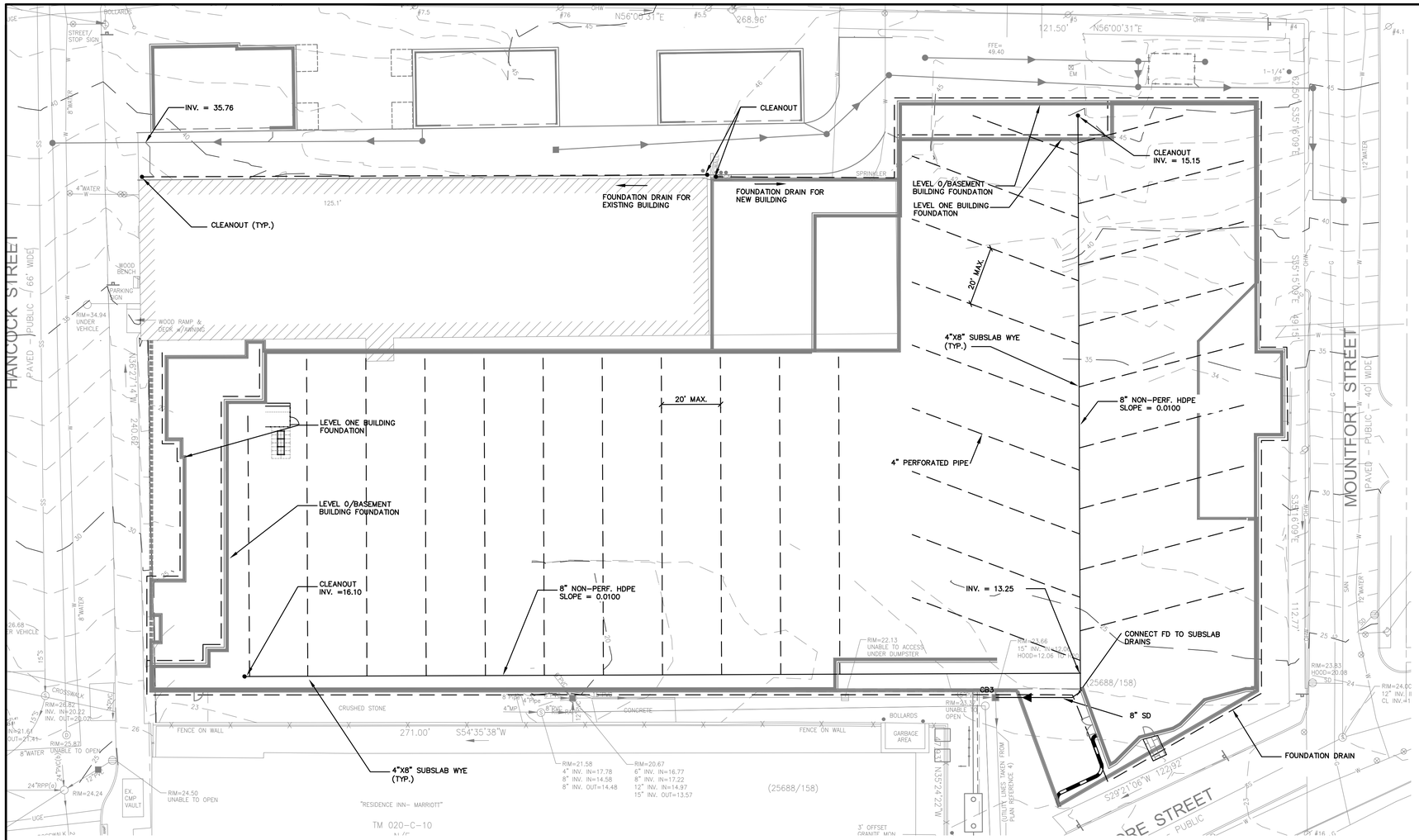
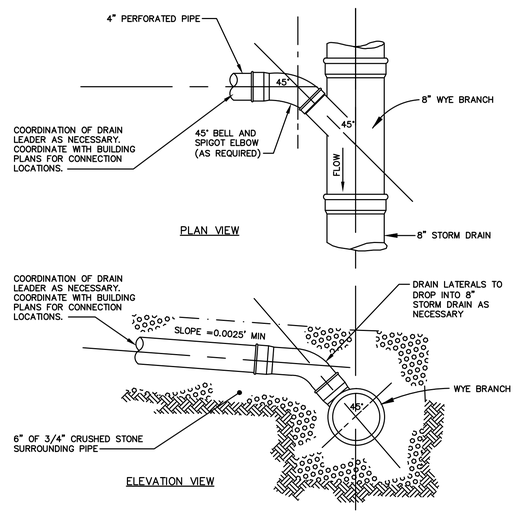


NOTE:
1. THE INSTALLATION OF THE SUBSLAB DRAIN SHALL BE COORDINATED WITH THE STRUCTURAL FOUNDATION PLAN TO AVOID ANY POTENTIAL CONFLICTS.
2. THE SUBSLAB DRAIN WILL NOT PROVIDE DRAINAGE FOR ANY FEATURE 4' BELOW THE BUILDINGS FINISH ELEVATION.
3. COORDINATE LOCATION OF EXTERIOR FOUNDATION DRAIN WITH LOCATION OF PROPERTY LINES AND EASEMENTS ON SHEET C101. PROPERTY LINES AND EASMENTS ARE NOT SHOWN ON THIS PLAN FOR CLARITY.

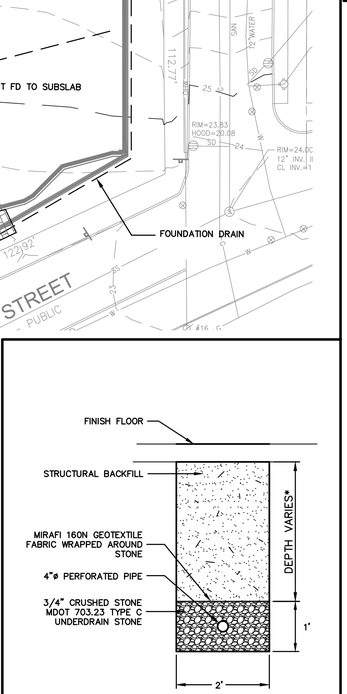
SUBSLAB DRAIN PLAN
SCALE: 1"=20'

DRAINAGE STRUCTURE SCHEDULE

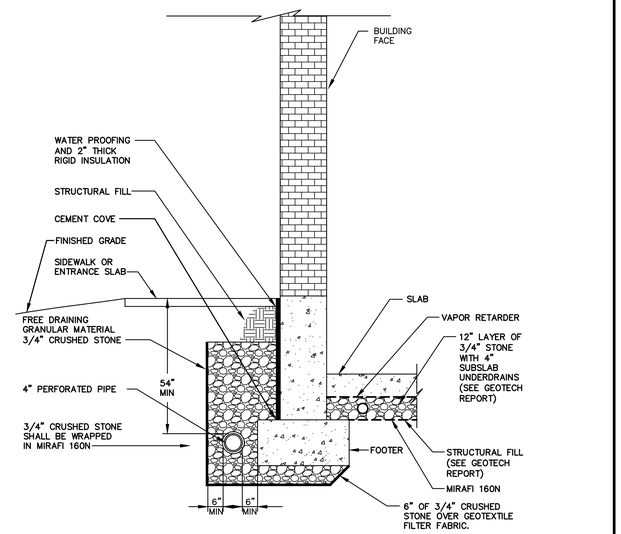
STRUCTURE	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)
CB 3	4'	18.45	12.06/15" (EXIST) 13.00/8" (ROOF DRAIN) 13.00/8" (SUBSURFACE DRAIN)	11.96/ 15" (EXIST)



4"x8" SUBSLAB WYE
NOT TO SCALE



SUBSLAB DRAIN
NOT TO SCALE
* REFER TO GEOTECHNICAL REPORT AND ARCHITECTURAL PLANS



TYPICAL FOUNDATION DRAIN DETAIL
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S ANTHONY 15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

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Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

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Drawing Name:	SUBSLAB DRAINAGE PLAN AND DETAILS
Project:	**Shipyard Redevelopment** Newbury Street, Portland, ME
Client:	**86 Newbury Street, LLC** 470 Fore Street, Portland, ME 04101

Drawing No.
C407

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1.3.5 Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (hay bales/ stone check dams/silt fence, etc.)

The following temporary and permanent erosion and sediment control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control BMPS.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Monitoring

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

The following standards must be met during construction

(a) Inspection and corrective action. Inspect disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspect these areas at least once a week as well as before and within 24 hours after a storm event (rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including standards and conditions in the permit, shall conduct the inspections.

(b) Maintenance. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If additional BMPs or significant repair of BMPs are necessary, implementation must be completed within 7 calendar days prior to any storm event (rainfall). All measures must be maintained in effective operating condition until areas are permanently stabilized.

(c) Documentation. Keep a log (report) summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

The log must be made accessible to MDEP and City of Portland staff and a copy must be provided upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

C. Temporary Erosion Control Measures

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. A crushed stone-stabilized construction entrance shall be placed at the approved drive off Fore Streets and Newbury Streets.

2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less then 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

4. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

a) Temporary stockpiles shall not be located within 50 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.

c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.

5. All denuded areas that are within 50 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

7. Hancock Street, Newbury Street, Moundfors Street, and Fore Street shall be swept to control mud and dust as necessary. Additional stone shall be added to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or approved sediment bags (such as Silt Sack). Installation details are provided in the plan set. The barriers shall be inspected after each rainfall and repairs made as necessary. Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. The barrier shall be removed when the tributary drainage area has been stabilized.

12. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications - Section 637 - Dust Control.

13. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in Temporary Erosion Control Measures paragraph 3 of this report. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

2. All storm drain pipe outlets shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized to the extent practicable prior to directing runoff to the tributary pipe or culvert.

3. Catch basins shall be provided with sediment sumps and inlet hoods (the Snout) for all outlet pipes that are 18" in diameter or less.

1.2 Implementation Schedule

The following construction sequence shall be required to insure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction of the project will commence in Fall of 2018 and be completed by Fall of 2019.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area.

1. Install stabilized construction entrance along Newbury Street and Fore Street.
2. Install perimeter silt fence and/or wood waste berms prior to commencement of demolition.
3. Perform demolition of existing site elements.
4. Foundation preparation area shall be excavated for installation of the building foundations. Building work will be on going through the remainder of the project.
5. Commence installation of drainage appurtenances.
6. Commence earthwork and grading to subgrade.
7. Commence earthwork for Subsurface Chambers.
8. Commence installation of water and sewer lines.
9. Continue earthwork and grading to subgrade as necessary for construction.
10. Complete installation of underground utilities to within 5' of the buildings.
11. Install light pole foundations and light poles.
12. Complete remaining earthwork operations.
13. Complete installation of drainage appurtenances.
14. Install sub-base and base gravel within walkways, and drives.
15. Install brick sidewalk.
16. Install base course paving for drives and concrete surfaces.
17. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
18. Install surface course paving for drives. Stripe per plan.
19. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.
20. Touch up loam and seed.

Note: All denuded areas not subject to final paving, riprap, or gravel shall be revegetated.

Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.
2. The work shall be conducted in sections which shall:
   a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.
   b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 50 feet of an undisturbed wetland and 7 days for all other areas. Areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.
   c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

1.3 Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control information is included in the plan set.

1.4 Details and Specifications

The Erosion Control details and specifications are included in the plan set.

1.5 Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to those areas in which work is expected to be under taken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway/parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

1. Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 50 feet from any natural resources.

2. Natural Resource Protection

Any areas within 50 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 50 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

3. Sediment Barriers

During frozen conditions, sediment barriers shall consist of woodwaste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

4. Mulching

An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

5. Mulching on Slopes and Ditches

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

6. Seeding

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

Standards for Timely Stabilization of Construction Sites During Winter

1. Standard for the timely stabilization of ditches and channels -- The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the applicant fails to stabilize a ditch or channel to be grass-lined by September 1, then the applicant will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch -- The applicant shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch --The applicant shall line the ditch with stone riprap by November 15. The applicant shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the applicant shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes -- The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope. If the applicant fails to stabilize any slope to be vegetated by September 1, then the applicant shall take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats -- By September 1 the applicant shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the applicant shall cover the slope with a layer of woodwaste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod -- The applicant shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the applicant pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The applicant shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with woodwaste compost -- The applicant shall place a six-inch layer of woodwaste compost on the slope by November 15. Prior to placing the woodwaste compost, the applicant shall remove any snow accumulation on the disturbed slope. The applicant shall not use woodwaste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap -- The applicant shall place a layer of stone riprap on the slope by November 15. The applicant shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

3. Standard for the timely stabilization of disturbed soils -- By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation -- By September 1 the applicant shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed soil before November 1, then the applicant shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod -- The applicant shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch -- By November 15 the applicant shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the applicant shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the applicant will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

1.4 Maintenance of facilities

The stormwater facilities will be maintained by the Applicant, 86 Newbury Street, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report.

Long-term operation/maintenance for the stormwater facilities must comply with Chapter 32 of the City of Portland Code of Ordinances. An excerpt for the annual report requirements is provided below:

The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.

Snow Storage:
Plowed snow stored on-site shall not be placed over the FocalPoint filter system. Snow shall be removed from the site by a private waste hauler.

Inspection and Maintenance Frequency and Corrective Measures :
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to observe that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Ditches, Swales, and other Open Stormwater Channels:
Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sidesloses. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Inlet/Outlet Control Structures:
Inspect structures and piping 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure.

Stormdrain Outlets:
Inspect outlets 2 times per year (preferably in Spring and Fall) to ensure that the outlets are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit Repair any erosion damage at the stormdrain outlet.

Subsurface Detention Chambers:
Inspect chambers per manufacturer's recommendation. At a minimum, inspect chambers two times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove sediment from isolator row when depth of sediment reaches three inches.

FocalPoint System:
A five year maintenance and inspection contract shall be obtained with a professional with knowledge of erosion and stormwater control including experience with the FocalPoint system. The contract shall be renewed before its expiration. At a minimum the system shall be inspected every six months. Remove sediment and provide maintenance as required based upon the inspection.

Post-Construction Stormwater Management Plan

As part of the Stormwater Permit, the applicant is required to meet the standards in Section 5 of the City of Portland Technical Manual for Stormwater Management. The General Standard in item IV. Submission Requirements states that a project must submit a Post-Construction Stormwater Inspection & Maintenance Plan per Maine DEP Chapter 500 Appendix B with reporting requirements per Chapter 32 of City of Portland Code of Ordinances, and a Stormwater Maintenance Agreement. The management plan shall comply to Chapter 32 of City of Portland Code of Ordinances as follows:

(a) The owner or operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning, and maintenance requirements of the approved post-construction stormwater management plan.
(b) If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide record of the deficiency and corrective action(s) to the department of public works ("DPW") in the annual report.
(c) The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.
(d) Any person(s) required to file an annual certification under this section shall include with the annual certification a filing fee established by DPW to pay the administrative and technical costs of review of the annual certification.
(e) In order to determine compliance with this article and with the post-construction stormwater management plan, DPW may enter upon property at reasonable hours with the consent of the owner, occupant, or agent to inspect the BMPs.

Housekeeping

The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to MDEP Chapter 500 rules - Appendix C.

Spill Prevention:
Appropriate spill prevention, containment, and response planning/implementation shall be used to prevent pollutants from being discharged from materials on site.

Groundwater Protection:
During construction, hazardous materials with the potential to contaminate groundwater shall not be stored or handled in areas of the site which drain to an infiltration area.

Fugitive Sediment and Dust:
Appropriate measures shall be taken to ensure that activities do not result in noticeable erosion of the soils and water and/or calcium chloride shall be used to ensure that activities do not result in fugitive dust emissions during or after construction.

Debris and Other Materials:
Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench or Foundation De-watering:
Water collected through the process of trenching and/or de-watering must be removed from the ponded area, and must be spread through natural wooded buffers or other areas that are specifically designed to collect the maximum amount of sediment possible.

Non-stormwater Discharges:
Identify and prevent contamination by non-stormwater discharges.

PROJECT: SHIPYARD REDEVELOPMENT

SITE LOCATION: PORTLAND, ME

TEMPORARY SEEDING

1. INSTRUCTION ON PREPARATION OF SOIL: PREPARE A GOOD SEED BED FOR PLANTING METHOD USED.
2. APPLY LIME AS FOLLOWS: _# / ACRES, OR 138 # /M SQ. FT.
3. FERTILIZE WITH ____ POUNDS OF ____ N–P–K/AC. OR 13.8 POUNDS OF 10–10–10 N–P–K/M SQ. FT.
4. METHOD OF APPLYING LIME AND FERTILIZER: SPREAD AND WORK INTO THE SOIL BEFORE SEEDING.
5. SEED WITH THE FOLLOWING MIXTURE:
   50% WINTER RYE
   50% ANNUAL RYE
6. MULCHING INSTRUCTIONS: APPLY AT THE RATE OF ____PER ACRE, OR 75 POUNDS PER M. SQ. FT.

	AMOUNT	UNIT # TONS, ETC.
7. TOTAL LIME	138 #/1000 SQ. FT.	
8. TOTAL FERTILIZER	13.8 #/1000 SQ. FT.	
9. TOTAL SEED	1.03 #/1000 SQ. FT.	
10. TOTAL MULCH	75 #/1000 SQ. FT.	
11. TOTAL OTHER MATERIALS, SEEDS, ETC.		
12. REMARKS		

SPRING SEEDING IS RECOMMENDED; HOWEVER, LATE SUMMER (PRIOR TO SEPTEMBER 1) SEEDING CAN BE MADE. PERMANENT SEEDING SHOULD BE MADE PRIOR TO AUGUST 5 OR AS A DORMANT SEEDING AFTER THE FIRST KILLING FROST AND BEFORE THE FIRST SNOWFALL. IF SEEDING CANNOT BE DONE WITHIN THESE SEEDING DATES, TEMPORARY SEEDING AND MULCHING SHALL BE USED TO PROTECT THE SITE. PERMANENT SEEDING SHALL BE DELAYED UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

SEEDING PLAN

PROJECT: SHIPYARD REDEVELOPMENT

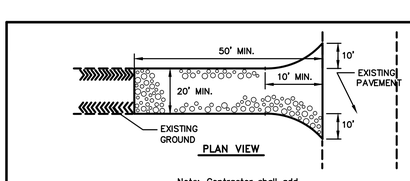
SITE LOCATION: PORTLAND, ME

PERMANENT SEEDING

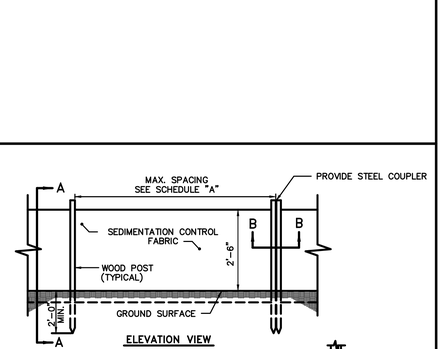
1. INSTRUCTION ON PREPARATION OF SOIL: PREPARE A GOOD SEED BED FOR PLANTING METHOD USED.
2. APPLY LIME AS FOLLOWS: _# / ACRES, OR 138 # /M SQ. FT.
3. FERTILIZE WITH ____ POUNDS OF ____ N–P–K/AC. OR 18.4 POUNDS OF 10–20–20 N–P–K/M SQ. FT.
4. METHOD OF APPLYING LIME AND FERTILIZER: SPREAD AND WORK INTO THE SOIL BEFORE SEEDING.
5. SEED WITH THE FOLLOWING MIXTURE:
   40% CREEPING RED FESCUE
   30% CHARGER II PERENNIAL RYEGRASS
   20% KENBLUE KENTUCKY BLUEGRASS
   10% TIFFANY CHEWINGS FESCUE
6. MULCHING INSTRUCTIONS: APPLY AT THE RATE OF ____PER ACRE, OR 75 POUNDS PER M. SQ. FT.

	AMOUNT	UNIT # TONS, ETC.
7. TOTAL LIME	138 #/1000 SQ. FT.	
8. TOTAL FERTILIZER	18.4 #/1000 SQ. FT.	
9. TOTAL SEED	1.03 #/1000 SQ. FT.	
10. TOTAL MULCH	75 #/1000 SQ. FT.	
11. TOTAL OTHER MATERIALS, SEEDS, ETC.		
12. REMARKS		

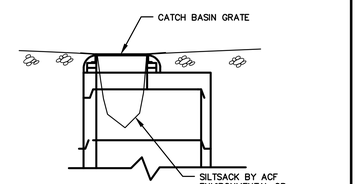
SPRING SEEDING IS RECOMMENDED, HOWEVER, LATE SUMMER (PRIOR TO SEPTEMBER 1) SEEDING CAN BE MADE. PERMANENT SEEDING SHOULD BE MADE PRIOR TO AUGUST 5 OR AS A DORMANT SEEDING AFTER THE FIRST KILLING FROST AND BEFORE THE FIRST SNOWFALL. IF SEEDING CANNOT BE DONE WITHIN THESE SEEDING DATES, TEMPORARY SEEDING AND MULCHING SHALL BE USED TO PROTECT THE SITE. PERMANENT SEEDING SHALL BE DELAYED UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.



STABILIZED CONSTRUCTION ENTRANCE
N.T.S.



SILTATION FENCE
N.T.S.



CATCH BASIN INLET FILTER
N.T.S.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — LUCAS S ANTHONY — 15250 — LICENSED PROFESSIONAL ENGINEER — 8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: NTS	Job No.: 3184
File Name: 3184–DETAILS.dwg		

This plan shall not be modified without written permission from Gorrill Palmer (GP). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GP.

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Drawing Name: EROSION CONTROL NOTES & DETAILS
Project: Shipyard Redevelopment, Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC, 470 Fore Street, Portland, ME 04101

Drawing No. C408

8/20/2018 12:01 PM
U:\3184_Shipyard Brewing\Z – CAD\DWG\3184–DETAILS.dwg

UT SUBDISTRICT

FRONTAGE REQUIREMENTS

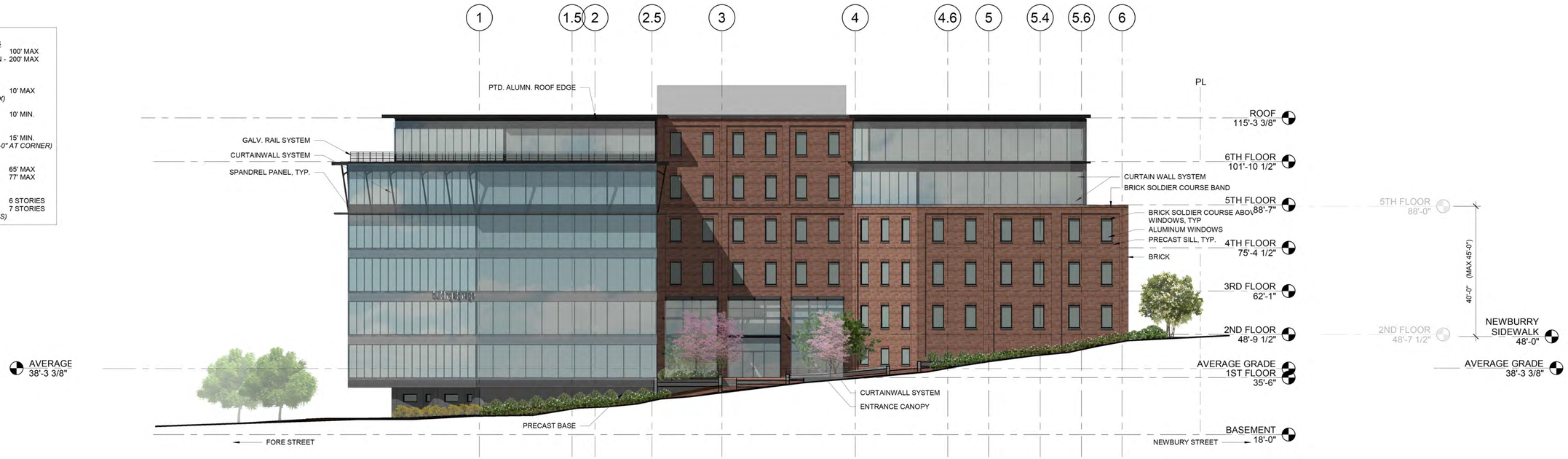
- BUILDING LENGTH - 100' MAX
  MASSING VARIATION - 200' MAX
  (ACTUAL = 200'-0")

SETBACKS

- FRONT YARD - 10' MAX
  (ACTUAL = 10'-0" MAX)
- SIDEYARD - 10' MIN.
  (N/A)
- BONUS FLOOR - 15' MIN.
  (ACTUAL = 15'-0", 35'-0" AT CORNER)

HEIGHT STANDARDS

- BUILDING HEIGHT - 65' MAX
  BONUS HEIGHT - 77' MAX
  (ACTUAL = 77'-0")
- BUILDING STORIES - 6 STORIES
  BONUS FLOORS - 7 STORIES
  (ACTUAL = 6 STORIES)



1 | MOUNTFORT STREET ELEVATION
1/16" = 1'-0"

UN SUBDISTRICT

FRONTAGE REQUIREMENTS

- BUILDING LENGTH - 50' MAX
  (ACTUAL = 50'-0")

SETBACKS

- FRONT YARD - 5' MAX
  (ACTUAL = 22'-0" (UT CONFLICT))
- SIDEYARD - 10' MIN.
  (N/A)
- CORNER COND. - 35' MIN.
  (ACTUAL = 35'-0")

HEIGHT STANDARDS

- BUILDING HEIGHT - 45' MAX
  (ACTUAL = 40'-0")
- BUILDING STORIES - 4 STORIES
  (ACTUAL = 3 STORIES)
  (ACTUAL = 5 STORIES W/CORNER)

UN SUBDISTRICT

FRONTAGE REQUIREMENTS

- BUILDING LENGTH - 50' MAX
  (ACTUAL = 50'-0")

SETBACKS

- FRONT YARD - 5' MAX
  (ACTUAL = 3'-0" - 5-0")
- SIDEYARD - 10' MIN.
  (N/A)

HEIGHT STANDARDS

- BUILDING HEIGHT - 45' MAX
  (ACTUAL = 43'-6 1/2" MAX (VARIES))
- BUILDING STORIES - 4 STORIES
  (ACTUAL = 3 STORIES)

2 | NEWBURY STREET ELEVATION
1/16" = 1'-0"

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT

Revisions:

Scale: 1/16" = 1'-0"

Date: AUG 17, 2018

Building Elevations

A2.01

UT SUBDISTRICT

FRONTAGE REQUIREMENTS

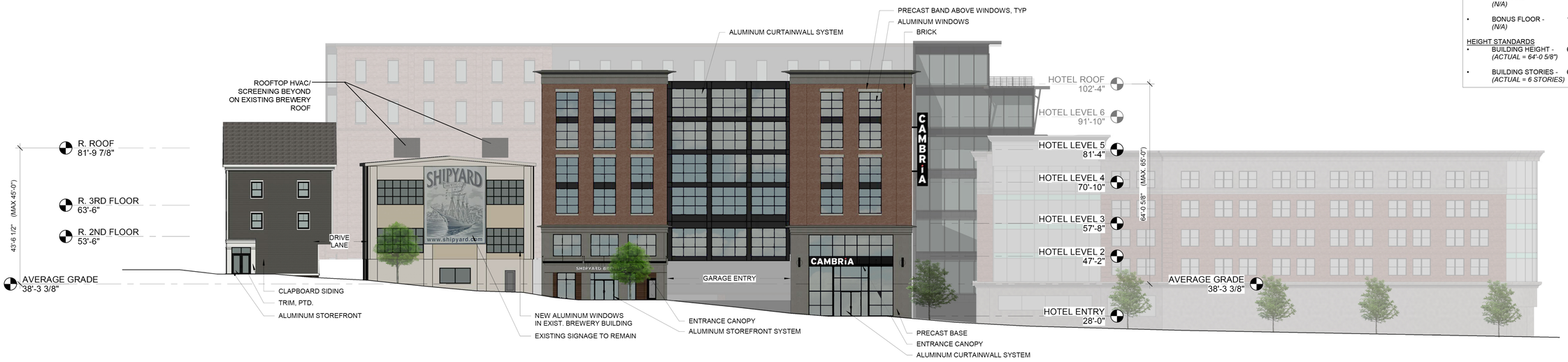
- BUILDING LENGTH - 100' MAX
  PARTITION WALLS - 200' MAX
  (ACTUAL = 120'-0")

SETBACKS

- FRONT YARD - 10' MAX
  (ACTUAL = 3'-0" / 0'-6")
- SIDEYARD - 10' MIN.
  (N/A)
- BONUS FLOOR - 15' MIN.
  (N/A)

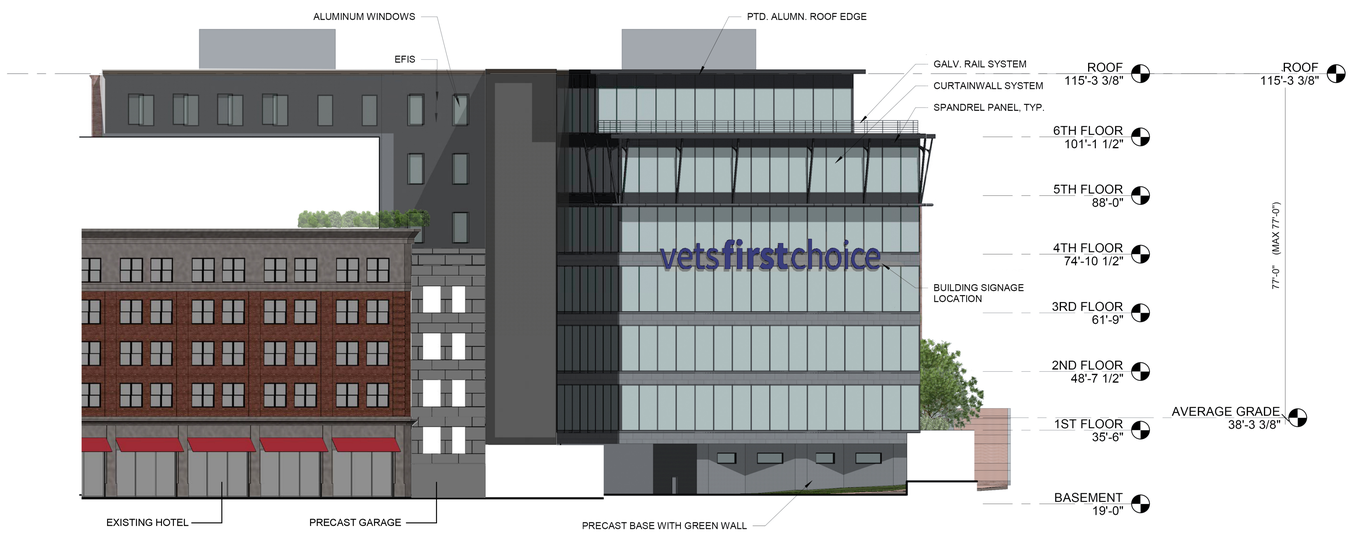
HEIGHT STANDARDS

- BUILDING HEIGHT - 65' MAX
  (ACTUAL = 64'-0 5/8")
- BUILDING STORIES - 6 STORIES
  (ACTUAL = 6 STORIES)



1 | HANCOCK STREET ELEVATION

1/16" = 1'-0"



2 | FORE ST ELEVATION

1/16" = 1'-0"

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT

Revisions:

Scale: 1/16" = 1'-0"

Date: AUG 17, 2018

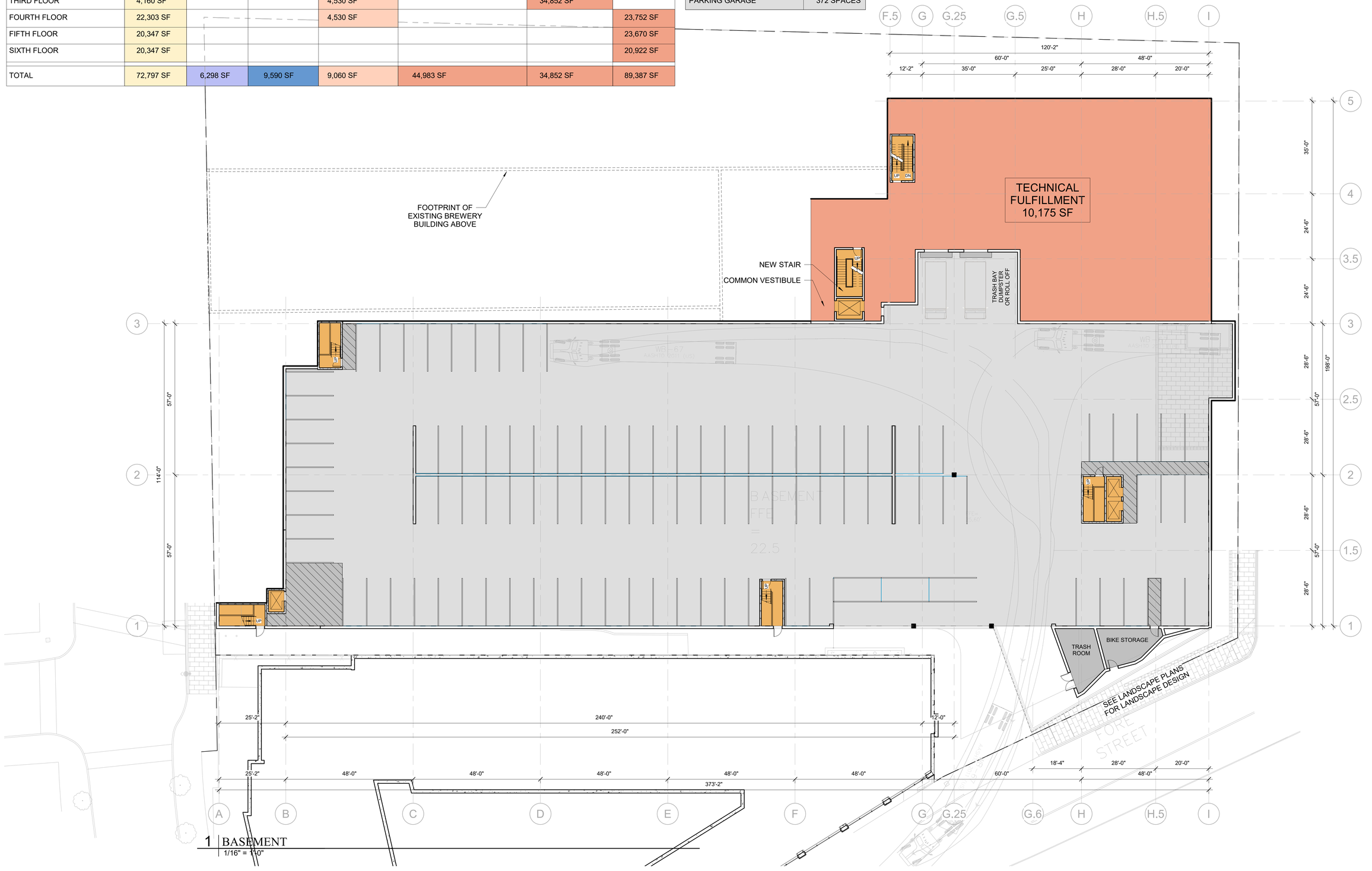
BUILDING ELEVATIONS

A2.02

PROJECT DESCRIPTION

	HOTEL	RETAIL	BREWERY	RESIDENTIAL	TECHNICAL FULFILLMENT	PHARMACY	OFFICE
BASEMENT					10,175 SF		
FIRST FLOOR	1,480 SF	5,200 SF	9,590 SF				21,043 SF
SECOND FLOOR	4,160 SF	1,098 SF			34,375 SF		
THIRD FLOOR	4,160 SF			4,530 SF		34,852 SF	
FOURTH FLOOR	22,303 SF			4,530 SF			23,752 SF
FIFTH FLOOR	20,347 SF						23,670 SF
SIXTH FLOOR	20,347 SF						20,922 SF
TOTAL	72,797 SF	6,298 SF	9,590 SF	9,060 SF	44,983 SF	34,852 SF	89,387 SF

HOTEL	105 ROOMS
RESIDENTIAL A	4 UNITS
RESIDENTIAL B	4 UNITS
RESIDENTIAL C	2 UNITS
PARKING GARAGE	372 SPACES



1 BASEMENT
1/16" = 1'-0"

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT

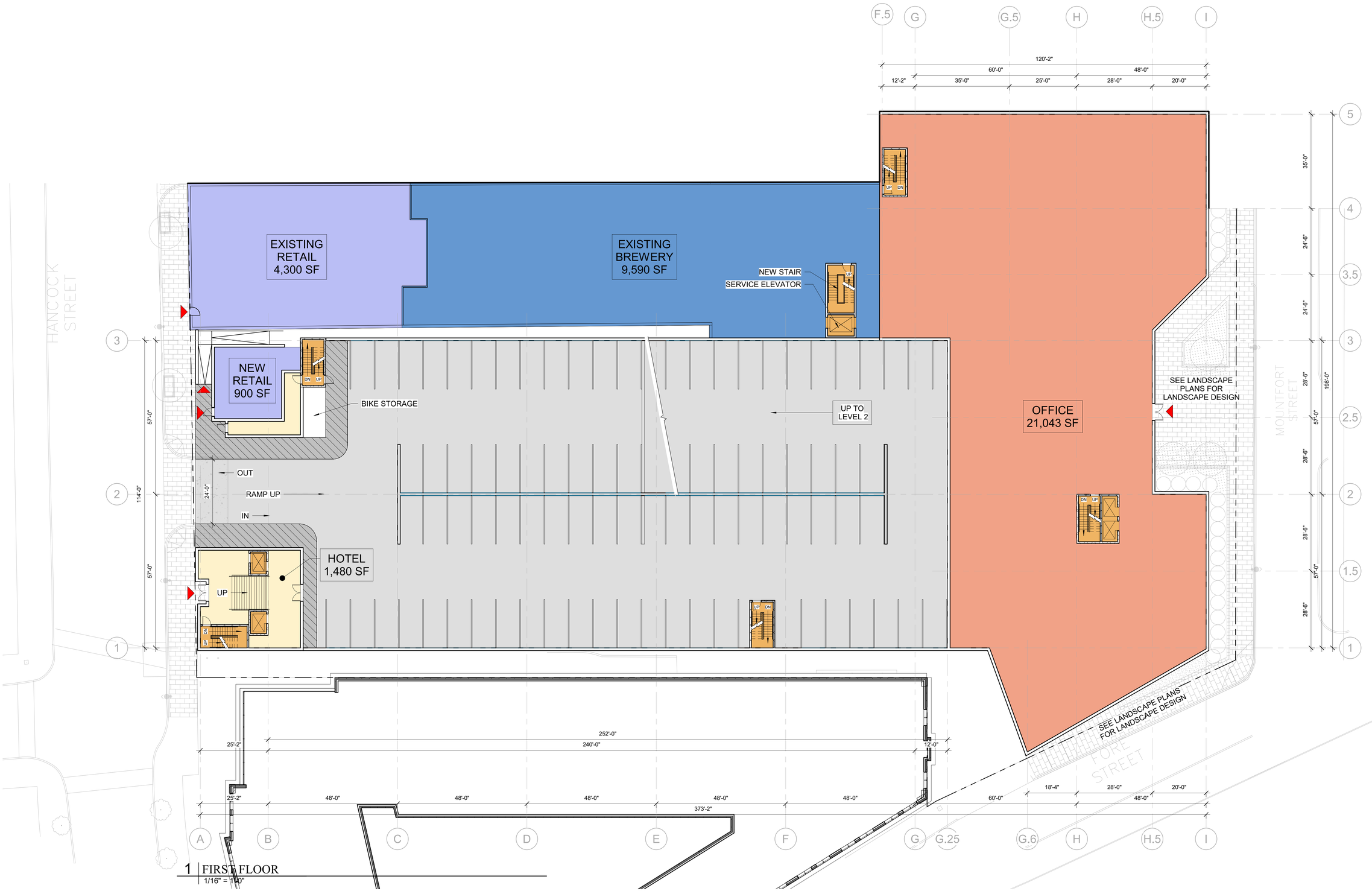
Revisions:

Scale: 1/16" = 1'-0"

Date: JULY 2018

BASEMENT

A1.00



1 FIRST FLOOR
1/16" = 1'-0"

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT
Address
City, State

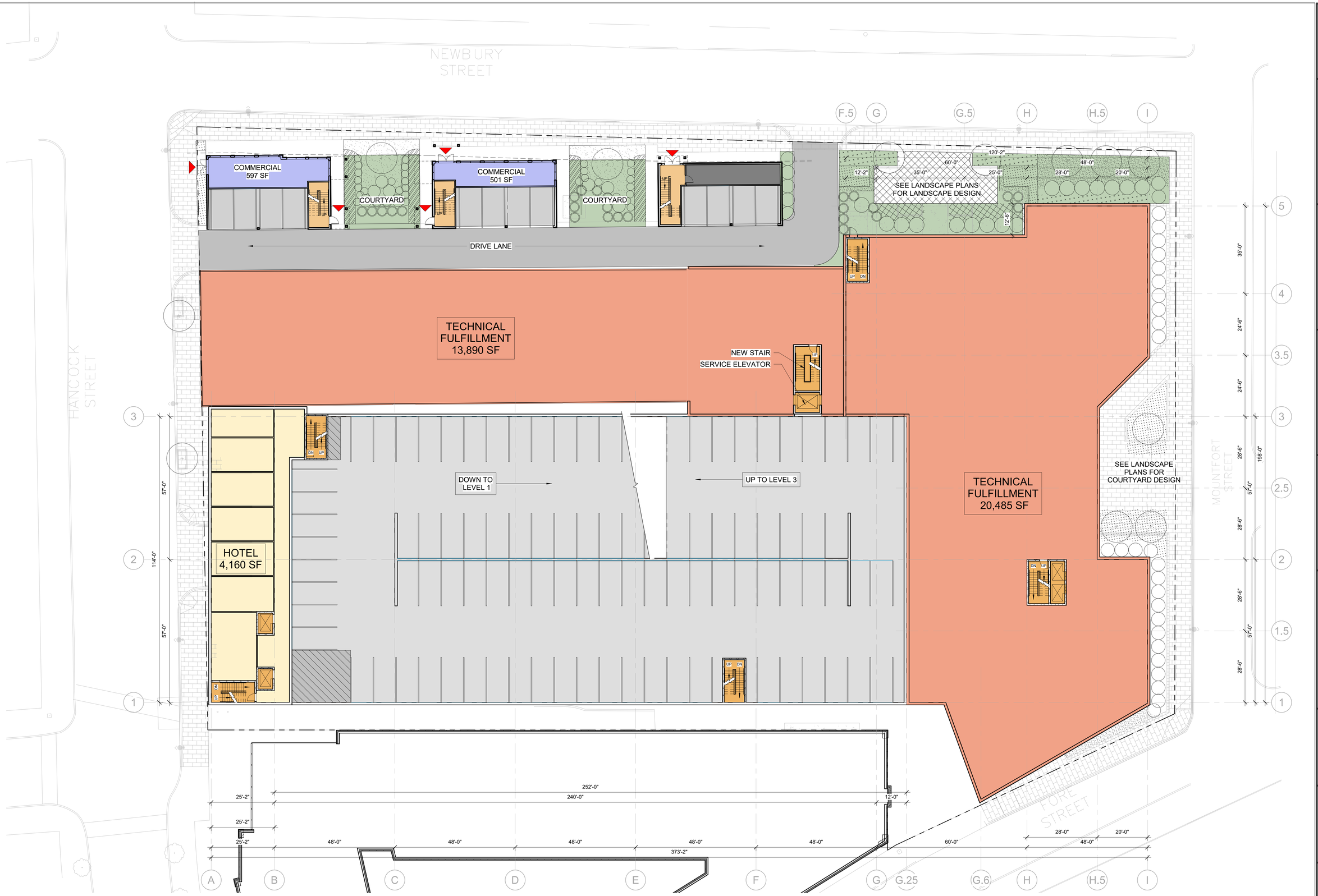
Revisions:

Scale: 1/16" = 1'-0"

Date: JULY 2018

First Floor

A1.01



1 | SECOND FLOOR
1/16" = 1'-0"

Prepared For:
Owner
Address
City, State

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD DEVELOPMENT
Address
City, State

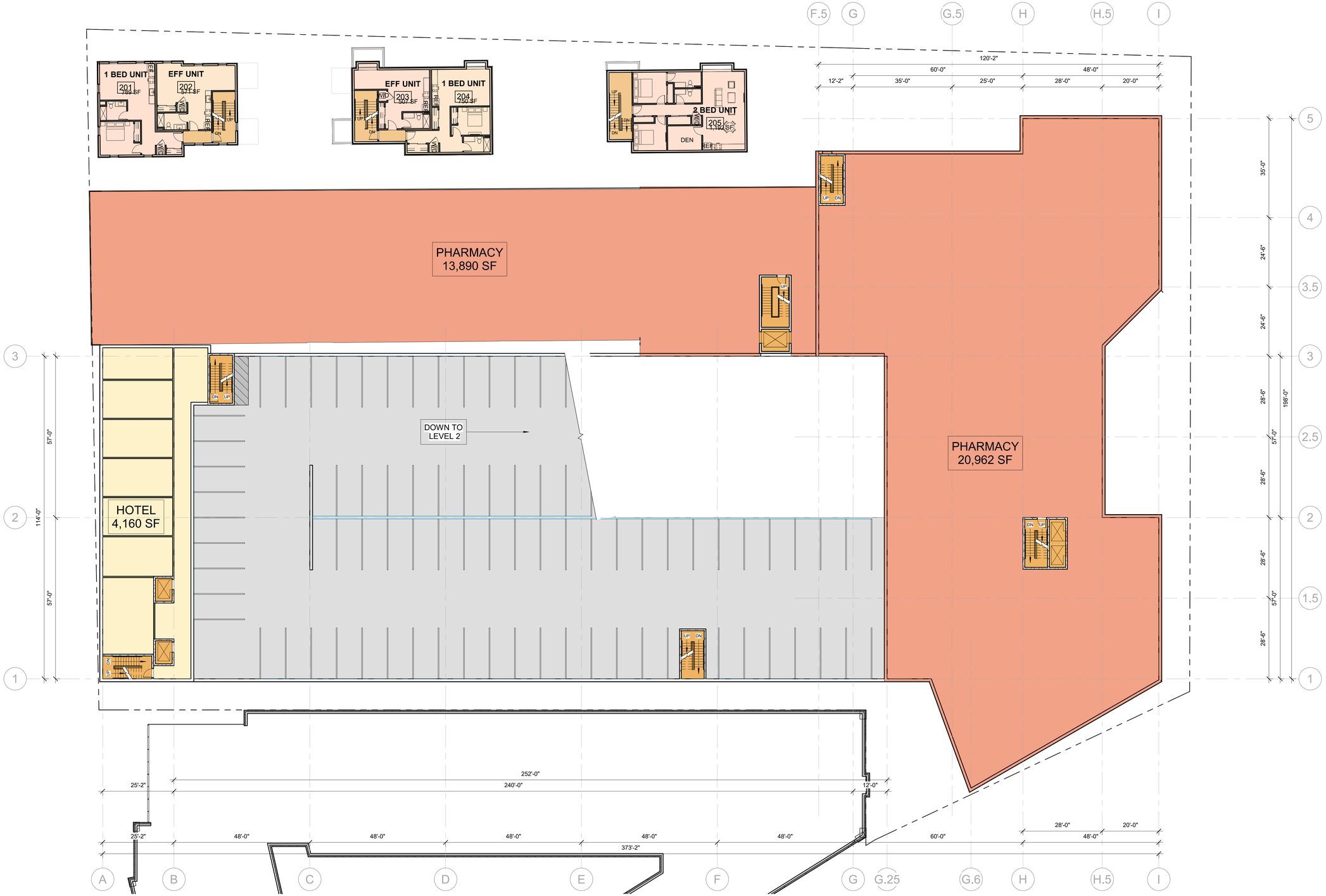
Revisions:

Scale:
1/16" = 1'-0"

Date:
JULY 2018

Second Floor Plan

A1.02



2 | THIRD FLOOR
1/16" = 1'-0"

Prepared For:
Owner
Address
City, State

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD
DEVELOPMENT
Address
City, State

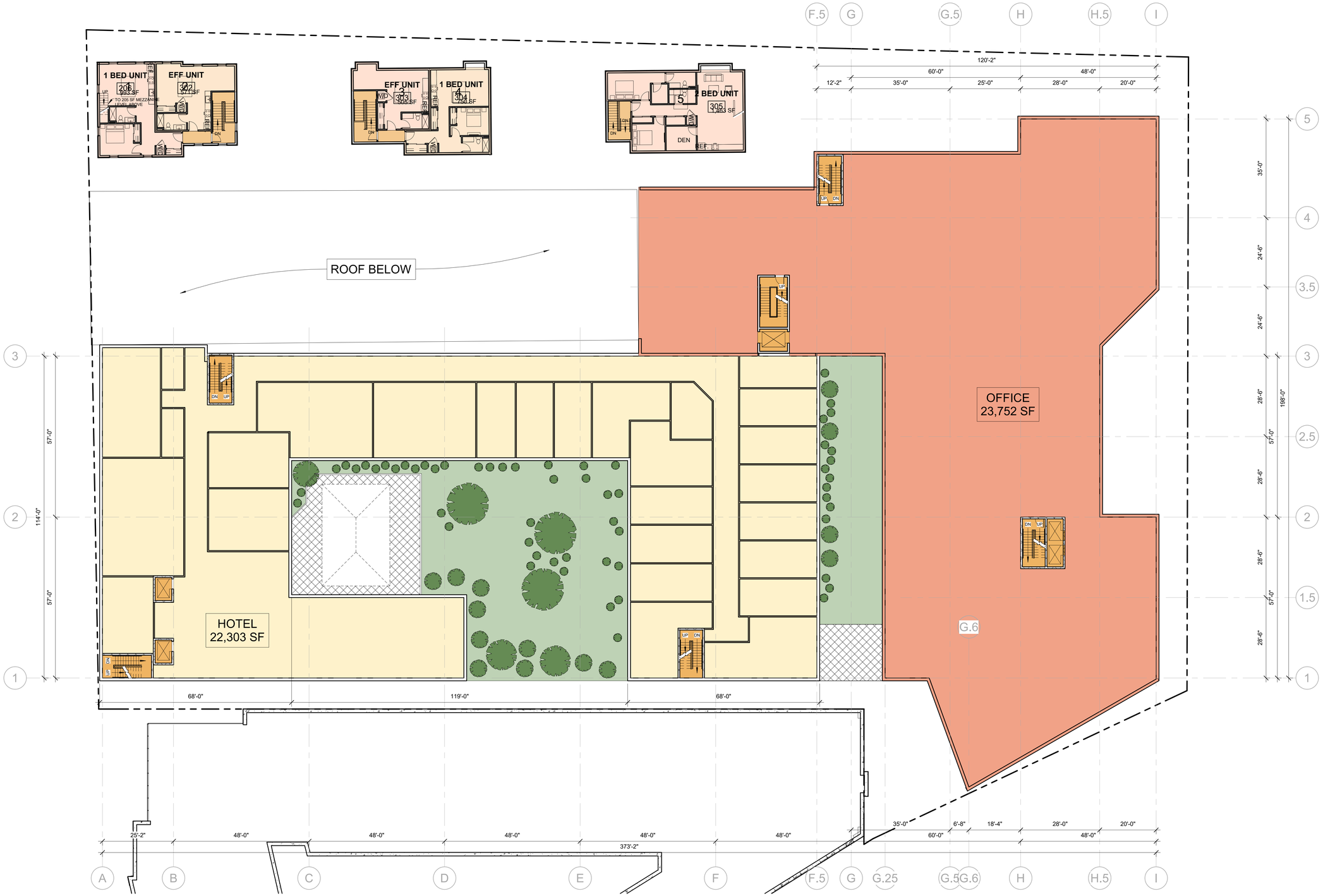
Revisions:

Scale: 1/16" = 1'-0"

Date: JULY 2018

Third Floor Plan

A1.03



2 FOURTH FLOOR
1/16" = 1'-0"

Prepared For:
Owner
Address
City, State

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD DEVELOPMENT
Address
City, State

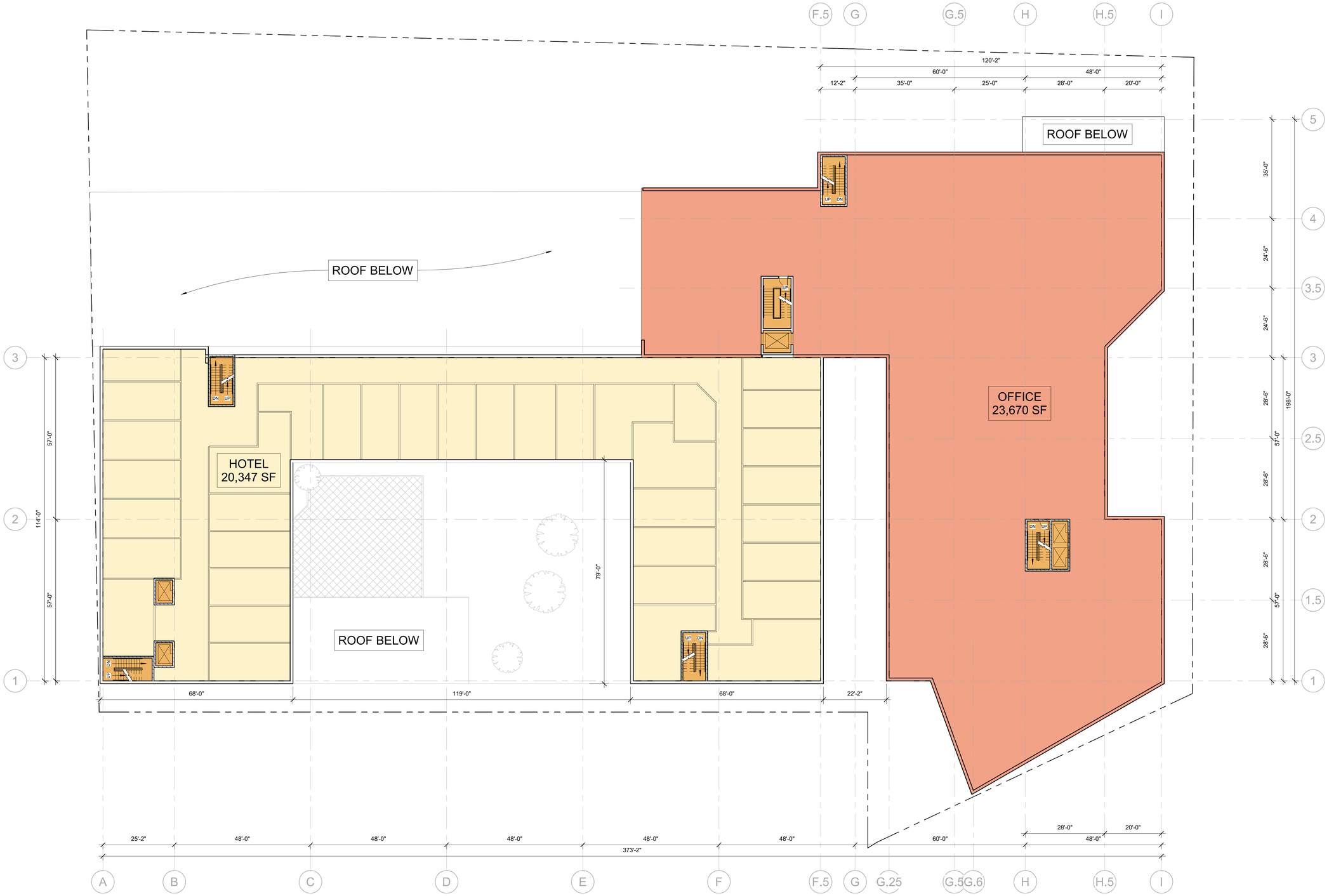
Revisions:

Scale: 1/16" = 1'-0"

Date: JULY 2018

Fourth Floor Plan

A1.04



1 | 5TH FLOOR
1/16" = 1'-0"

Prepared For:
Owner
Address
City, State

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD DEVELOPMENT
Address
City, State

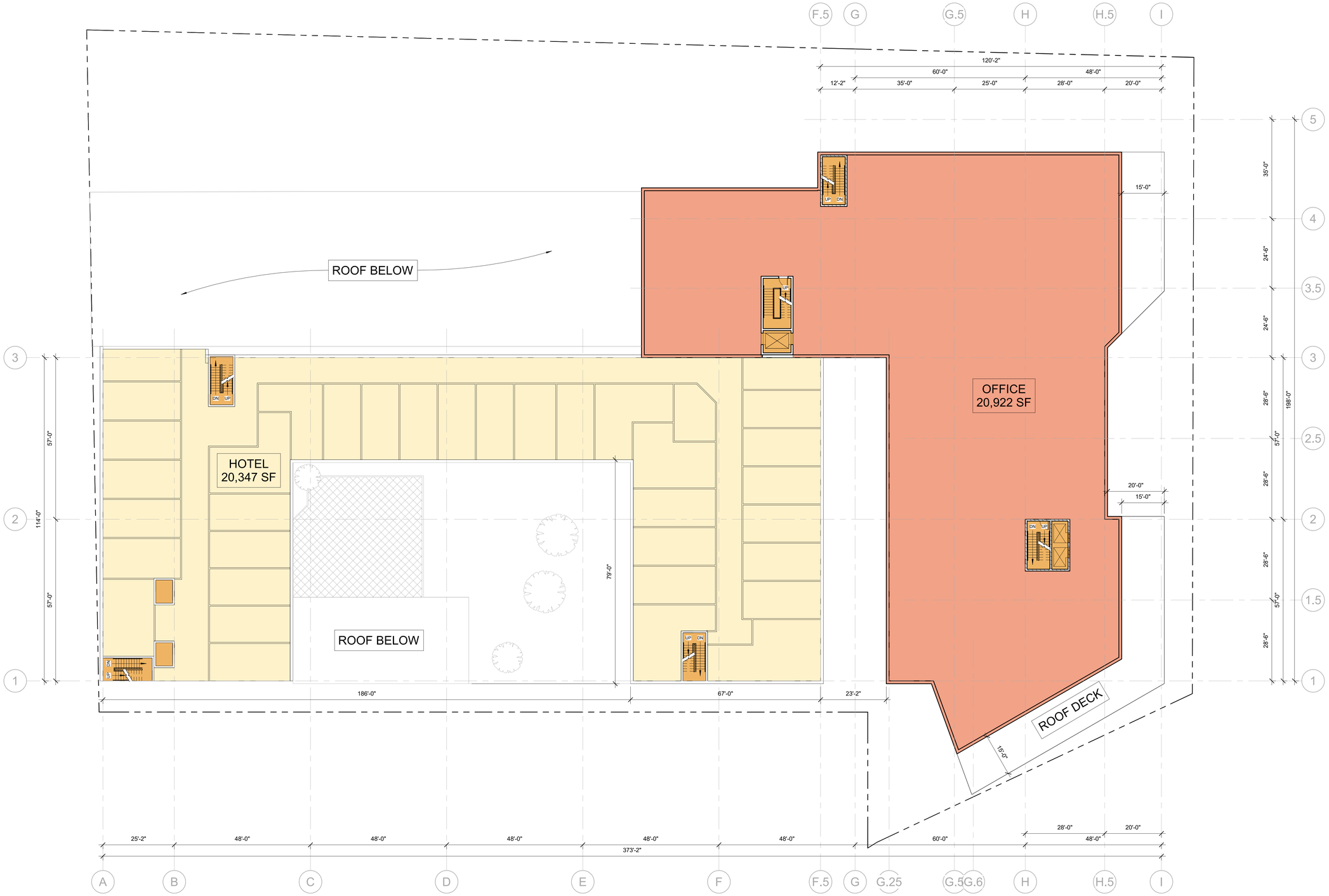
Revisions:

Scale: 1/16" = 1'-0"

Date: JULY 2018

Fifth Floor Plan

A1.05



1 6TH FLOOR
1/16" = 1'-0"

Prepared For:
Owner

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD
DEVELOPMENT

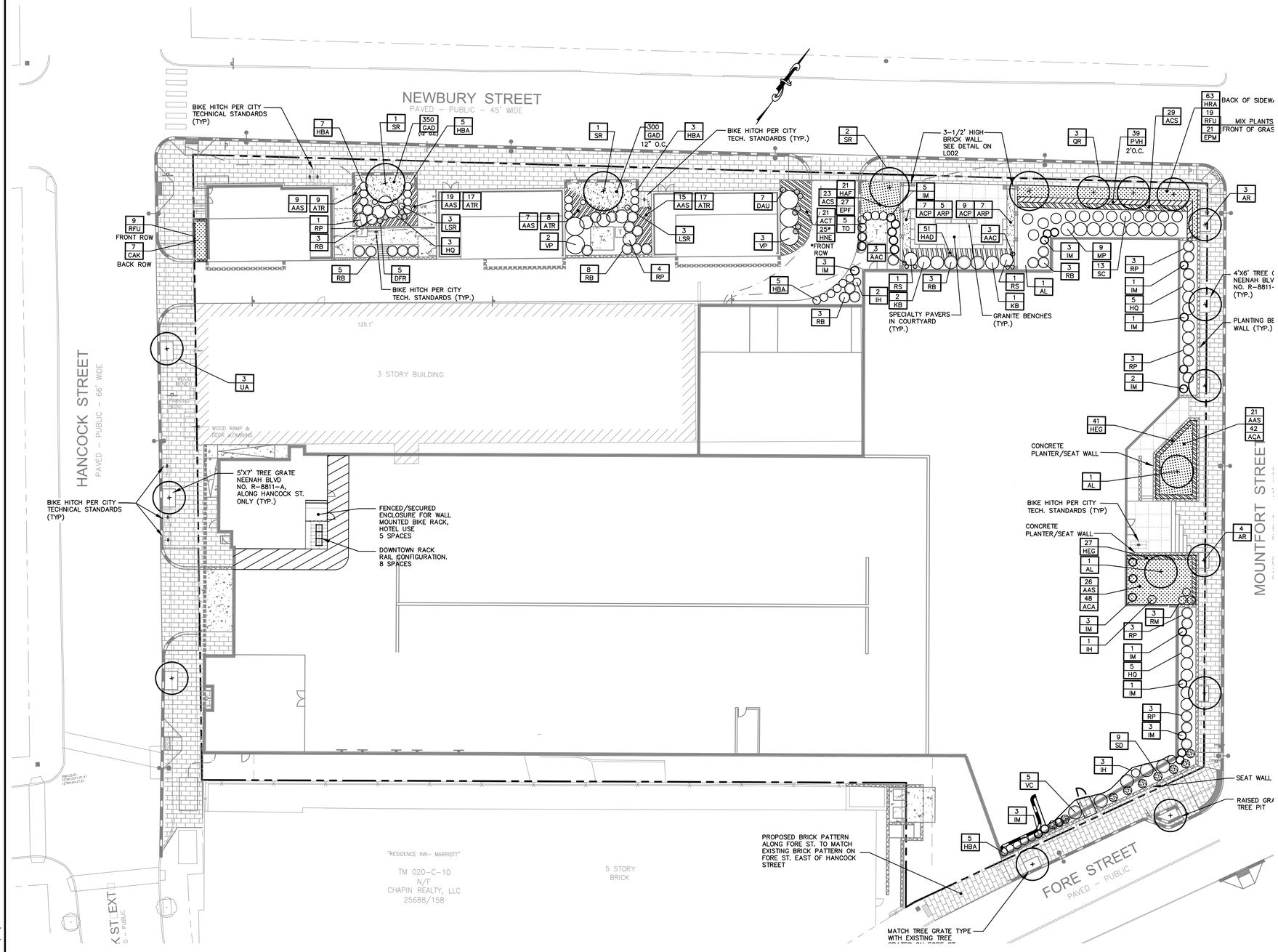
Revisions:

Scale: 1/16" = 1'-0"

Date: JULY 2018

Sixth Floor Plan

A1.06



GENERAL PLANTING NOTES

1. CALL DIG–SAFE (1–888–344–7233) PRIOR TO BEGINNING WORK. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. DO NOT SCALE FROM DRAWINGS. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES BETWEEN DRAWINGS, PLANT QUANTITIES, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.
4. PROVIDE SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. CONTRACTOR SHALL FURNISH AND PLACE 12 INCHES OF LOAM IN ALL SHRUB BEDS, 30 INCHES IN ALL TREE PITS, AND 6 INCHES UNDER ALL TURF AREAS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
6. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OFTHE LATEST PUBLICATION OF "AMERICAN STANDARDS FOR NURSERY STOCK BY THE AMERICAN ASSOCIATION OF NURSERYMEN".
7. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
8. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM THE OWNER.
9. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
10. EXISTING TREES TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY, OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL–ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DAMAGE TO EXISTING SITE IMPROVEMENTS DURING INSTALLATION OF LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
14. CONTRACTOR SHALL COORDINATE INSPECTION OF PLANT MATERIAL AND LOCATIONS WITH PROJECT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ALL PLANT MATERIAL SHALL BE ON–SITE AND PLACED BEFORE INSPECTION CAN BE COMPLETED. A MINIMUM OF 48 HOUR NOTIFICATION SHALL BE REQUIRED.
15. MAINTENANCE REQUIREMENTS: PRUNE DEAD OR DAMAGED BRANCHES, MAINTAIN GUY POSTS AND WATER AS REQUIRED UNTIL PROJECT COMPLETION AND ACCEPTANCE BY OWNER.
16. WATERING: ALL PLANTINGS SHALL BE THOROUGHLY WATERED UPON INSTALLATION, AND THEN WEEKLY WHENEVER ANY DRY SPELLS OCCUR, UNTIL ACCEPTANCE BY OWNER.
17. LANDSCAPE CONTRACTOR OR PLANT SUPPLIER SHALL GUARANTEE PLANTS AND PROVIDE REPLACEMENTS FOR TWO YEARS FROM INSTALLATION.
18. CONTRACTOR SHALL PLACE 4" SHREDDED DARK BARK MULCH WITHIN ALL PLANTING BEDS AND TREE PITS.

PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE
AR	ACER RUBRUM 'BOWHALL'	BOWHHALL COLUMNAR RED MAPLE	2-1/2" CAL.
ACS	ACONITUM X CAMMARUM 'STAINLESS STEEL'	STAINLESS STEEL MONKSHOOD	NO. 1 CONT.
ACA	AQUILEGIA CANADENSIS 'PINK LANTERNS'	CANADIAN COLUMBINE	NO. 1 CONT.
AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	8'-10' HGT. CLUMP
AAS	ASTILBE ARDENSII 'FLAMINGO'	FLAMINGO ASTILBE	NO. 1 CONT.
AAC	ASTILBE ARDENSII 'CATTLEYA'	CATTLEYA ASTILBE	NO. 1 CONT.
ACP	ASTILBE CHINENSIS "PURPLE CANDLES"	PURPLE CANDLES ASTILBE	NO. 1 CONT.
ACT	ASTILBE CHINENSIS VAR. TAQUETII "PURPLE LANCE"	PURPLE LANCE ASTILBE	NO. 1 CONT.
ARP	ASTILBE X ROSEA "PEACH BLOSSOM"	PEACH BLOSSOM ASTILBE	NO. 1 CONT.
ATR	ATHYRIUM NIPONICUM	PAINTED LADY FERN	NO. 1 CONT.
CAK	CALAMAGROSTIS X ACUTIFOLLA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 1 CONT.
CFR	CIMICIFUGA RACEMOSA	SNAKE ROOT	NO. 1 CONT.
DAU	DRYOPTERIS X AUSTRALIS	DIXIE WOOD FERN	NO. 1 CONT.
DFR	DRYOPTERIS FILIX-MAS 'ROBUSTA'	ROBUST MALE FERN	NO. 1 CONT.
DEB	DRYOPTERIS ERYTHROSORA 'BRILLANCE'	AUTUMN FERN	NO. 1 CONT.
EPM	ECHINACEA PURPUREA 'MAGNUS'	MAGNUS PURPLE CONE FLOWER	NO. 1 CONT.
EPF	EUPATORIUM FISTULOSUM	JOE PYE WEED	NO. 1 CONT.
HAF	HELIANTHUS ANGUSTIFOLIUS	SWAM SUNFLOWER	NO. 1 CONT.
HBA	HOSTA 'BLUE ANGEL'	BLUE ANGEL HOSTA	NO. 1 CONT.
HNE	HEUCHERA NORTHERN EXPOSURE™ AMBER	NORTHERN EXPOSURE CORAL BELLS	NO. 1 CONT.
HAD	HEUCHERA AMERICANA 'DALE'S STRAIN'	DALE'S STRAIN CORAL BELLS	NO. 1 CONT.
HEG	HEUCHERA 'GREEN SPICE'	GREEN SPICE CORAL BELLS	NO. 1 CONT.
HRA	HEMEROCALLIS 'RAINDROP'	RAINDROP DAYLILY	NO. 1 CONT.
HQ	HYDRANGEA QUERCIFOLIA	OAK LEAF HYDRANGEA	18"-24" HGT.
IH	ILEX X MESERVE 'HECKENSTAR'	CASTLE WALL® BLUE HOLLY	3'-4' HGT.
IM	ILEX X MESERVE 'HACHFEE'	CASTSLE SPIRE BLUE® HOLLY	4'-6' HGT.
KB	KALMIA LATIFOLIA 'BULLSEYE'	BULLSEYE KALMIA	18"-24" HGT.
LSR	LUGULARIA STENOCEPHALA 'THE ROCKET'	THE ROCKET GOLDEN RAY	NO. 1 CONT.
MVI	MERTENSIA VIRGINICA	VIRGINIA BLUEBELLS	NO. 1 CONT.
PVH	PANICUM VERGATUM 'HEAVY METAL'	HEAVY METAL SWITCH GRASS	NO. 1 CONT.
QR	QUERCUS RUBRA X BICOLOR 'LONG'	REGAL PRINCE OAK	2-1/2" CAL.
RB	RHODODENDRON X 'BOULE DE NEIGE'	BOULE DE NEIGE' RHODODENDRON	18"-24" HGT.
RP	RHODODENDRON 'PJM'	PJM RHODODENDRON	18"-24" HGT.
RS	RHODODENDRON SCHLIPPENBACHII	ROYAL AZAELA	24"-30" HGT.
RFU	RUDEBECKIA FULGIDA VAR 'FULGIDA'	BLACK EYED SUSAN	NO. 1 CONT.
SA	SYMPHORICARPOS 'BOKRABRIGHT'	BRIGHT FANTASY SNOWBERRY	24"-30" HGT.
SD	SYMPHORICARPOS X DOOR RENBOSII 'KOLMGALA'	GALAXY SNOWBERRY	12"-18" HGT.
SC	SYMPHORICARPOS X CHENAULTII 'HANCOCK'	SNOWBERRY HANCOCK	NO. 1 CONT.
SR	SYRINGA RETICULTA 'WILLAMETTE'	IVORY PILLAR JAPENESE TREE LILAC	2" CAL.
TO	THUJA OCCIDNETALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	6'-7' HGT.
VC	VIBURNUM CARLESII 'CAYUGA'	CAYUGA VIBURNUM	24"-30" HGT.
VP	VIBURNUM X PRAGENSE	PRAGUE VIBURNUM	24"-30" HGT.
UA	ULMUS AMERICANA 'PRINCETON'	PRINCETON AMERICAN ELM	2-1/2" CAL.

20 0 10 20 40
1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER DI MATTEO
No. 2696
STATE OF MAINE

Rev.	Date	Revision
3	9/18/18	REVISED PER CITY COMMENTS
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CDM | Draft: CH | Date: JUL 2018
Checked: LSA | Scale: 1"=20' | Job No.: 3184
File Name: 3184–LANDSC.dwg

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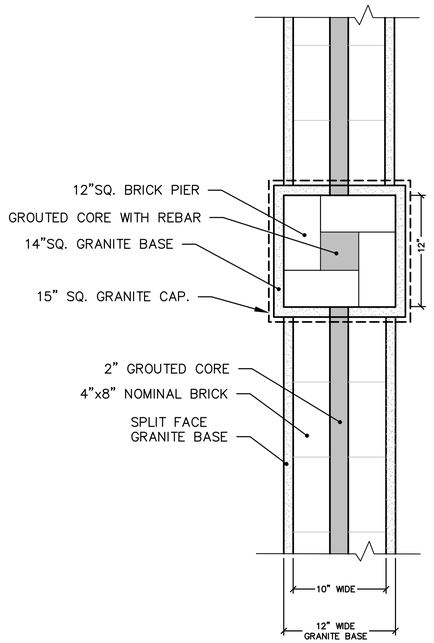
207.772.2515

Drawing Name: Landscape Plan
Project: Shipyard Redevelopment
Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC
470 Fore Street, Portland, ME 04101

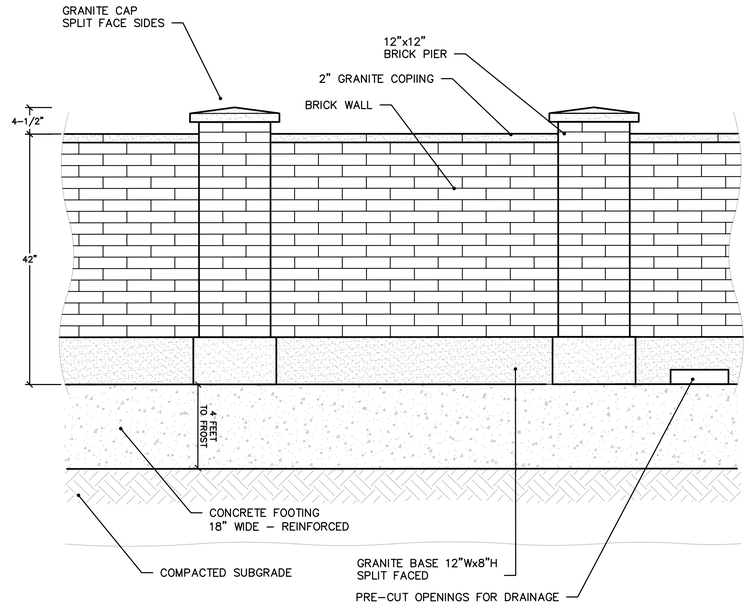
Drawing No. L001

U:\3184_Shipyard Brewing\2 – CAD\DWG\3184–LANDSC.dwg 9/18/2018 8:43 AM

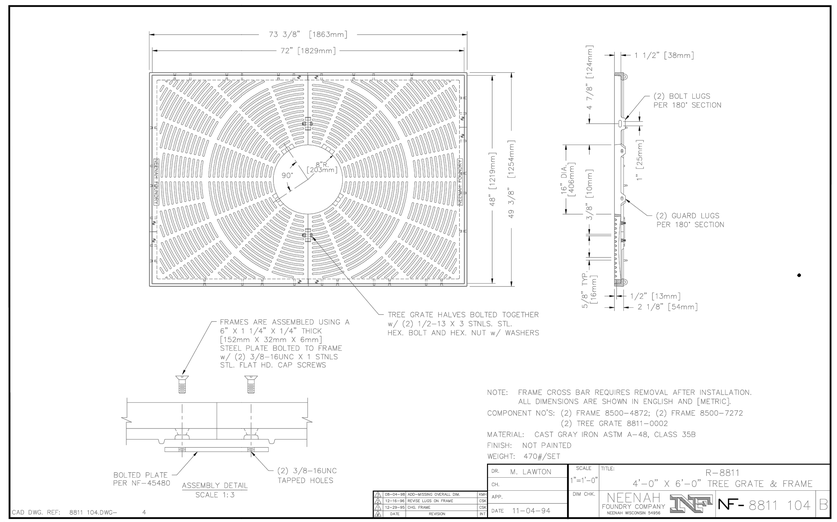
POCKET PARK WALL DETAIL



WALL PLAN
N.T.S



ELEVATION
1"=1'



NOTE: FRAME CROSS BAR REQUIRES REMOVAL AFTER INSTALLATION.. ALL DIMENSIONS ARE SHOWN IN ENGLISH AND [METRIC]
COMPONENT NO'S: (2) FRAME 8500-4872; (2) FRAME 8500-7272
(2) TREE GRATE 8811-0002
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NOT PAINTED
WEIGHT: 470#/SET

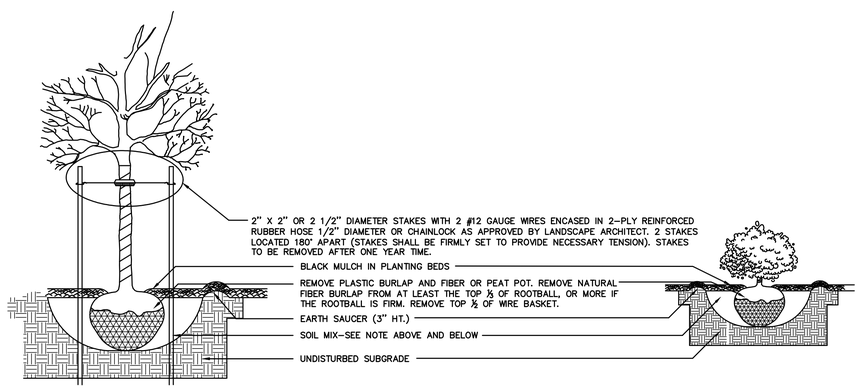
DR. M. LAWTON	SCALE: 1"=1'-0"	TITLE: R-8811 4'-0" X 6'-0" TREE GRATE & FRAME	
CH.			
APP.	DIM CHK.	NEENAH FOUNDRY COMPANY NEENAH, WISCONSIN, SHEBOYGAN, WISCONSIN	NF- 8811 104 B
DATE 11-04-94			

CAD DWG. REF: 8811 104.DWG– 4

COMPONENT NOS.: TREE GRATE 8811-0006, LIGHT OPENING GRATE 8811-0010
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NOT PAINTED
WEIGHT: GRATE 232# PER 180° SECTION, LIGHT OPENING GRATE 11#

DR. E. REMME	SCALE: 1"=1'-0"	TITLE: R-8811-A TREE GRATE 5'-0" X 7'-0" w/ (1) CENTER LIGHT OPENING	
CH.			
APP.	DIM CHK.	NEENAH FOUNDRY COMPANY NEENAH, WISCONSIN, SHEBOYGAN, WISCONSIN	NF- 88110006 B
DATE 7-22-98			

CAD DWG. REF: 88110006.DWG– 6



TREE AND SHRUB PLANTING DETAIL

NOT TO SCALE

GENERAL PLANTING NOTES:

DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH ROOT FLARE AT GROUND LEVEL. CORRECT HOLE DEPTH AS NEEDED. NOTE: MANY BALLED & BURLAPPED PLANTS HAVE SOIL PILED AROUND THE ROOT FLARE WHICH SHOULD BE REMOVED PRIOR TO PLANTING.

FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL. FOR BROAD-LEAVED EVERGREENS AND RELATED ERICACAE PLANTS, 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH (RECOMMENDATIONS ARE FOR ACCEPTABLE PLANTING AREAS).

CONTAINER GROWN STOCK:
REMOVE ALL CONTAINERS AND GENTLY COMB OUT ROOTS TO ELIMINATE CIRCLING ROOTS. PRUNE DAMAGED ROOTS AS NEEDED.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

20 0 10 20 40
1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER DI MATTEO
No. 2696
STATE OF MAINE

Rev.	Date	Revision
3	9/18/18	REVISED PER CITY COMMENTS
2	8/20/18	REVISED PER CITY COMMENTS
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Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design:	Draft: CH	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–LANDSC.dwg		

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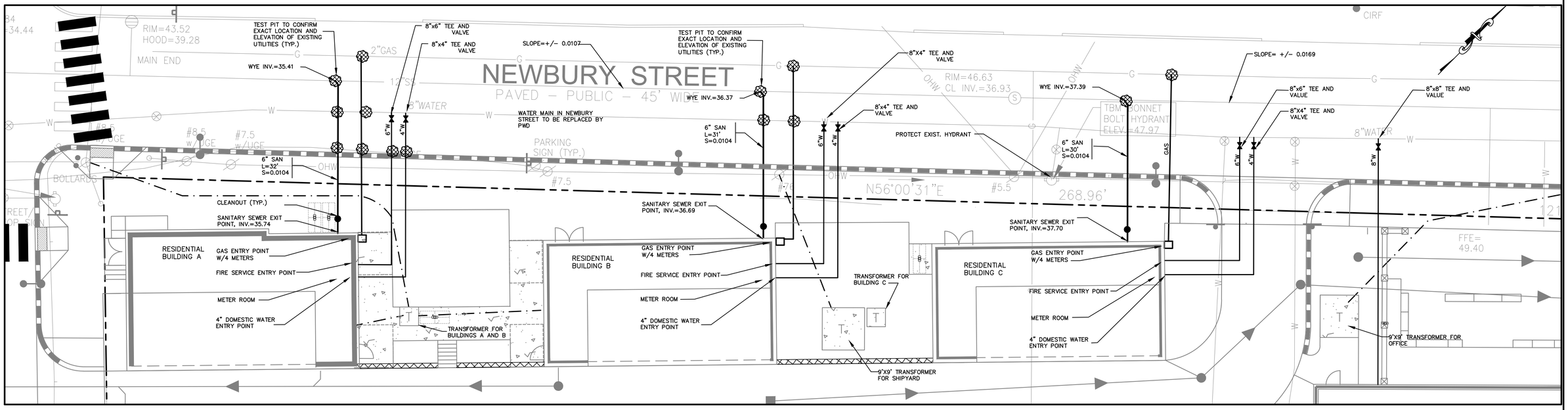
207.772.2515

Drawing Name:	Landscape Details
Project:	Shipyard Redevelopment Newbury Street, Portland, ME
Client:	86 Newbury Street, LLC 470 Fore Street, Portland, ME 04101

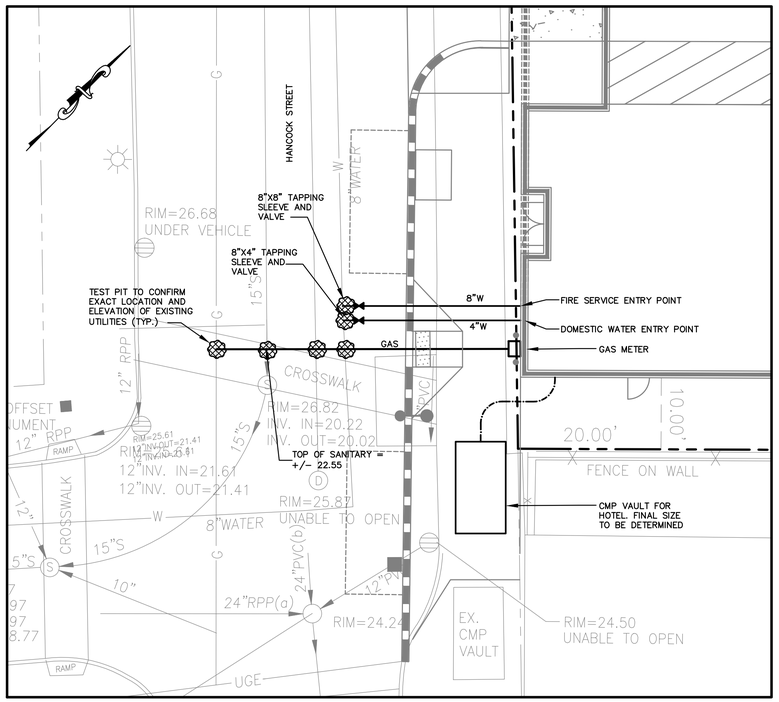
Drawing No. L002

U:\3184_Shipyard Brewing\Z – CAD\DWG\3184–LANDSC.dwg 9/18/2018 8:55 AM



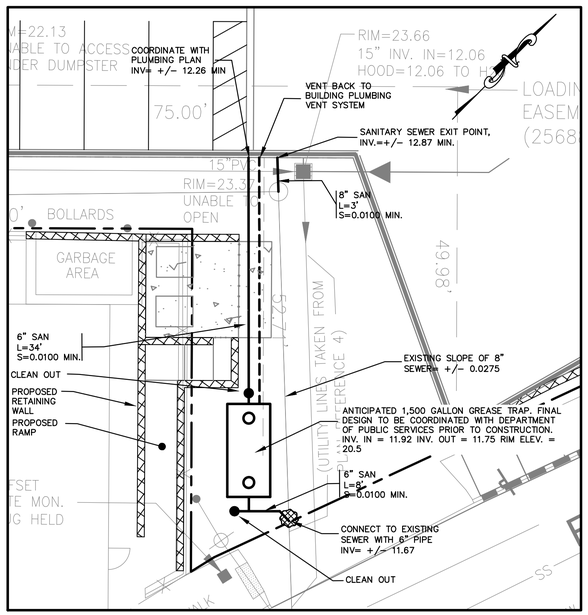
UTILITY PLAN 1

1"=10'



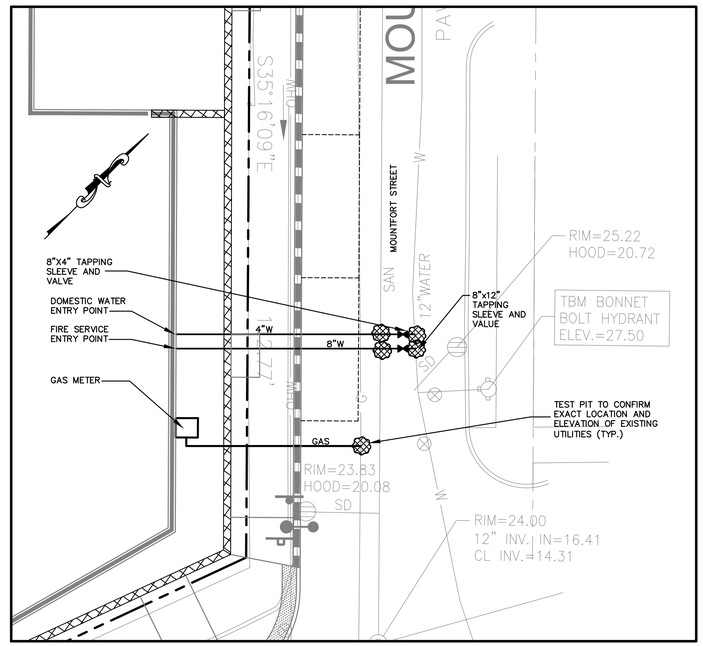
UTILITY PLAN 2

1"=10'



UTILITY PLAN 3

1"=10'



UTILITY PLAN 4

1"=10'

NOTES:
1. WATER MAIN IN NEWBURY STREET TO BE REPLACED BY PORTLAND WATER DISTRICT (PWD). CONTRACTOR TO COORDINATE WITH PWD PRIOR TO INSTALLING NEW WATER SERVICE CONNECTIONS ON NEWBURY STREET.
2. GREASE TRAP SIZING TO BE DETERMINED DURING BUILDING DESIGN BASED ON ANTICIPATED LOADING.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S. ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: 1"=10'	Job No.: 3184

File Name: 3184-SP_L1.dwg

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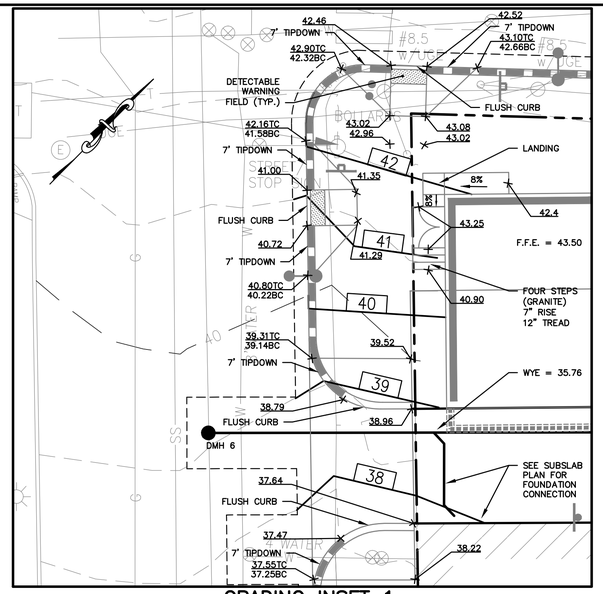
Drawing Name: UTILITY INSETS

Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME

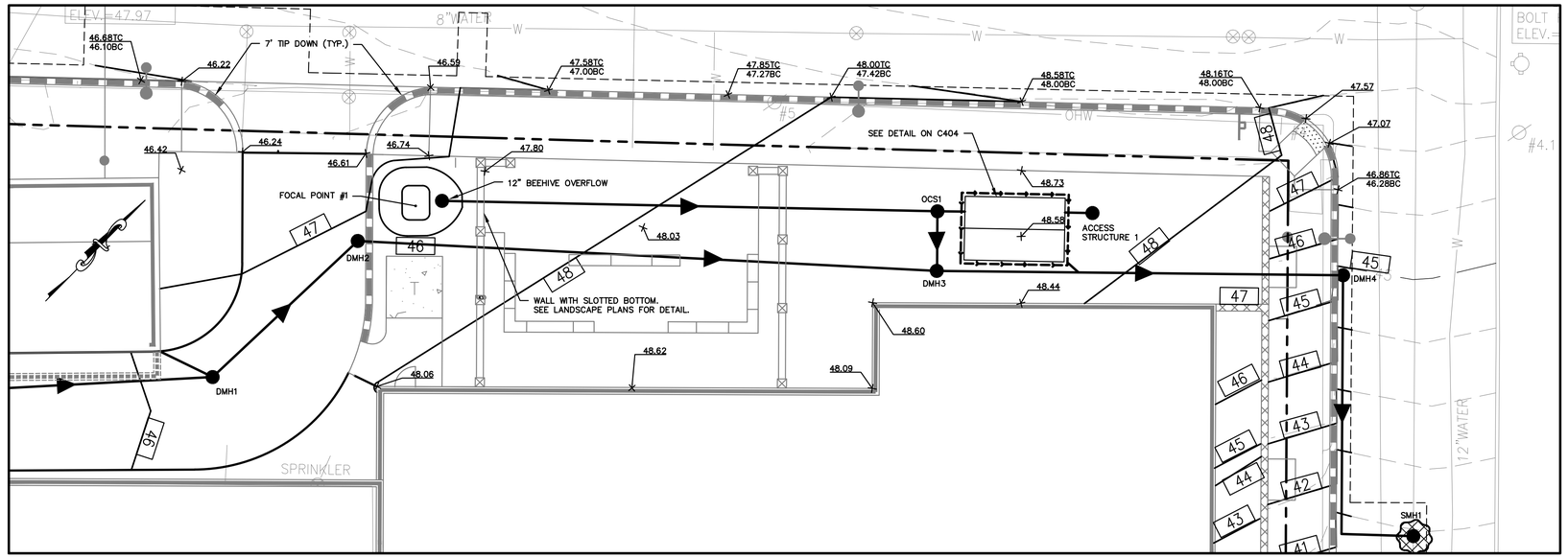
Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. C103

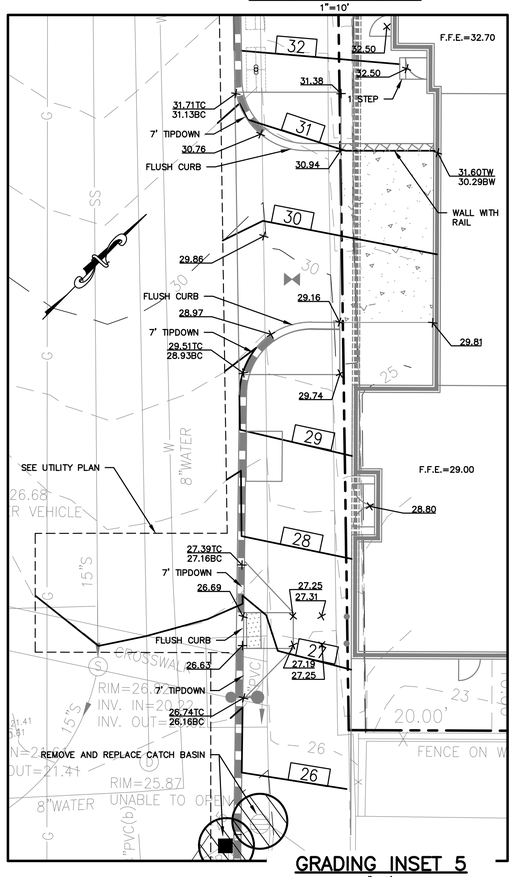
U:\3184_Shipyard Brewing\Z - CAD\DWG\3184-SP_L1.dwg 8/20/2018 11:58 AM



GRADING INSET 1
1"=10'



GRADING INSET 2
1"=10'



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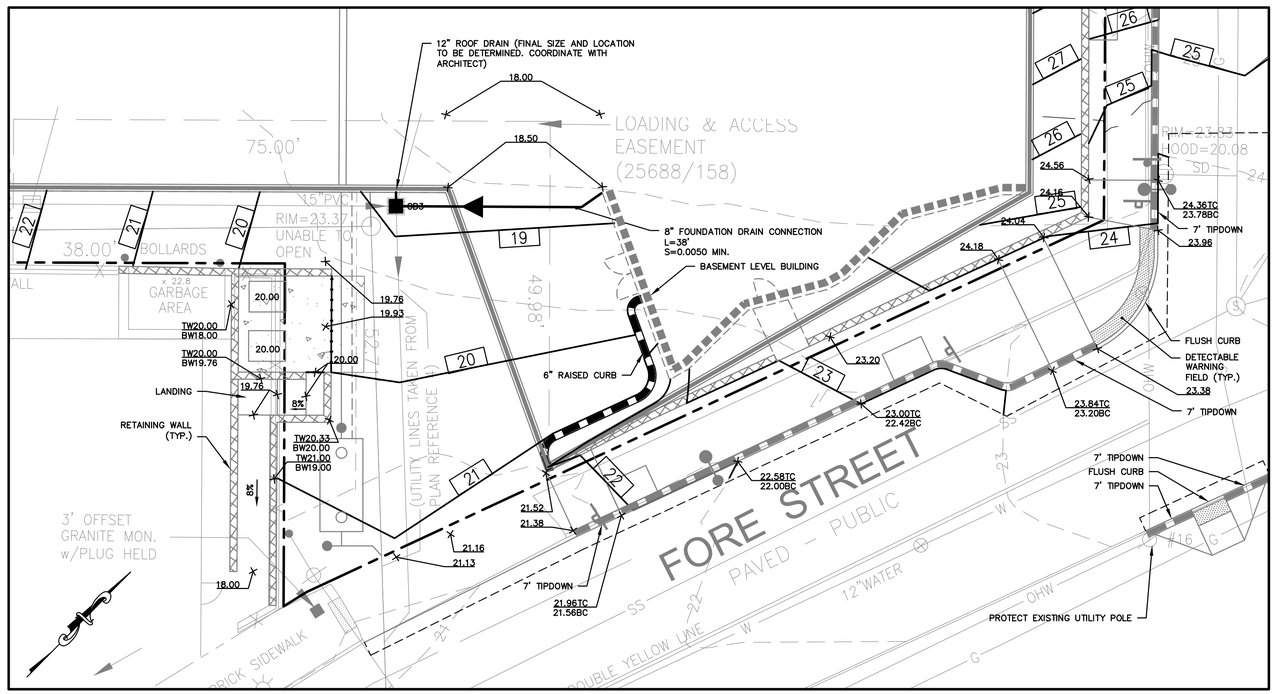
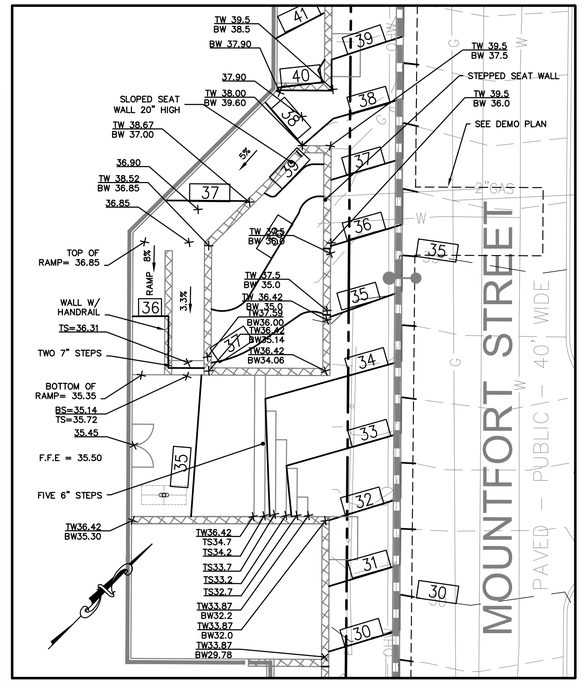
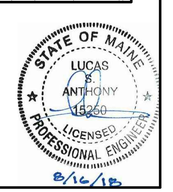
1"=10'



GRADING INSET 4
1"=10'



GRADING INSET 3
1"=10'



10 0 5 10 20
1 inch = 10 ft.

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SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: 1"=10'	Job No.: 3184
File Name: 3184-GRADING.dwg		

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Drawing Name: GRADING INSETS
Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME
Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. C105

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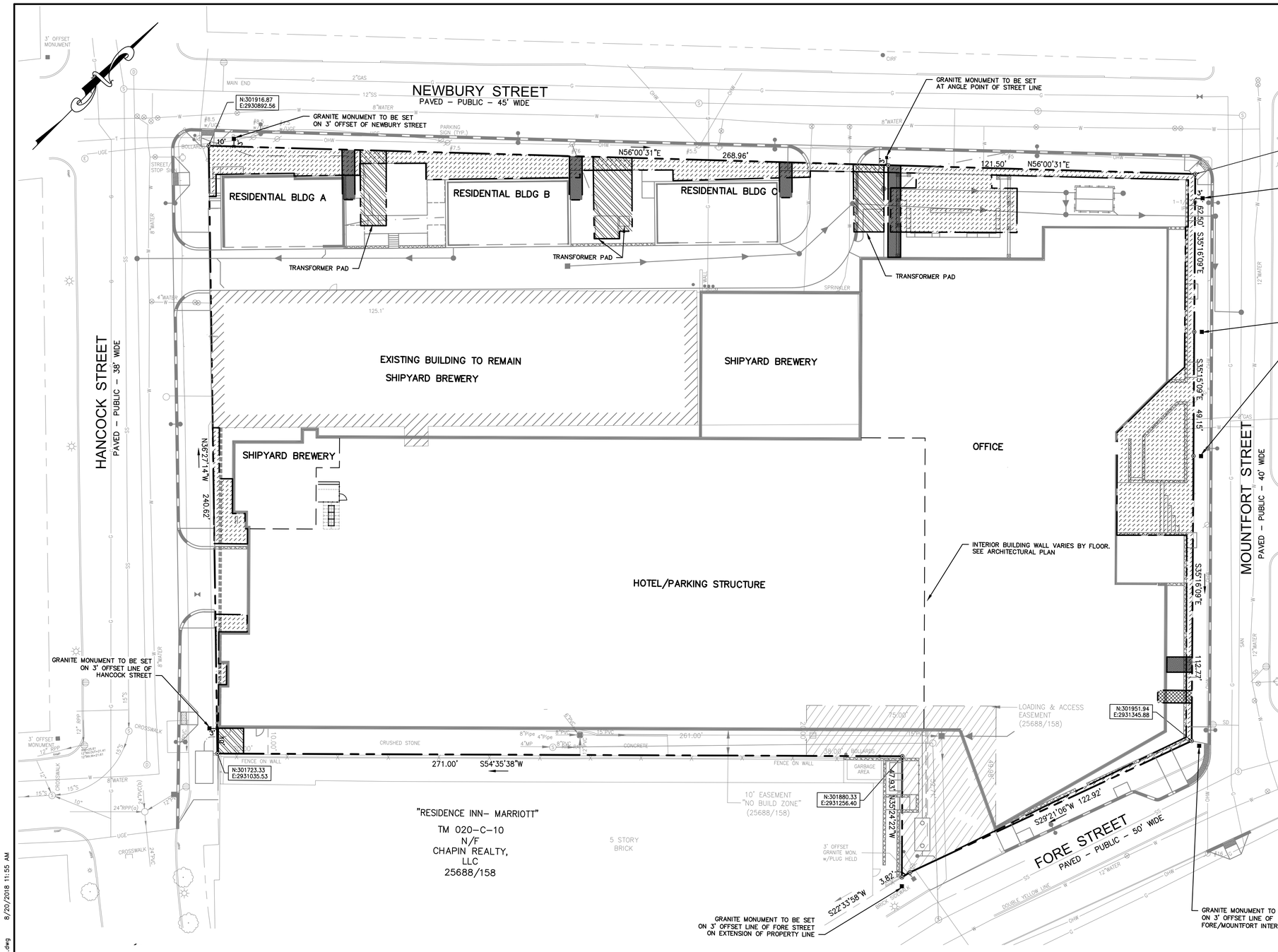

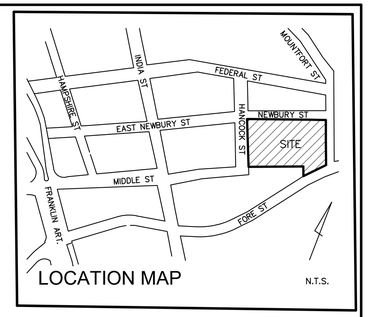

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE	
	EASEMENT LINE	
	MONUMENT	
	CURB	
	RELEASE OR EASEMENT (SEE SHEET C003)	⑥
	PROPERTY REBAR TO BE SET	⊙
	BUILDING	
	EDGE OF PAVEMENT	
	BUILDING OVERHANG	
	UTILITY POLE	
	MANHOLE	
	CATCH BASIN	
	LIGHTPOLE	

EASEMENT FOR CENTRAL MAINE POWER
EASEMENT FOR PORTLAND WATER DISTRICT
EASEMENT FOR UNITIL GAS
EASEMENT FOR PUBLIC SIDEWALK ON PRIVATE PROPERTY

APPROVAL BY:
CITY OF PORTLAND PLANNING BOARD

DATE: _____

GENERAL NOTES:

1. THIS SUBDIVISION INTENDS TO PROVIDE FOR THE FOLLOWING CONDOMINIUM UNITS:
   1) RESIDENTIAL BUILDING A (4 UNITS)
   2) RESIDENTIAL BUILDING B (4 UNITS)
   3) RESIDENTIAL BUILDING C (2 UNITS)
   4) OFFICE
   5) HOTEL
   6) SHIPYARD BREWERY
   7) STRUCTURED PARKING
2. OWNERS OF RECORD:
   TAX MAP 020 BLOCK C LOTS 1,2,5,9, AND 15
   86 NEWBURY STREET, LLC
   470 FORE STREET, PORTLAND, ME 04101
   C.C.R.D. BOOK 34818, PAGE 186
3. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD83

   CITY CONTROL POINTS USED:
   3022 – 3"O/S MONUMENT HANCOCK/THAMES
   N:301388.62
   E:2931424.18
   3000 – 3"O/S MONUMENT AT HANCOCK/FORE
   N:301536.15
   E:2931222.69
4. ELEVATIONS ARE BASED ON CITY OF PORTLAND VERTICAL DATUM. BENCHMARK USED IS A USC&GS DISK AT 17 COMMERCIAL STREET ELEVATION=14.50.
5. STREET LINES REPRODUCED FROM MARKERS FOUND AS SHOWN ON PLAN REFERENCE 3.
6. 50% OF THE SITE AREA MUST BE MAINTAINED AS PERVIOUS SURFACE AS A CONDITION OF APPROVAL.

SITE DATA:
TOTAL SITE AREA=2.15 A.C. (93,775 S.F.)

FLOODING:
THE ENTIRE SITE IS IN THE FLOOD ZONE C.

ZONE INFORMATION:
IS-FBC INDIA STREET FORM-BASED CODE, ABUTTING ZONES:
–UN–URBAN NEIGHBORHOOD SUBDISTRICT
–UT–URBAN TRANSITIONAL SUBDISTRICT

PLAN REFERENCES
1. "SUBDIVISION PLAN ON FORE STREET, PORTLAND, MAINE MADE FOR NORWICH PARTNERS LLC," BY OWEN HASKELL, INC. DATED DECEMBER 12, 2007 AND REVISED THROUGH 02–05–08. AN UNREVISED COPY CAN BE FOUND AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 207 PAGE 783. OHI JOB# 2006–262P.
2. "PLAN OF LAND – LAND TITLE SURVEY ON FORE, INDIA, MIDDLE, NEWBURY, HANCOCK, AND MOUNTFORT STREETS, PORTLAND, MAINE FOR SHIPYARD BREWING CO. LLC," BY OWEN HASKELL, INC. DATED APRIL 1987 AND UPDATED THROUGH 1/10/03. AN EARLIER REVISED VERSION CAN BE FOUND IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 195 PAGE 398. OHI JOB# 95217P.
3. "PLAN OF LAND – STANDARD BOUNDARY SURVEY ON FORE, INDIA, MIDDLE, NEWBURY, HANCOCK, AND MOUNTFORT STREET, PORTLAND, MAINE FOR AMERICAN HOIST & DERRICK CO." BY OWEN HASKELL, INC. DATED APRIL 1987 AND REVISED THROUGH 2/13/92. OHI JOB# 86193P.
4. "SITE PLAN WITH PARKING GARAGE SHIPYARD BREWERY PORTLAND, MAINE FOR SEA DOG REALTY" DATED 3–16–2011 BY ATTAR ENGINEERING INC.

20 0 10 20 40
1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

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SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CAG	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–SUBDIVISION.dwg		

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Drawing Name: PRELIMINARY SUBDIVISION PLAN
Project: **Shipyard Redevelopment** Newbury Street, Portland, ME
Client: **86 Newbury Street, LLC** 470 Fore Street, Portland, ME 04101

Drawing No. C002

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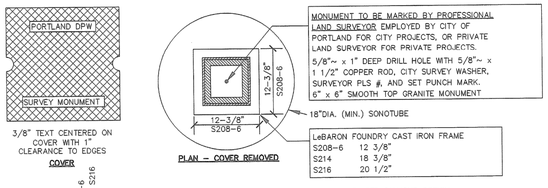
EASEMENTS AND RELEASES:

1.



GRANITE STREET MONUMENT

NOT TO SCALE

GENERAL NOTES:

1. THIS IS THE SUBDIVISION PLAT FOR THE CREATION OF UP TO 63 DWELLING UNITS IN A NEW MIXED–USE BUILDING TO BE CONSTRUCTED ON THE SUBJECT PROPERTY. THE APPROVAL OF THIS PLAT DOES NOT CREATE ANY SUBDIVISION OF THE LAND ON THE SUBJECT PROPERTY. ALTHOUGH THE 63 DWELLING UNITS WILL BE CONSTRUCTED TO CONDOMINIUM UNIT STANDARDS, THE APPLICANT WILL INITIALLY OPERATE THE PROPERTY AS MARKET RATE RENTAL APARTMENTS.
2. APPLICANT INTENDS TO DEVELOP SUBJECT PROPERTY AS A PROJECT NAMED "YORK STREET MIXED–USE DEVELOPMENT" CONSISTING OF UP TO 63 RESIDENTIAL UNITS THAT ARE SUBJECT TO SUBDIVISION REGULATION, PLUS RETAIL AND RESTAURANT. SEE MATRIX ON THIS SHEET FOR UNIT SIZES. CONDOMINIUM DOCUMENTS TO BE RECORDED AT THE CUMBERLAND COUNTY REGISTERY OF DEEDS.
3. THE SIGNATURES OF THE CITY OF PORTLAND PLANNING BOARD ON THIS SUBDIVISION PLAT CONSTITUTE SUBDIVISION APPROVAL FOR THE CREATION OF 63 RESIDENTIAL UNITS. THE NON–RESIDENTIAL UNITS ARE NOT SUBJECT TO SUBDIVISION REGULATION.
4. THE RECORD OWNER OF THE SUBJECT PROPERTY IS 101 YORK STREET, LLC BY VIRTUE OF A DEED FROM J.B. BROWN & SONS RECORDED ON APRIL 27, 2016 AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 33066, PAGE 241. SEE PLAN OF THE NEW DIVISION OF LOTS IN PLAN BOOK 216, PAGE 124.
5. SUBJECT PROPERTY CONSISTS OF PARTIAL LOTS 21, 22 AND 26 ON THE CITY OF PORTLAND TAX MAP 40.
6. TOTAL LAND AREA OF SUBJECT PROPERTY IS APPROXIMATELY 66,787 SQ FT.
7. LAND BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON AN ON–THE–GROUND SURVEY TITLED "NEW DIVISION OF LOTS ON HIGH, DANFORTH, MAPLE & YORK STREETS, PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR J.B. BROWN & SONS" BY OWEN HASKELL, INC. DATED DECEMBER 3, 2013 AND REVISED APRIL 25, 2016 AND RECORDED IN PLAN BOOK 216, PAGE 124.
8. ZONING DISTRICT: SUBJECT PROPERTY IS LOCATED IN THE B–3 DOWNTOWN BUSINESS DISTRICT. SPACE AND BULK CRITERIA FOR THE B–3 DOWNTOWN BUSINESS DISTRICT ARE AS FOLLOWS:
   a. MIN. LOT SIZE: NONE
   b. MIN. STREET FRONTAGE: 15'
   c. MAX FRONT YARD SETBACK: 5' OR LESS
   d. MIN. YARD DIMENSIONS: NONE
   e. MIN. LOT WIDTH: NONE
   f. MAX LOT COVERAGE: 100%
   g. MAX HEIGHT OF BUILDING: 65'
9. THE FOLLOWING IS THE FLOOR SPACE AREA FOR EACH PROPOSED USE:

RESTAURANT:	7,000 S.F.
RETAIL:	9,955 S.F.
RESIDENTIAL:	80,798 S.F.
TOTAL:	97,753 S.F.

10. THE TOTAL NUMBER OF PARKING SPACES REQUIRED FOR THE YORK STREET MIXED–USE DEVELOPMENT IS 124 SPACES. EXCESS PARKING WILL BE PROVIDED ON SITE IN THE PARKING GARAGE.
11. A SUBDIVISION IS DEFINED AS THE DIVISION OF A LOT, TRACT OR PARCEL OF LAND INTO THREE (3) OR MORE LOTS, INCLUDING LOTS OF FORTY (40) ACRES OR MORE, WITHIN ANY FIVE–YEAR PERIOD WHETHER ACCOMPLISHED BY SALE, LEASE, DEVELOPMENT, BUILDINGS OR OTHERWISE AND AS FURTHER DEFINED IN 30–A M.R.S.A. SECTION 4401. THE TERM SUBDIVISION SHALL ALSO INCLUDE THE DIVISION OF A NEW STRUCTURE OR STRUCTURES ON A TRACT OR PARCEL OF LAND INTO THREE (3) OR MORE DWELLING UNITS WTHIN A FIVE–YEAR PERIOD AND THE EXISTING STRUCTURE OR STRUCTURES PREVIOUSLY USED FOR COMMERCIAL OR INDUSTRIAL USE INTO THREE (3) OR MORE DWELLING UNITS WTHIN A FIVE–YEAR PERIOD. THE AREA INCLUDED IN THIS EXPANSION OF AN EXISTING STRUCTURE IS DEEMED TO BE A NEW STRUCTURE FOR THE PURPOSES OF THIS PARAGRAPH. A DWELLING UNIT SHALL INCLUDE ANY PART OF A STRUCTURE WHICH, THROUGH SALE OR LEASE, IS INTENDED FOR HUMAN HABITATION, INCLUDING SINGLE–FAMILY AND MULTI–FAMILY HOUSING CONDOMINIUMS, TIME–SHARE UNITS AND APARTMENTS.
12. THIS IS A PRIVATE DEVELOPMENT. MAINTENANCE AND MANAGEMENT OF SIDEWALKS, STORMWATER DEVICES, SITE LIGHTING, TRASH REMOVAL, AND SNOW REMOVAL SHALL BE THE RESPONSIBILITY OF THE OWNER. IN THE EVENT THE OWNER DECIDES AT SOME TIME IN THE FUTURE TO SELL THE INDIVIDUAL DWELLING UNITS SEPARATELY AS CONDOMINIUM UNITS, A CONDOMINIUM ASSOCIATION WILL BE ORGANIZED, AS SUCCESSOR TO THE OWNER, TO TAKE OVER THE SAID RESPONSIBILITIES OF MAINTENANCE AND MANAGEMENT AS DESCRIBED IN THIS NOTE 12.
13. THE OWNER SHALL BE RESPONSIBLE FOR COMPLYING WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST–CONSTRUCTION STORM WATER MANAGEMENT, WHICH SPECIFIES ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS AT A MINIMUM. IN ADDITION, THE OWNER SHALL BE RESPONSIBLE FOR COMPLYING WITH THE CONDITIONS OF THE SUBMITTED STORMWATER MANAGEMENT PLANS AND MEET CITY STANDARDS AND STATE GUIDELINES. STORMWATER DRAINAGE SYSTEM MAINTENANCE AGREEMENT BETWEEN THE CITY OF PORTLAND AND 101 YORK STREET, LLC TO BE RECORDED AT THE CUMBERLAND COUNTY REGISTERY OF DEEDS. AS SET FORTH IN NOTE 12 ABOVE, IN THE EVENT THE OWNER DECIDES AT SOME TIME IN THE FUTURE TO SELL THE INDIVIDUAL DWELLING UNITS SEPARATELY AS CONDOMINIUM UNITS, A CONDOMINIUM ASSOCIATION WILL BE ORGANIZED, AS SUCCESSOR TO THE OWNER, TO TAKE OVER THE SAID RESPONSIBILITIES OF MAINTENANCE AND MANAGEMENT AS DESCRIBED IN THIS NOTE 13.
14. DURING CONSTRUCTION THE DEVELOPER/CONTRACTOR/SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE SUBMITTED STORMWATER MANAGEMENT PLANS AND MEET CITY STANDARDS AND STATE GUIDELINES.
15. FOR PURPOSES OF SUCCESSION FOR THE OBLIGATIONS AND RESPONSIBILITIES SET FORTH IN THESE NOTES, INCLUDING NOTES 12 AND 13 ABOVE, A DECLARATION OF CONDOMINIUM FOR THE YORK STREET MIXED USE DEVELOPMENT SHALL BE RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

WAIVERS:

16. THE PLANNING BOARD VOTED X–X TO GRANT THE FOLLOWING WAIVERS:

SUBDIVISION CONDITIONS OF APPROVAL:

17. THE PLANNING BOARD VOTED X–X THAT THE PLAN IS IN CONFORMANCE WITH THE SUBDIVISION STANDARDS OF THE LAND USE CODE, SUBJECT TO THE FOLLOWING CONDITIONS OF APPROVAL, WHICH MUST BE MET PRIOR TO THE SIGNING OF THE PLAT:

1. CONSTRUCTION:
   a. METHODS AND MATERIALS USED IN CONSTRUCTION OF IMPROVEMENTS WITHIN THE CITY RIGHT OF WAY SHALL CONFORM TO CURRENT CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS AND SPECIFICIATIONS AND/OR CURRENT M.D.O.T. STANDARDS AND SPECIFICATIONS.
   b. ALL CURBING SHALL BE DESIGNED AND BUILT WITH TIP–DOWNS AT ALL DRIVEWAYS AND CROSSWALKS, IN ACCORDANCE WITH CITY OF PORTLAND PUBLIC WORKS DEPARTMENT TECHNICAL STANDARDS AND GUIDELINES. FINAL AS–BUILT LOCATIONS OF CURBING AND TIP DOWNS SHALL BE COORDINATED WITH PUBLIC WORKS DEPARTMENT. ALL WATER MAINS, SERVICES AND ASSOCIATED APPURTENANCE SHALL BE IN CONFORMANCE WITH PORTLAND WATER DISTRICT STANDARDS. ALL NATURAL GAS MAINS, SERVICES AND ASSOCIATED APPURTENANCES SHALL BE IN CONFORMANCE WITH UNITIL STANDARDS.
   c. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES" PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. CONTRACTOR SHALL POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
   d. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. APPLICANT, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.
   e. WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN, APPROPRIATE FOR THE TYPE OF CONSTRUCTION, MUST BE EMPLOYED TO REGULATE TRAFFIC.
   f. CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED AND DISPOSED OF IN ACCORDANCE WITH CITY OF PORTLAND'S SOLID WASTE ORDINANCE CHAPTER 12.
   g. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE DEVELOPER/CONTRACTOR AT THEIR EXPENSE.
   h. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERTY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE THEIR INTEGRITY. IF DISTURBED THEY SHALL BE REPLACED BY A SURVEYOR LICENSED IN THE STATE OF MAINE AT THE CONTRACTOR/DEVELOPER'S EXPENSE.
   i. ALL SANITARY SERVICES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT SEWER DIVISION.
   j. ALL NEW CONNECTIONS, RECONNNECTIONS, ETC. TO SANITARY OR STORM SEWERS SHALL REQUIRE A CONNECTION PERMIT PRIOR TO BEGINNING ANY WORK. THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO COMMENCEMENT TO ALLOW FOR INSPECTION.
   k. A PERMIT MUST BE OBTAINED FROM THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN THE CITY RIGHT–OF–WAY.
   l. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATIONS TO OR DEVIATIONS FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION, TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION AND SURFACING OF PARKING AREAS, AND LOCATIONS AND SIZE OF BUILDINGS.
   m. LANDSCAPING SHALL MEET THE CITY OF PORTLAND TECHNICAL MANUAL, INCLUDING STREET TREES TO BE INSTALLED IN THE CITY RIGHT–OF–WAY AS SHOWN ON THE LANDSCAPING PLAN. STREET TREES SHALL BE A SPECIES IDENTIFIED ON THE CITY OF PORTLAND RECOMMENDED TREE LIST, UNLESS OTHERWISE APPROVED BY THE PORTLAND CITY ARBORIST OR HIS/HER DESIGNEE.
   n. ALL DISTURBED AREA ON THE STIE NOT COVERED BY BUILDINGS OR PAVED AREA SHALL BE STABILIZED WITH LOAM AND SEED OR OTHER MATERIALS AS REQUIRED BY BEST MANAGEMENT PRACTICES.
   o. THE CONTRACTOR OR APPLICANT IS REQUIRED TO NOTIFY THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT INSPECTION DIVISION IN WRITING THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE WITH THE CONTRACTOR, DEVELOPMENT REVIEW COORDINATOR, PUBLIC WORKS REPRESENTATIVE AND OWNER TO REVIEW THE CONSTRUCTION SCHEDULE AND CRITICAL ASPECTS OF THE SITE WORK. AT THAT TIME, THE SITE/BUILDING CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A DETAILED CONSTRUCTION SCHEDULE AT ATTENDING CITY REPRESENTATIVE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A MUTUALLY AGREEABLE TIME FOR PRECONSTRUCTION MEETING.

DWELLING UNIT SIZE MATRIX

UNIT TYPE	AREA SF	TOTAL
EFFICIENCY	571	2
EFFICIENCY	507	1
EFFICIENCY	505	1
1 BEDROOM	789	1
1 BEDROOM	750	2
1 BEDROOM	993	1
2 BEDROOM	1,192	1
2 BEDROOM	1,463	1
TOTAL:		10

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S. ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

Rev.	Date	Revision
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Design: CEH	Draft: CG	Date: JUL 2018
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File Name: 3184–SUBDIVISION.dwg		

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Drawing Name: SUBDIVISION NOTES AND DETAILS

Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME

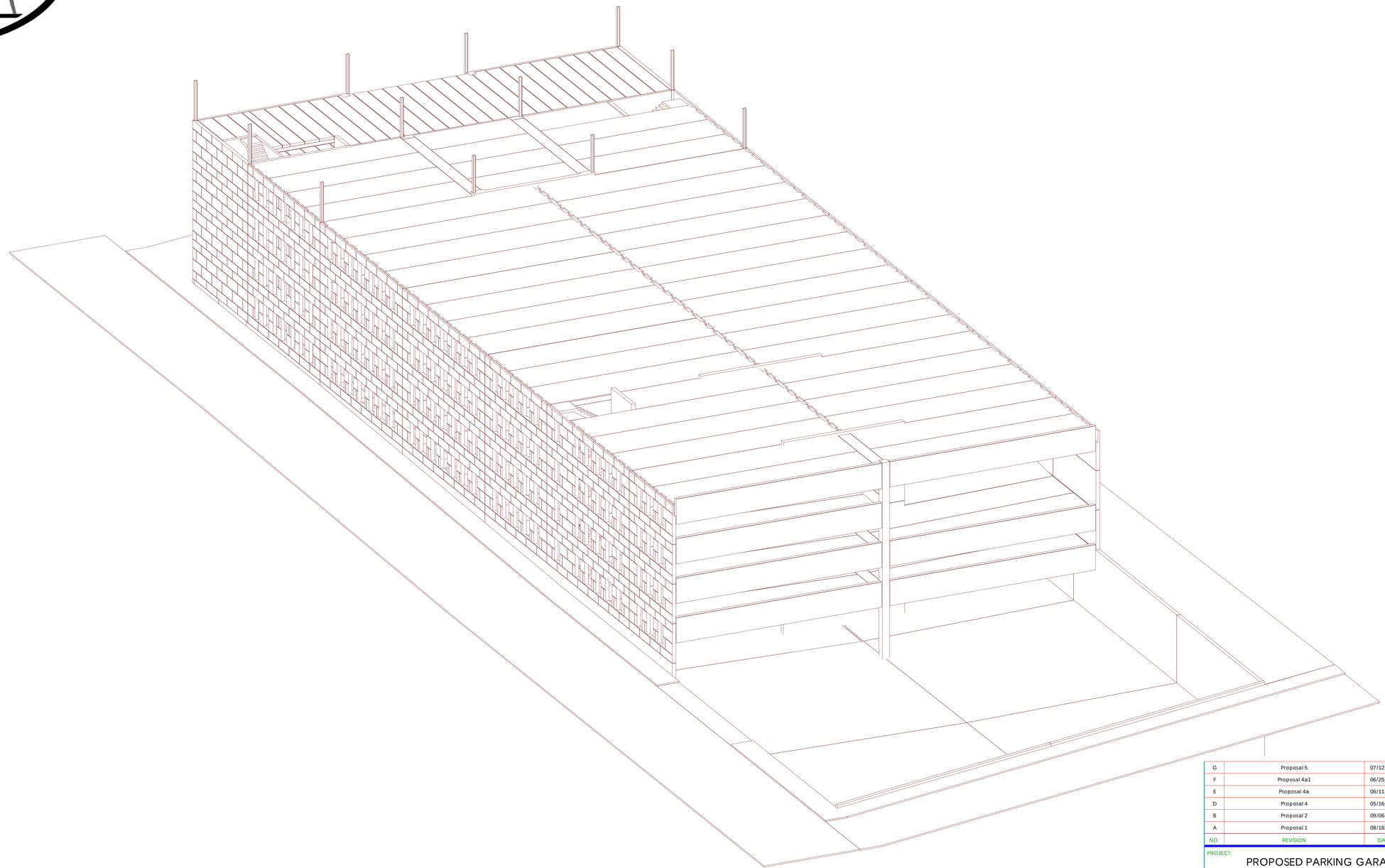
Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. C003

U:\3184_Shipyard Brewing\Z – CAD\DWG\3184–SUBDIVISION.dwg 8/20/2018 11:55 AM

PROPOSED PARKING GARAGE

SHIPYARD BREWERY, PORTLAND MAINE



CUSTOMER:

ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:

ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PRECAST PRODUCER:

STRESCON LIMITED
101 Ashburn Lake Road
Saint John, New Brunswick
Phone: 506-633-8877
Fax: 506-632-7576

STRESCON LIMITED
131 Duke Street P.O. Box 44205
Bedford, Nova Scotia B4A 3Z8
Phone: 902-494-7400
Fax: 902-494-7401

NO.	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
COVER SHEET

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DETAILER:	CHECKER:
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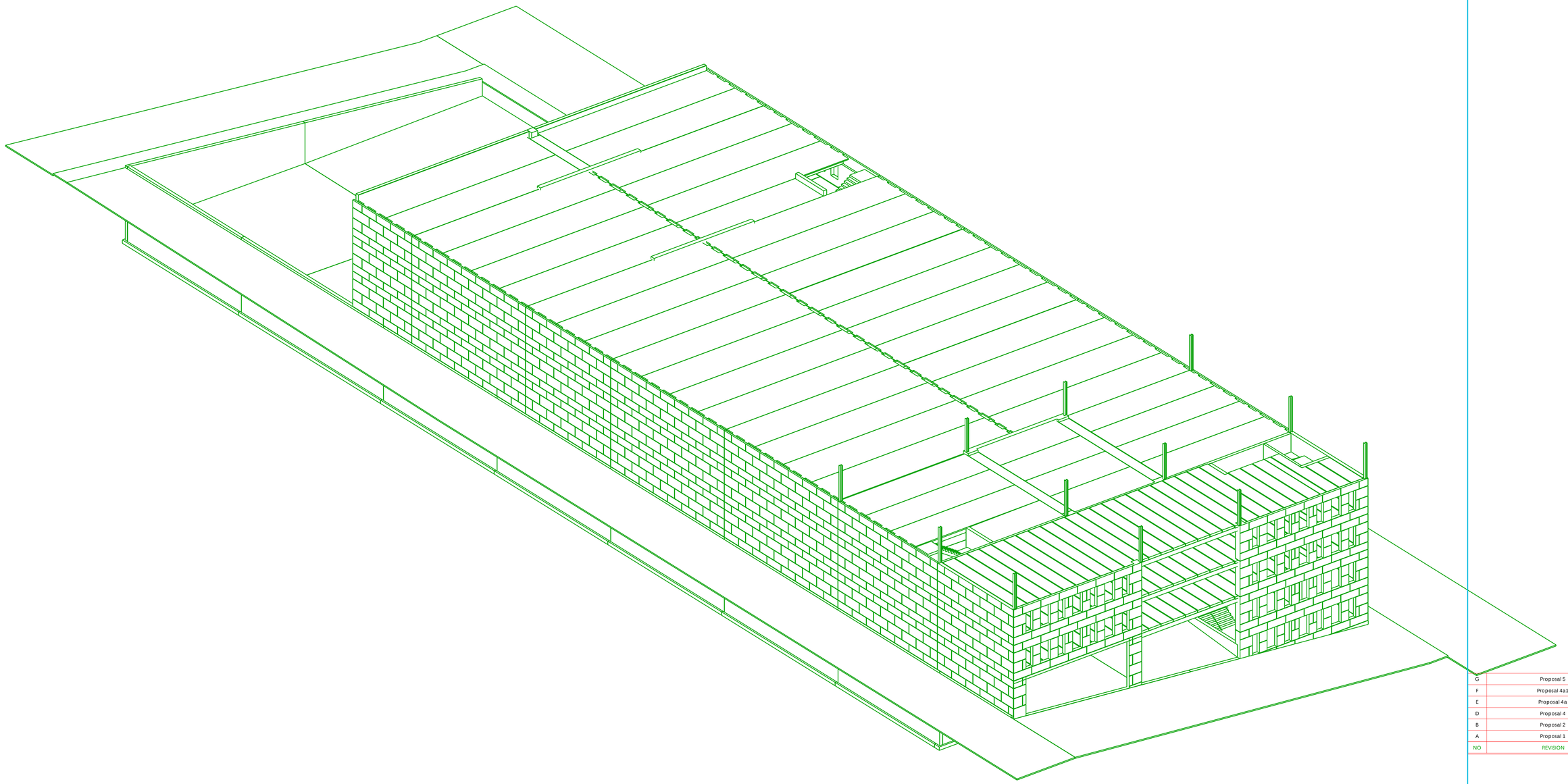
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-000	G



3d

NO	REVISON	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
3D Layout

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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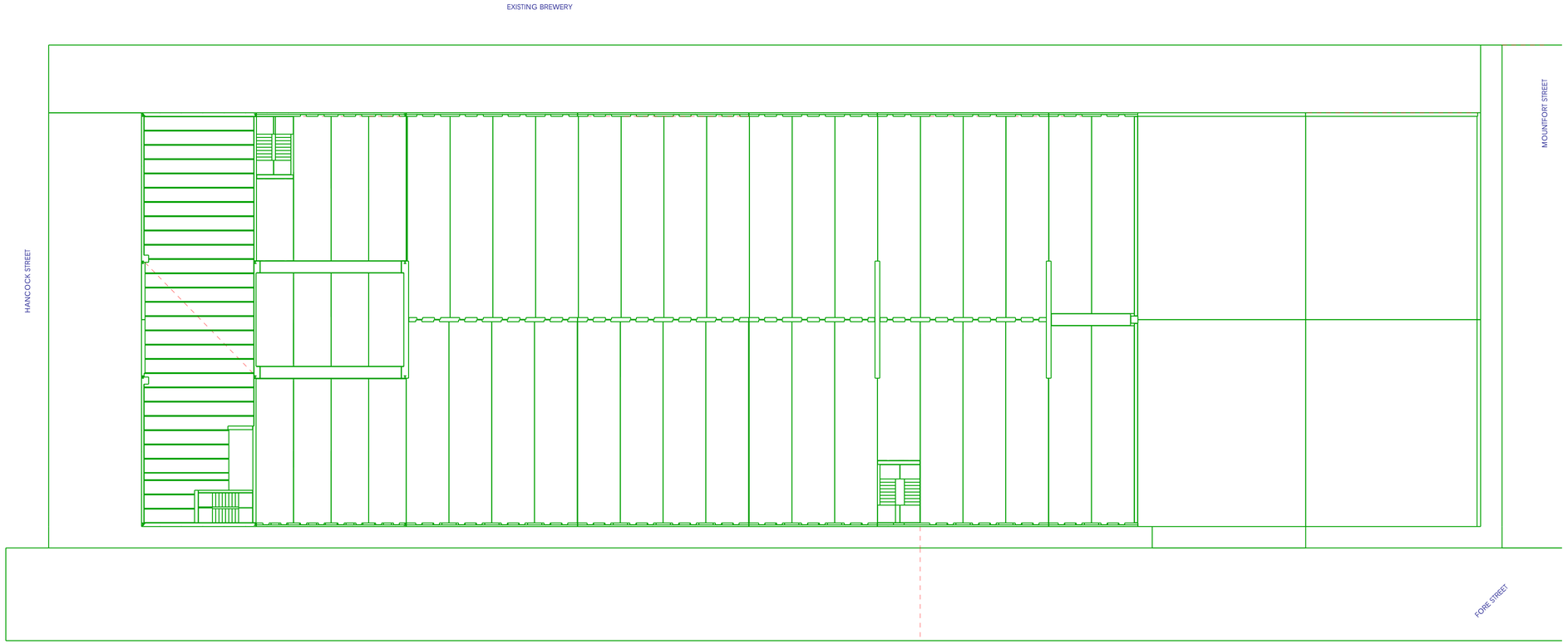
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-001	G



NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	
00	Proposal 1	01/01/1970	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
Plot Plan

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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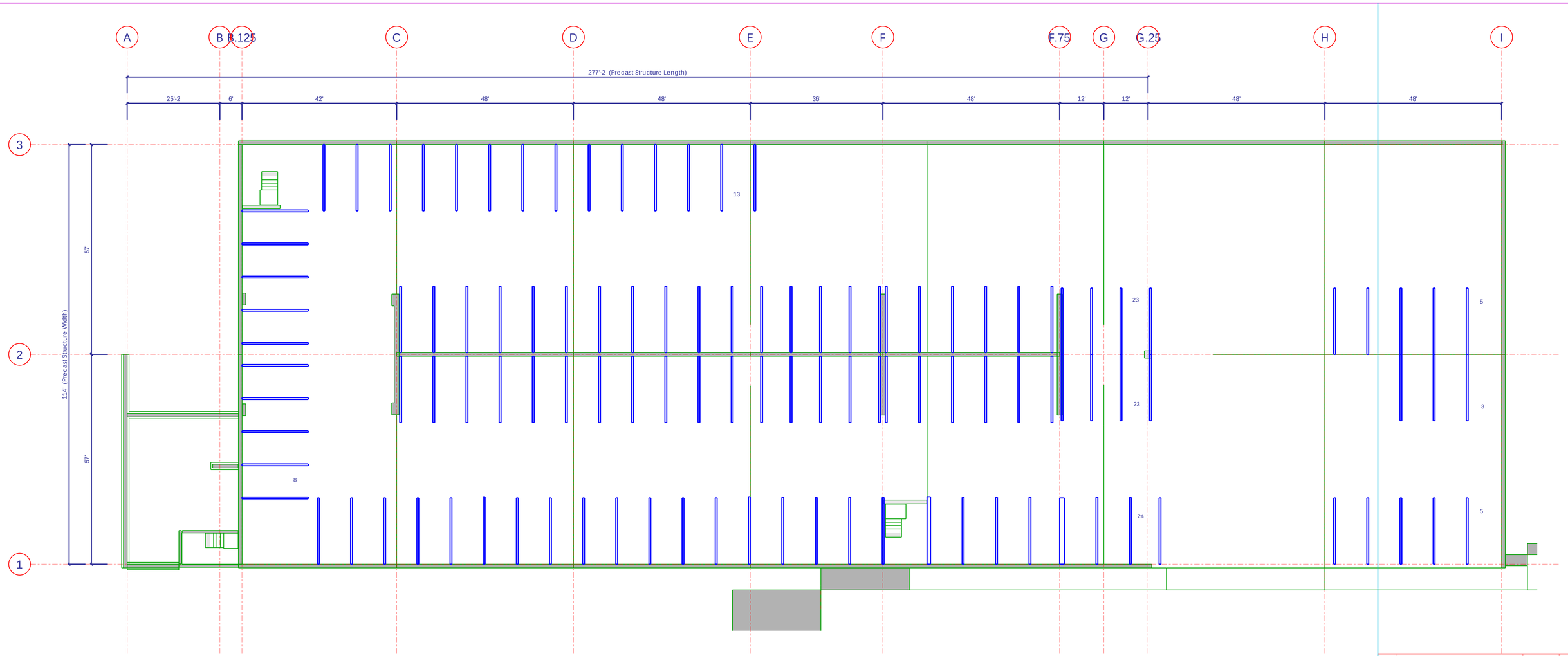
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-002	G



PLAN L0-18'0"

NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
PC Layout
Parking Level L0
104 Stalls

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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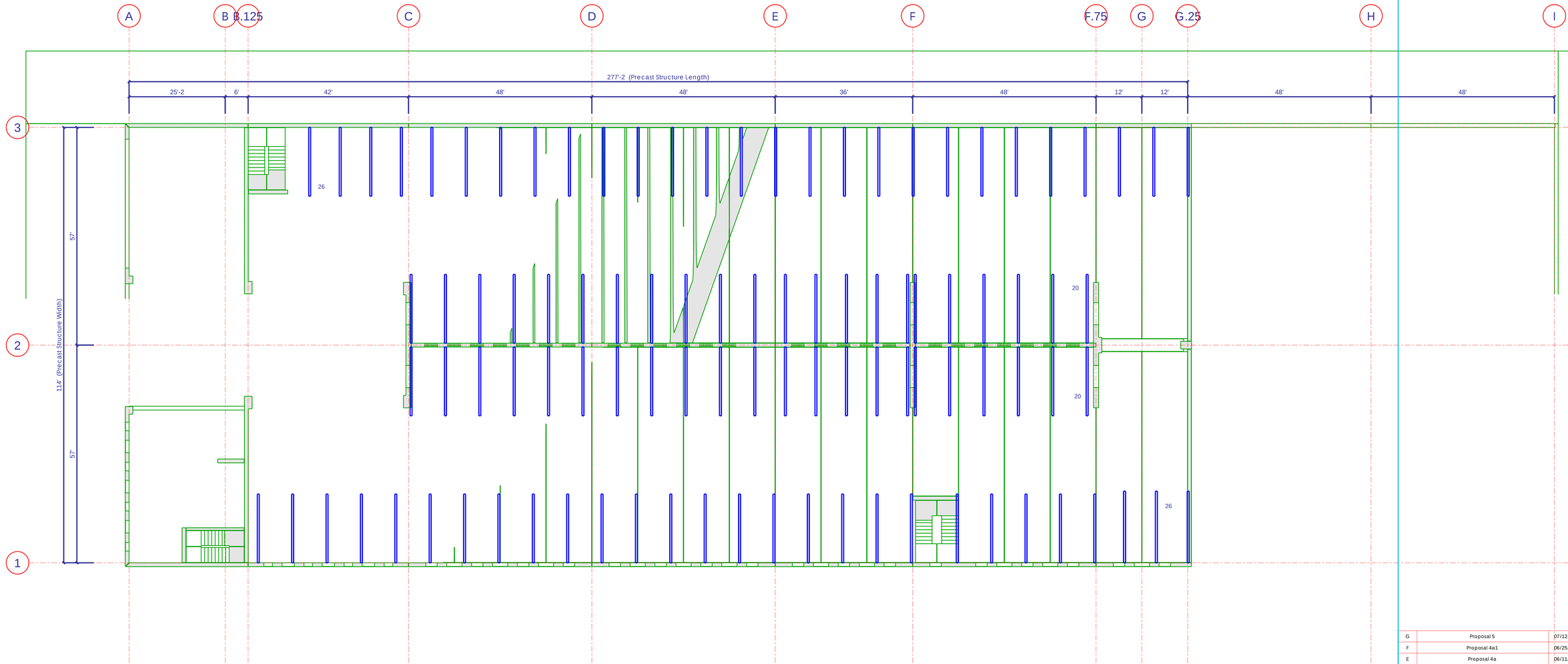
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-101	G



PLAN L1-36'0"

NO	REVISON	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
PC Layout
Parking Level L1
92 Stalls

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK
BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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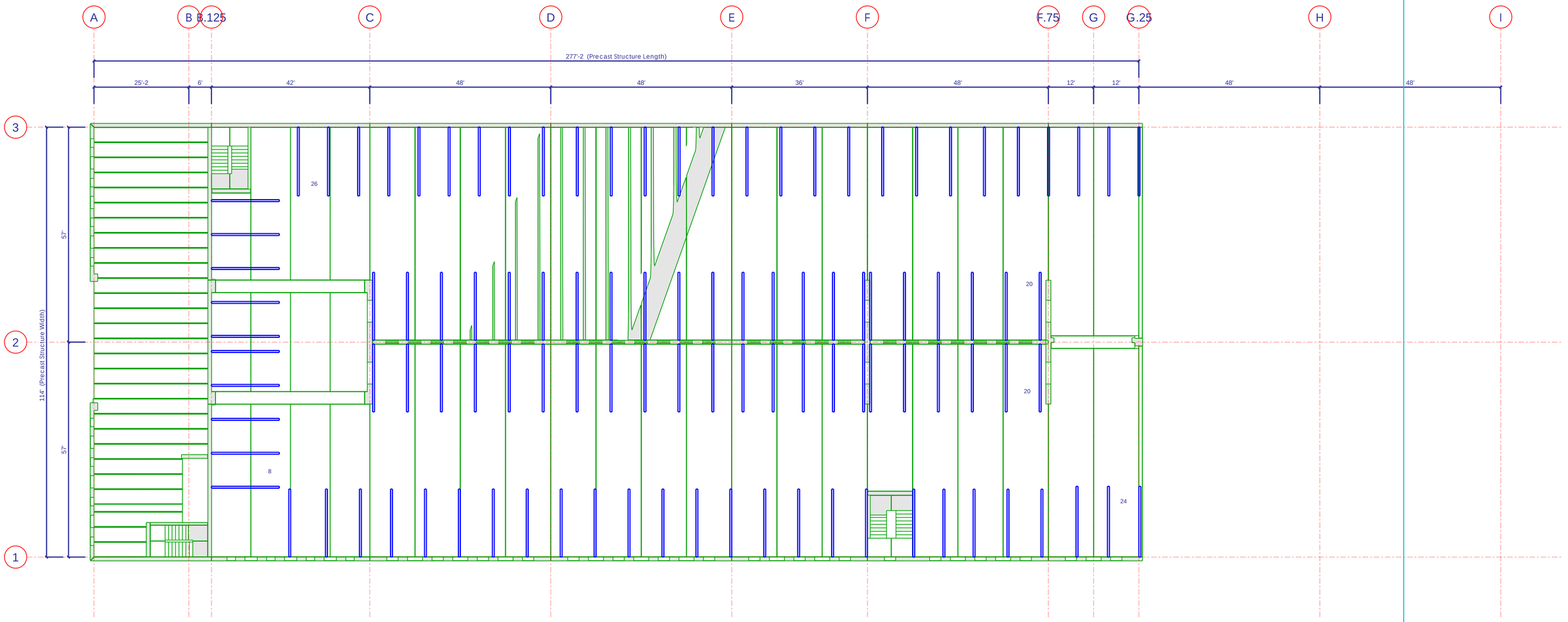
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-102	G



PLAN L2-46'6"

NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
PC Layout
Parking Level L2
98 Stalls

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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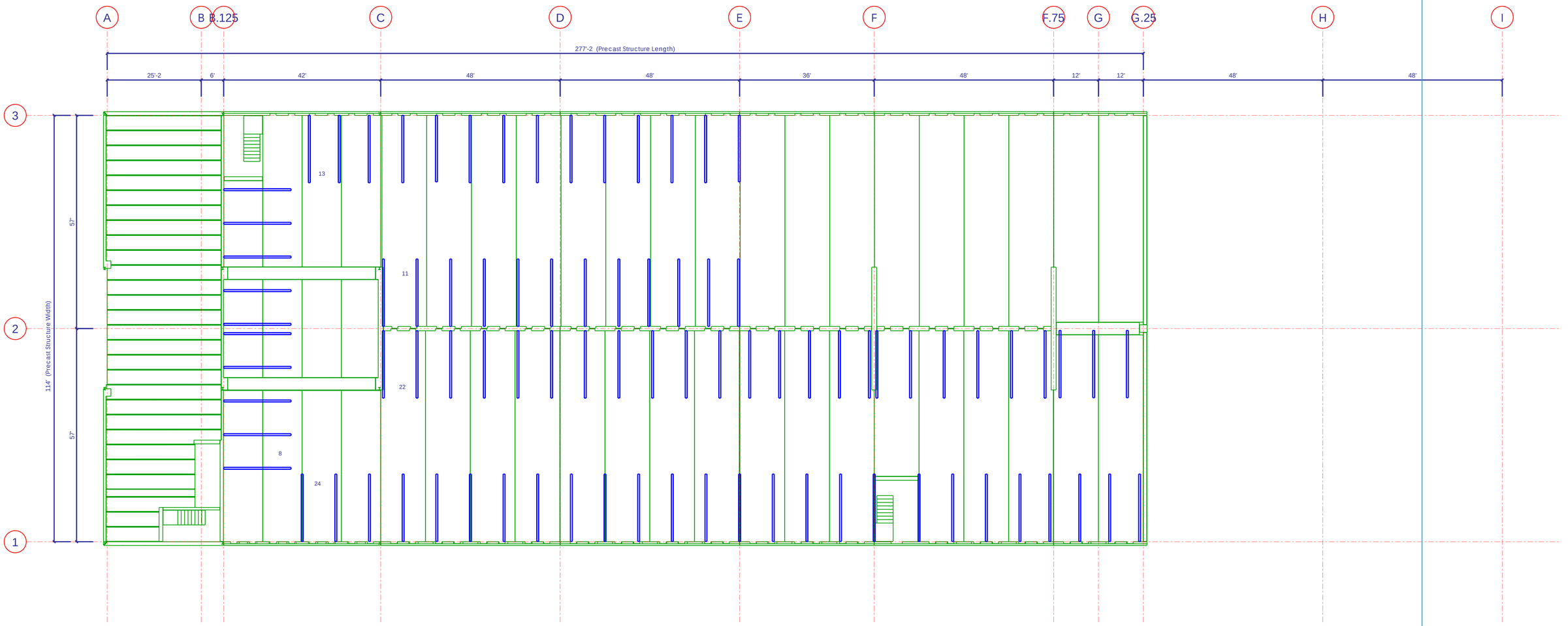
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-103	G



PLAN L3-57'0"

NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
PC Layout
Parking Level L3
78 Stalls

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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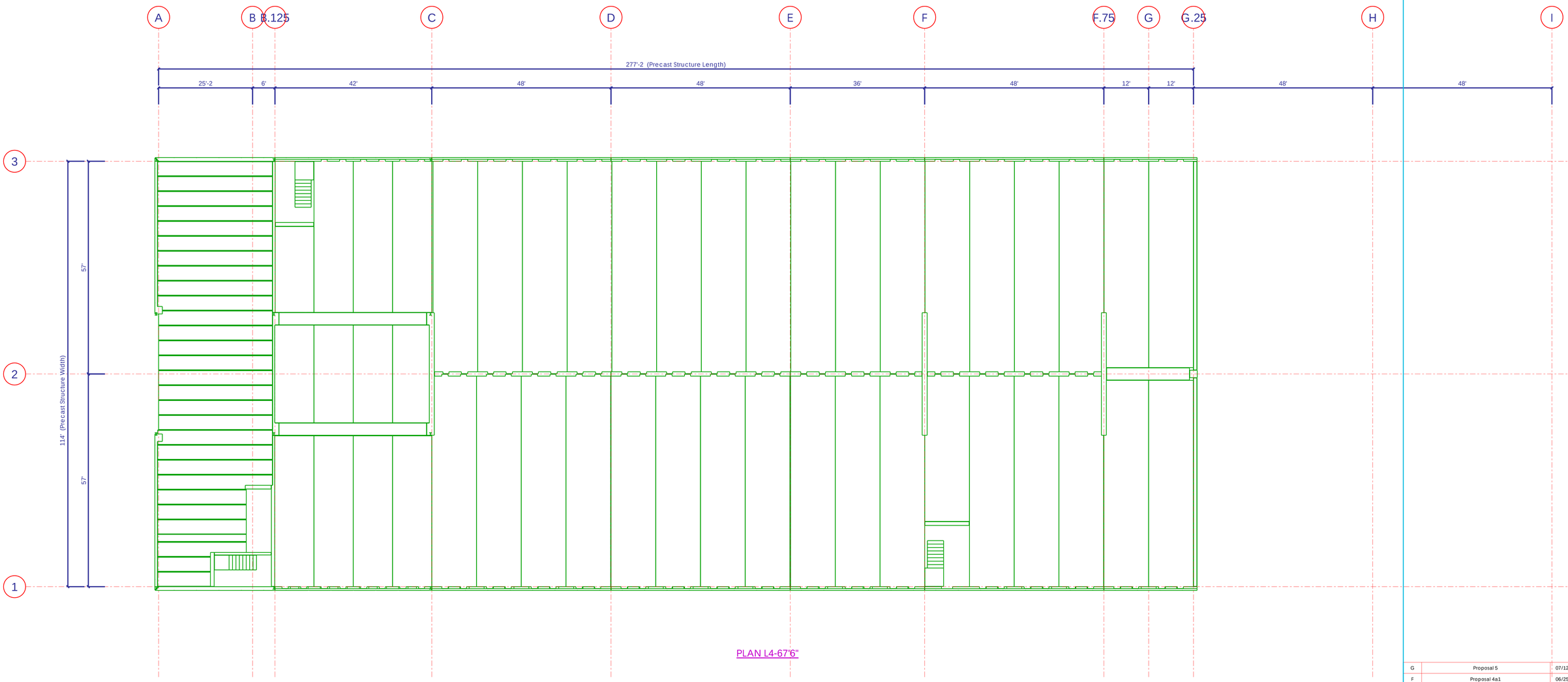
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-104	G



PLAN L4-67'6"

NO.	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
PC Layout
Transfer Slab L4

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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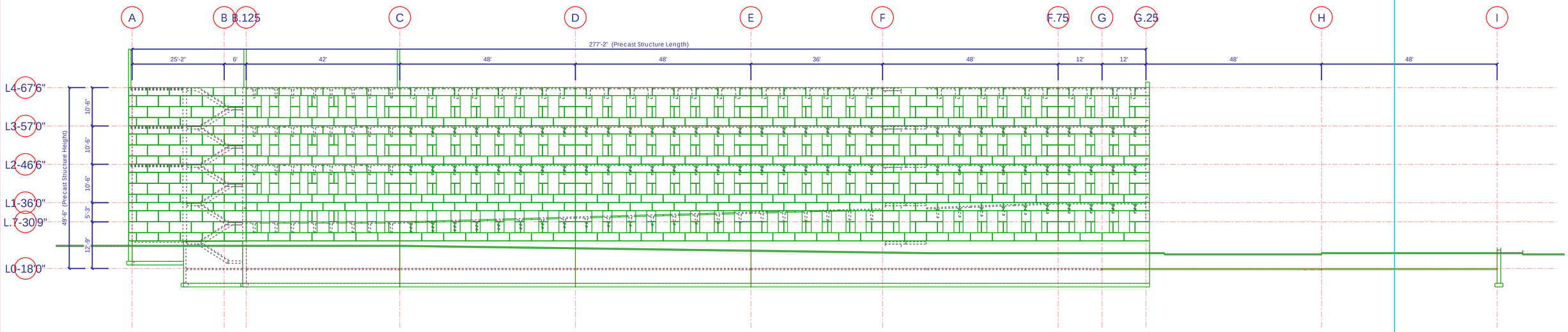
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-105	G



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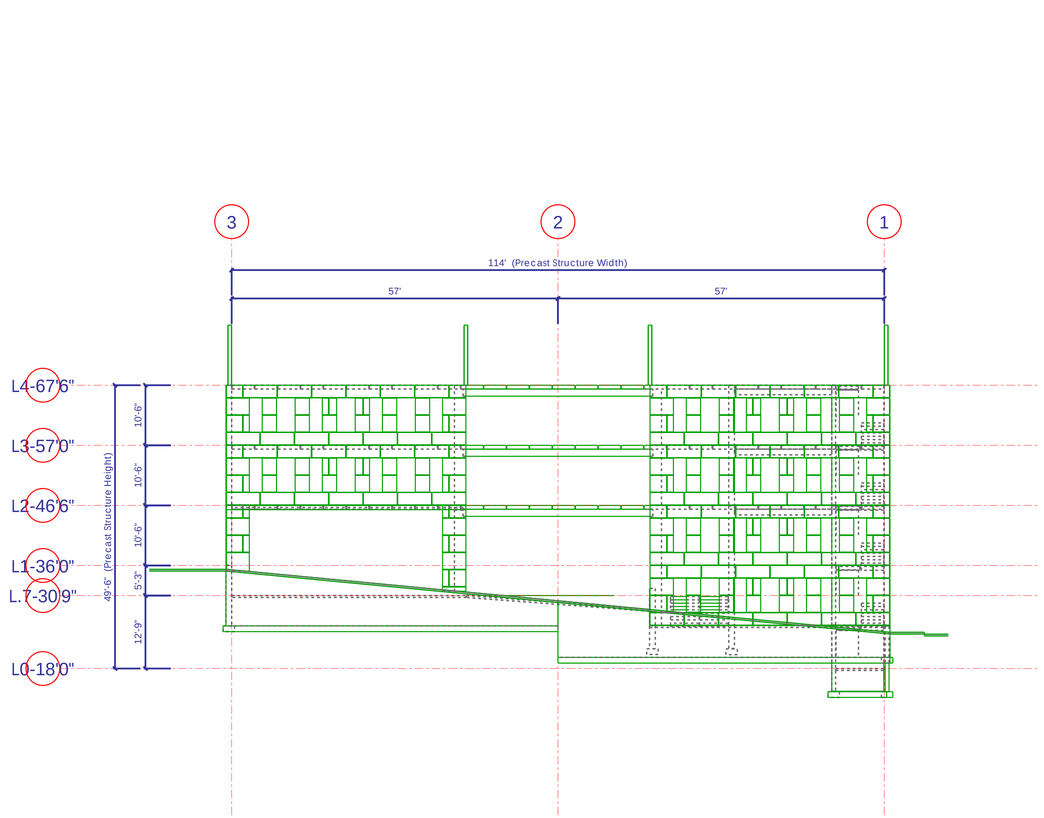

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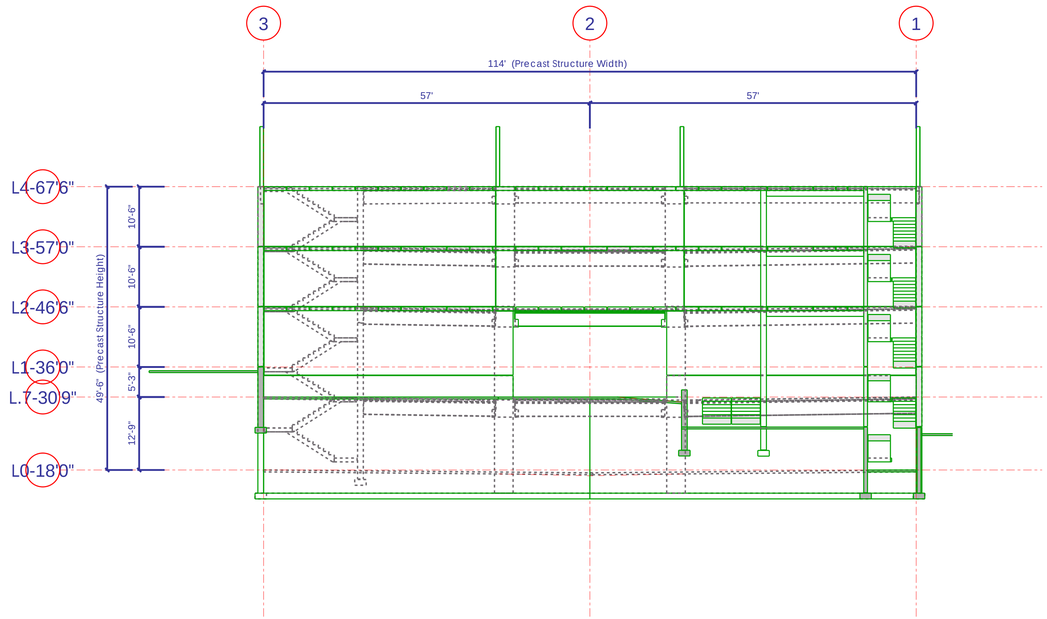

GRID B.25

NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
Precast Elevations
At Grid 1, Grid A & Grid B.25

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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MODEL:	CONTRACT NO:	DWG. NO:	REV:
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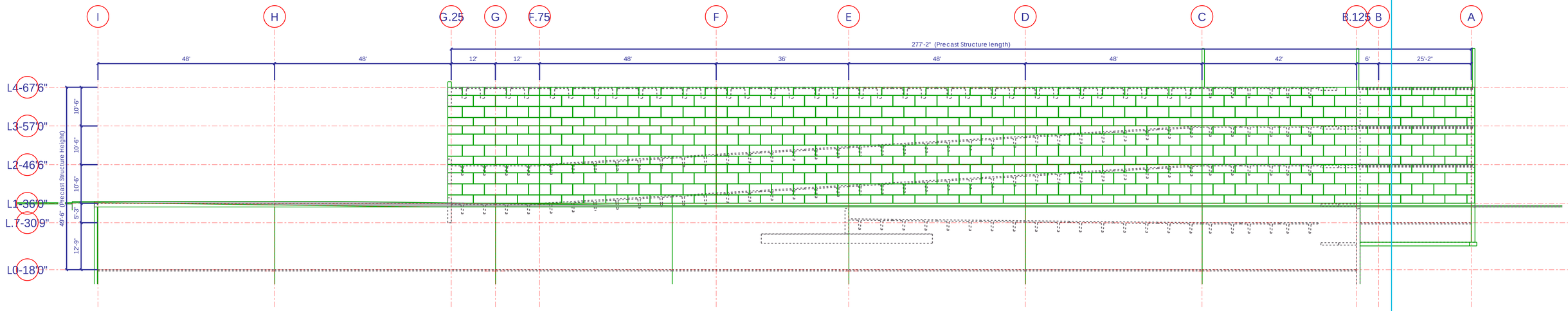

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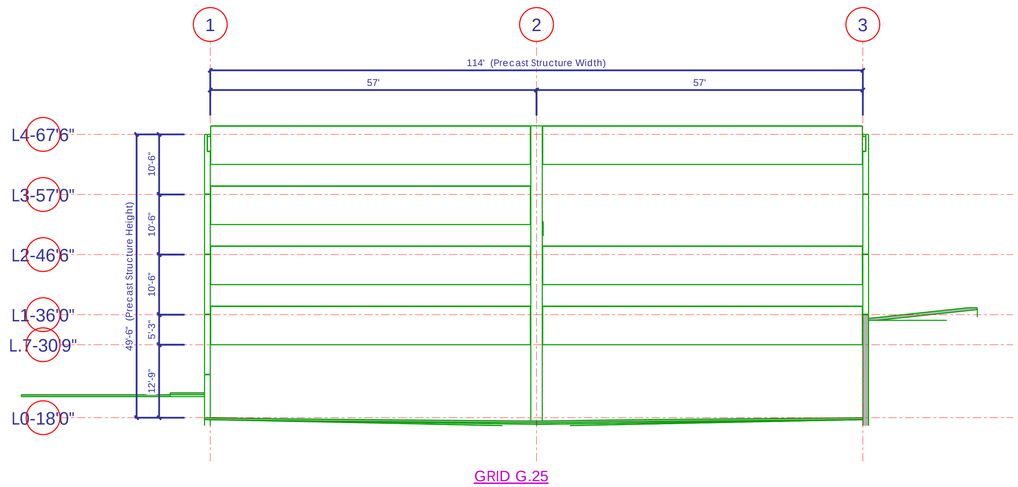

GRID G.25

NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
Precast Elevations
At Grid 3 & Grid G.25

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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MODEL:	CONTRACT NO:	DWG. NO:	REV:
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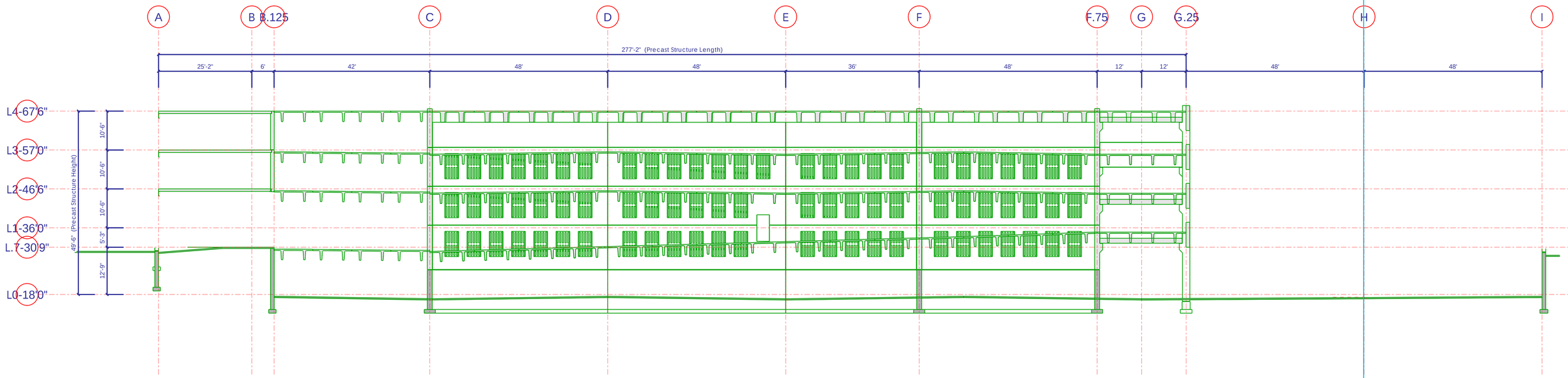

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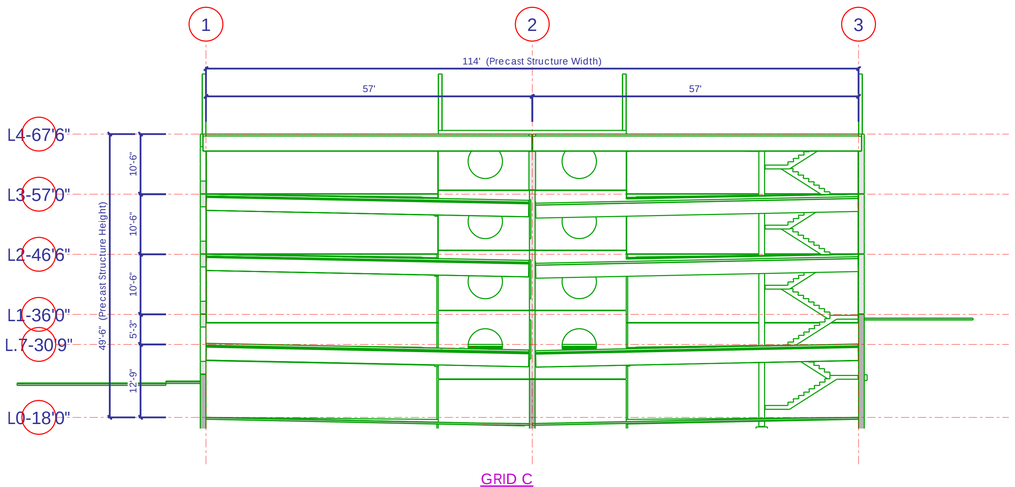

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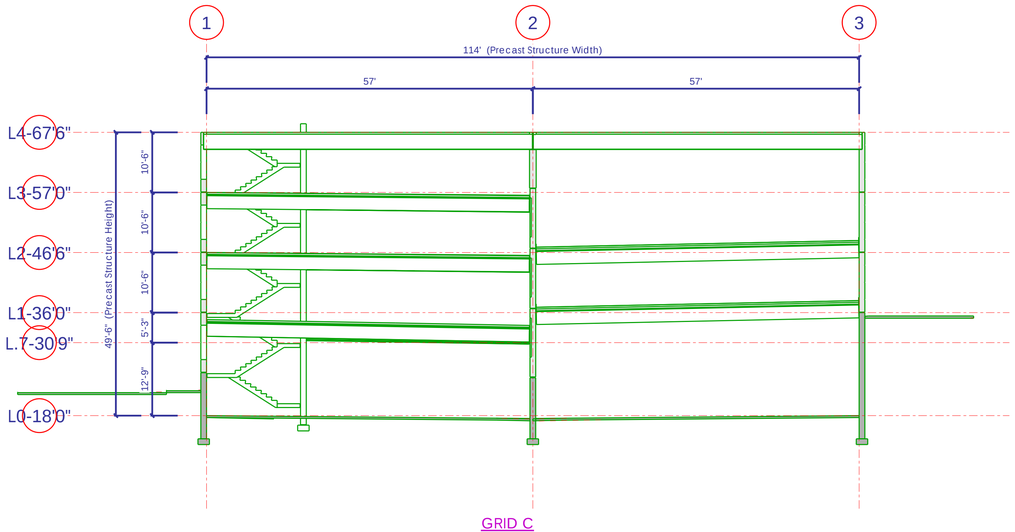

GRID C

NO	REVISION	DATE	BY	CHK'D
G	Proposal 5	07/12/2018	AJL	
F	Proposal 4a1	06/25/2018	AJL	
E	Proposal 4a	06/11/2018	AJL	
D	Proposal 4	05/16/2018	AJL	
B	Proposal 2	09/06/2017	AJL	
A	Proposal 1	08/18/2017	AJL	

ENGINEER'S STAMP:

CUSTOMER:
ALLIED COOK CONSTRUCTION
1950 LAFAYETTE ROAD
PORTSMOUTH, NH

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE

CONSULTING ENGINEER:

PROJECT:
PROPOSED PARKING GARAGE
SHIPYARD BREWERY, PORTLAND MAINE

TITLE:
Building Sections
At Grids 2, C & F

STRESCON LIMITED
SAINT JOHN, NEW BRUNSWICK — BEDFORD, NOVA SCOTIA
Modelled in Tekla Structures 3D

PROJ. MGR:	DESIGN ENG:	PR. LEADER:	DRAWN BY:	CHECKER:
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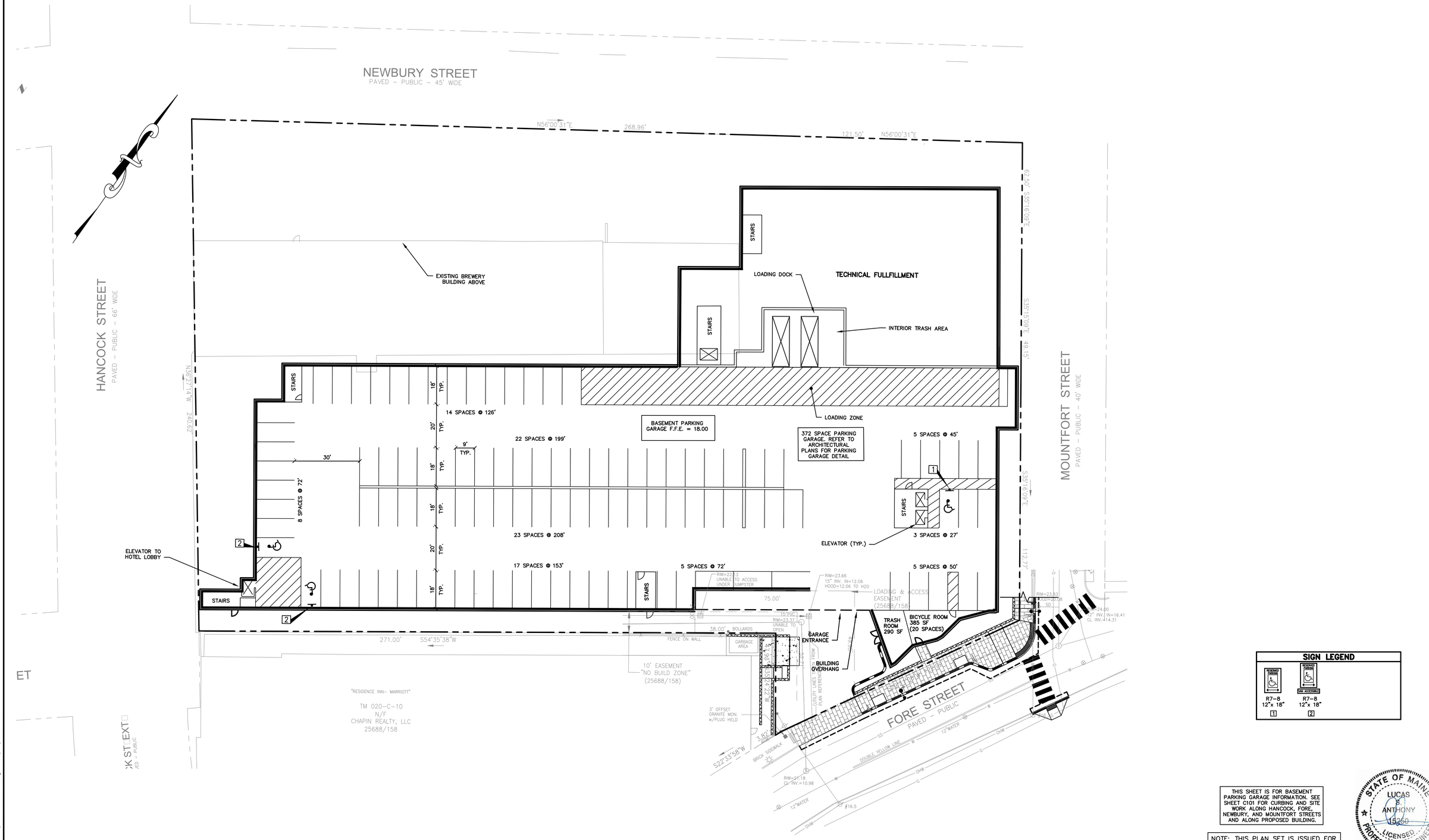
MODEL:	CONTRACT NO:	DWG. NO:	REV:
Shipyard Brewery Parking Garage	0	PC-301	G



THIS SHEET IS FOR BASEMENT PARKING GARAGE INFORMATION. SEE SHEET C101 FOR CURBING AND SITE WORK ALONG HANCOCK, FORE, NEWBURY, AND MOUNTFORT STREETS AND ALONG PROPOSED BUILDING.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
LUCAS S. ANTHONY
15250
LICENSED PROFESSIONAL ENGINEER
8/16/18

Rev.	Date	Revision
2	8/20/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft: CG	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–SP_L0_L2.dwg		

This plan shall not be modified without written permission from Gorrill Palmer (GP). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GP.

GORRILL PALMER
Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

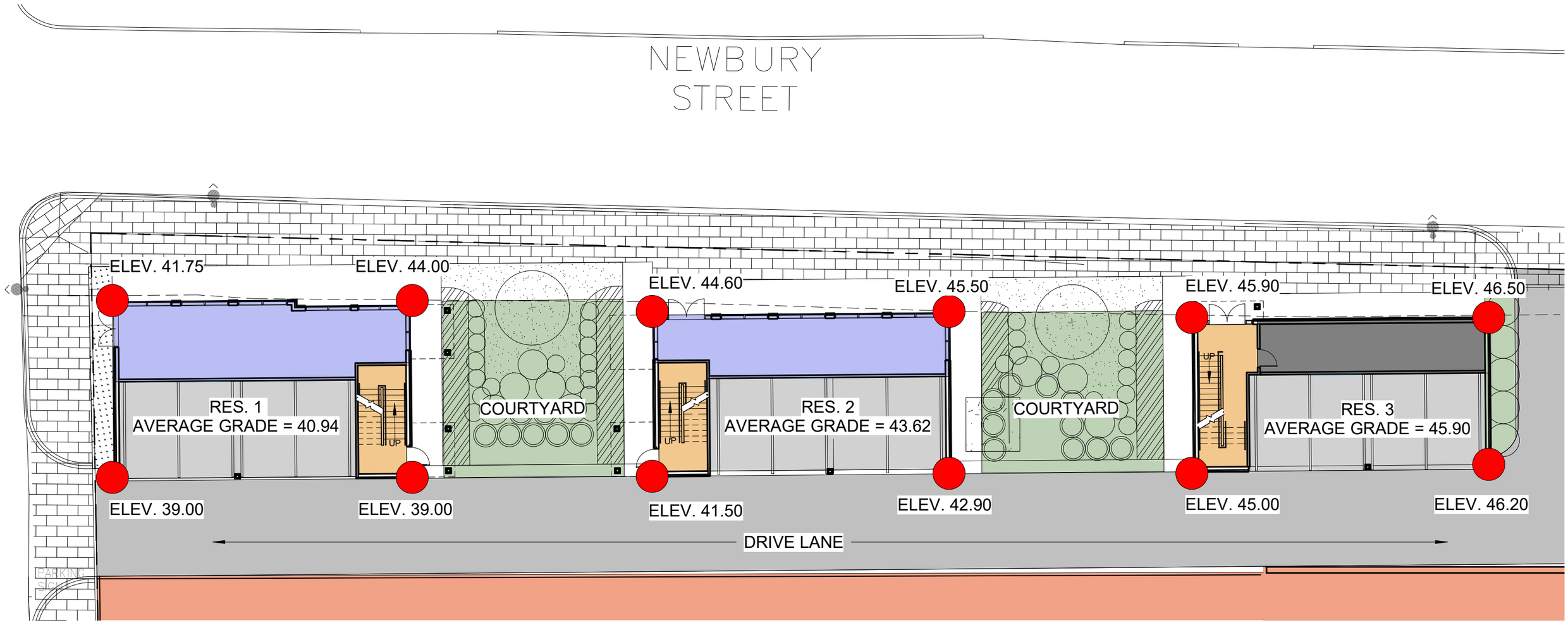
Drawing Name: SITE PLAN – BASEMENT

Project: Shipyard Redevelopment
Newbury Street, Portland, ME

Client: 86 Newbury Street, LLC
470 Fore Street, Portland, ME 04101

Drawing No. C100

U:\3184_Shipyard Brewing\Z – CAD\DWG\3184–SP_L0_L2.dwg 8/20/2018 11:57 AM



1 | AVERAGE GRADE CALCULATIONS FOR RESIDENTIAL BUILDINGS

1/16" = 1'-0"

SHIPYARD DEVELOPMENT

AUGUST 2018

ARCHETYPE architects
48 Union Wharf Portland, Maine 04101

AVERAGE GRADE = 27.50 + 39.00 + 43.00 + 43.50 + 44.25 + 45.50 + 46.00 + 47.00 + 48.00 + 47.00 + 24.50 + 21.50 + 21.00 / 13 = 38.28' (AVERAGE GRADE)

1 AVERAGE GRADE
1/16" = 1'-0"

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT

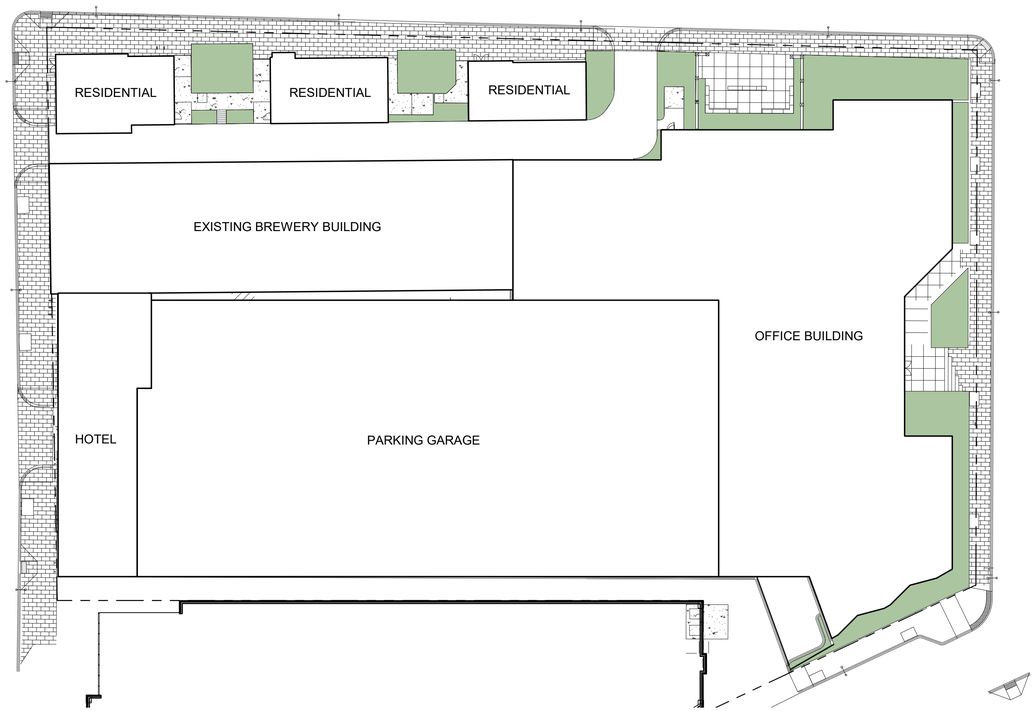
Revisions:

Scale: 1/16" = 1'-0"

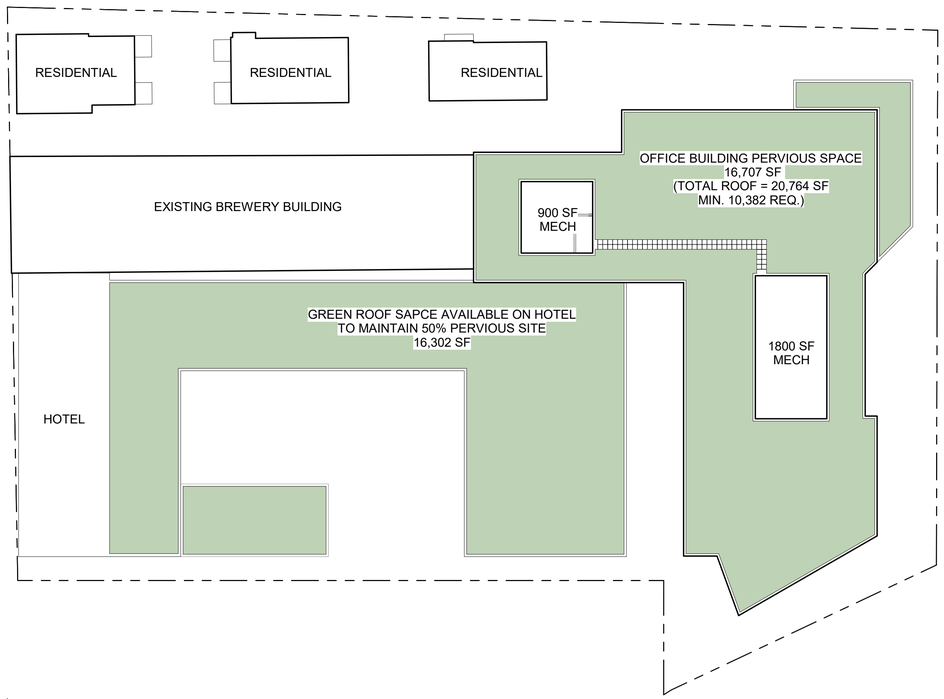
Date: May 24, 2018

Unnamed

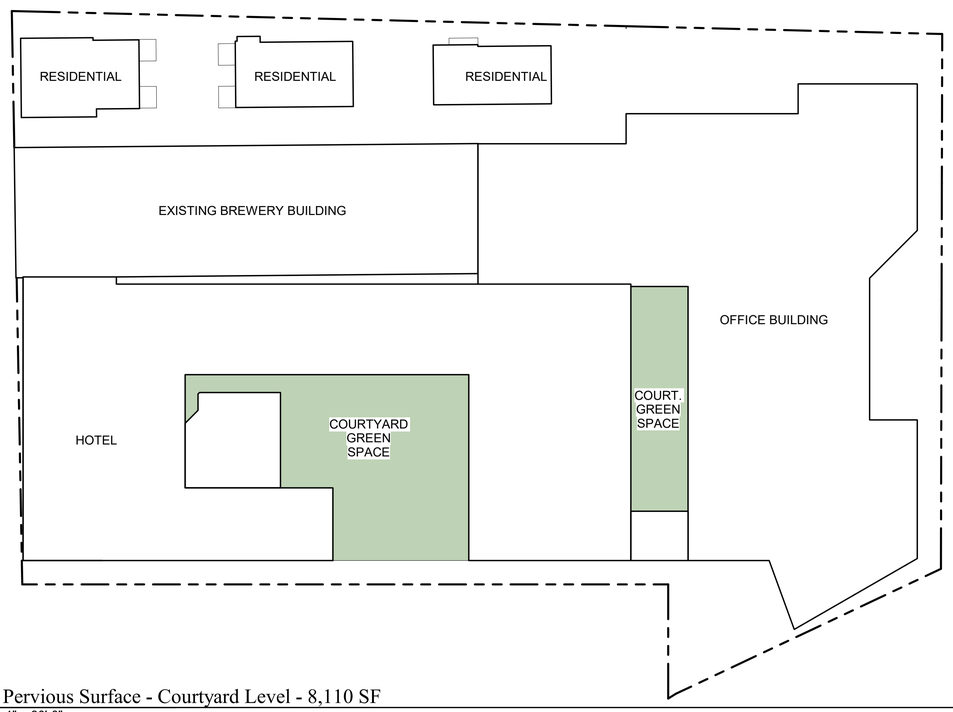
A3.05



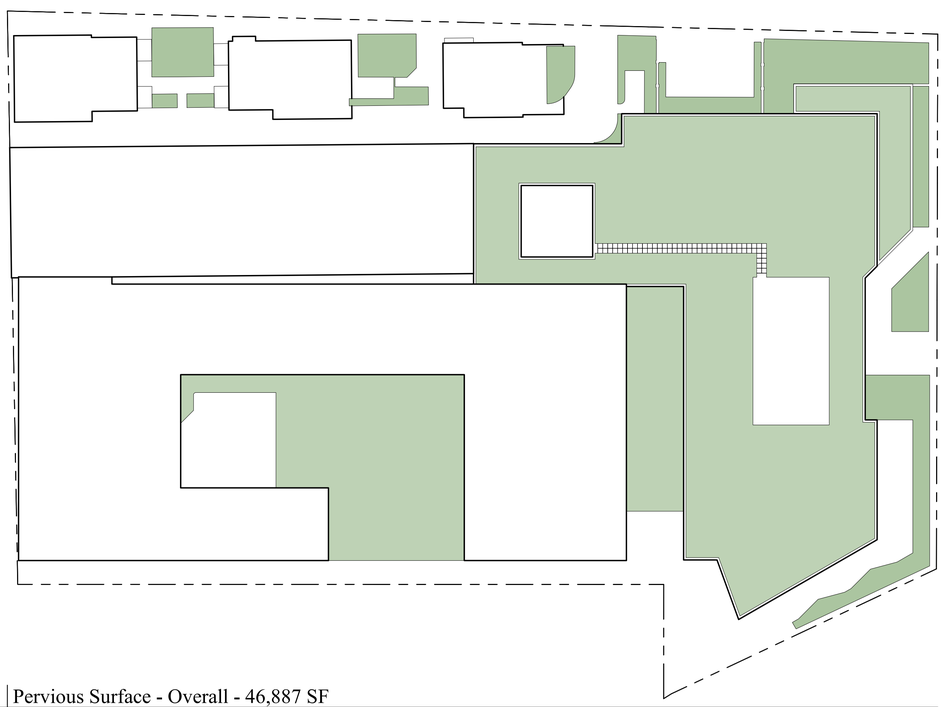
1 | Pervious Surface - Ground Level - 5,768 SF
1" = 30'-0"



3 | Pervious Surface - Roof - 33,009 SF
1" = 30'-0"



2 | Pervious Surface - Courtyard Level - 8,110 SF
1" = 30'-0"



4 | Pervious Surface - Overall - 46,887 SF
1" = 30'-0"

TOTAL SITE	= 93,774 SF
50%	= 46,887 SF
PERVIOUS AREA	
GROUND	= 5,768 SF
COURTYARD	= 8,110 SF
ROOF	= 33,009 SF
TOTAL	= 46,887 SF

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT

Revisions:

Scale: 1" = 30'-0"

Date: AUGUST 2018

PERVIOUS SURFACE

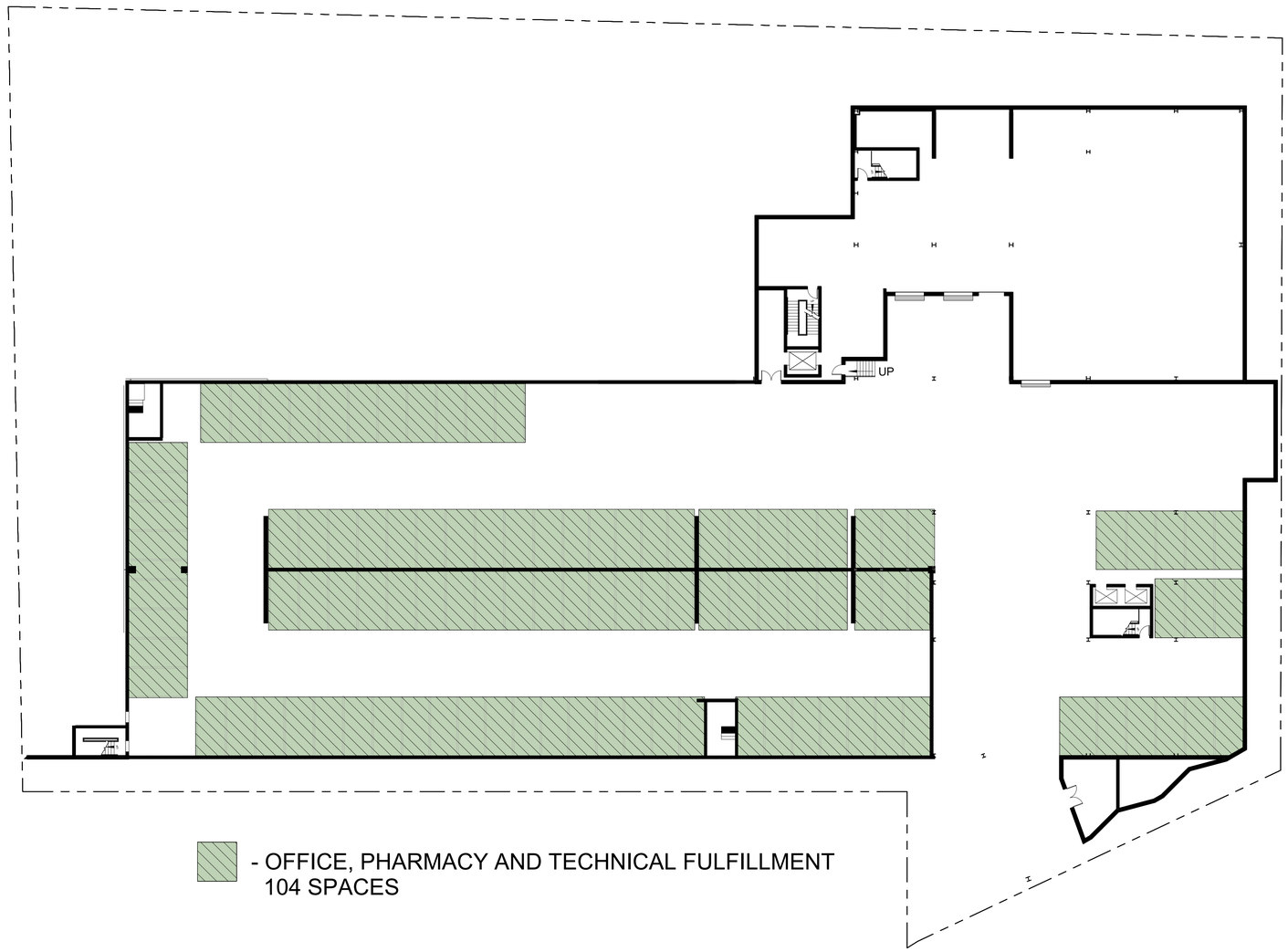
G1.01

SCHEDULE OF OFFICE, PHARMACY AND TECH. FULFILLMENT PARKING

	24/7 (365 DAYS/YR)	7AM-6PM (5 DAY/WEEK)	TOTAL
-BASEMENT	104	0	104
-LEVEL ONE	0	38	38
-LEVEL TWO	2	96	98
-LEVEL THREE	0	78	78
-TOTAL	**106**	**212**	**318**

SCHEDULE OF HOTEL, BREWERY, TASTING ROOM AND RETAIL PARKING

	24/7 (365 DAYS/YR)	7AM-6PM (5 DAY/WEEK)	TOTAL
-BASEMENT	0	0	0
-LEVEL ONE	54	0	54
-LEVEL TWO	0	0	0
-LEVEL THREE	0	0	0
-TOTAL	**54**	**0**	**54**



1 BASEMENT PLAN
1" = 20'-0"

Prepared For: 86 Newbury Street Holding, LLC

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT
PORTLAND, MAINE

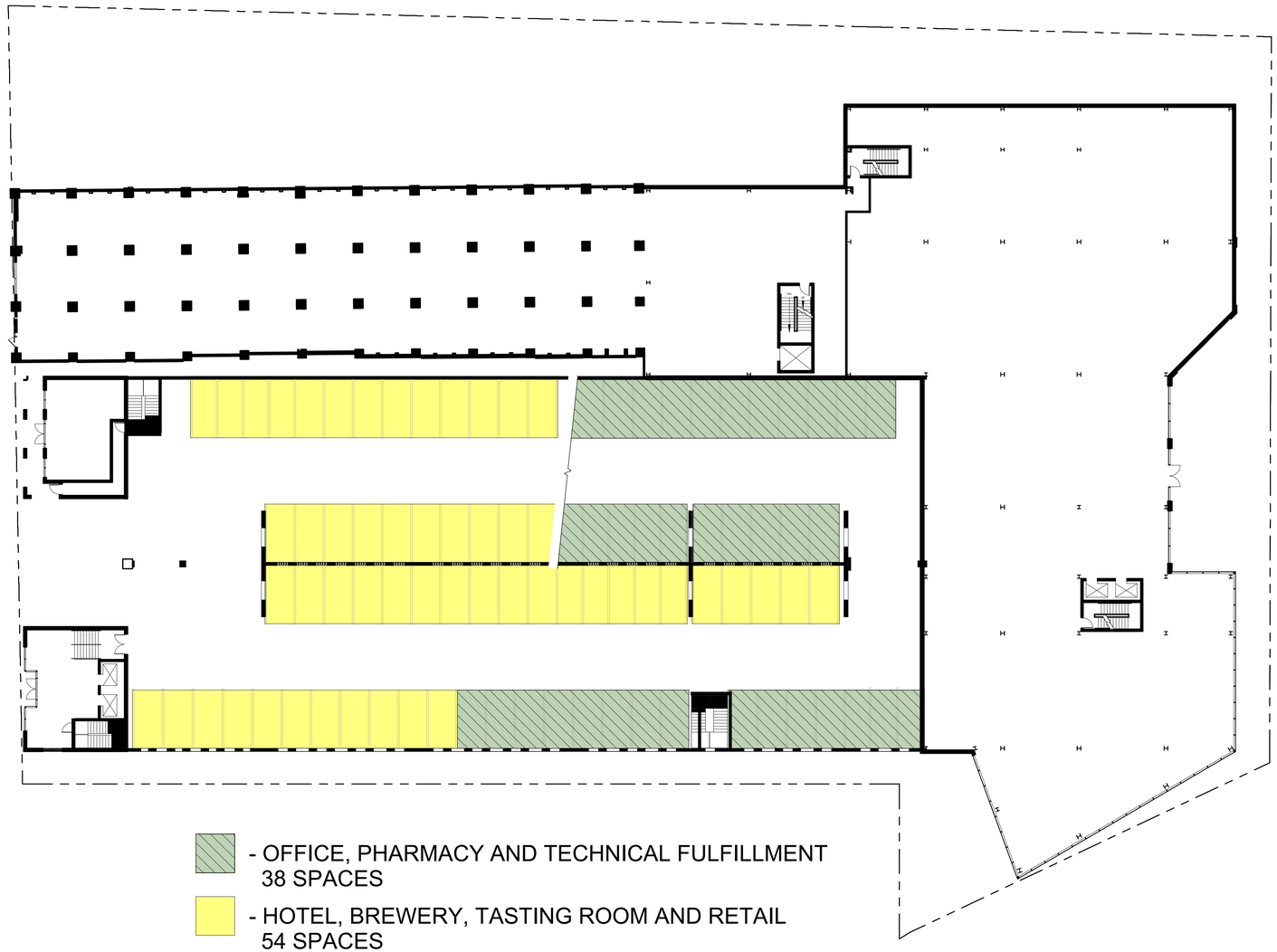
Revisions:

Scale: 1" = 20'-0"

Date: 15 SEPT. 2018

BASEMENT

0



1 FIRST FLOOR PLAN
1" = 20'-0"

Prepared For:
86 Newbury Street Holding, LLC

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD DEVELOPMENT
PORTLAND, MAINE

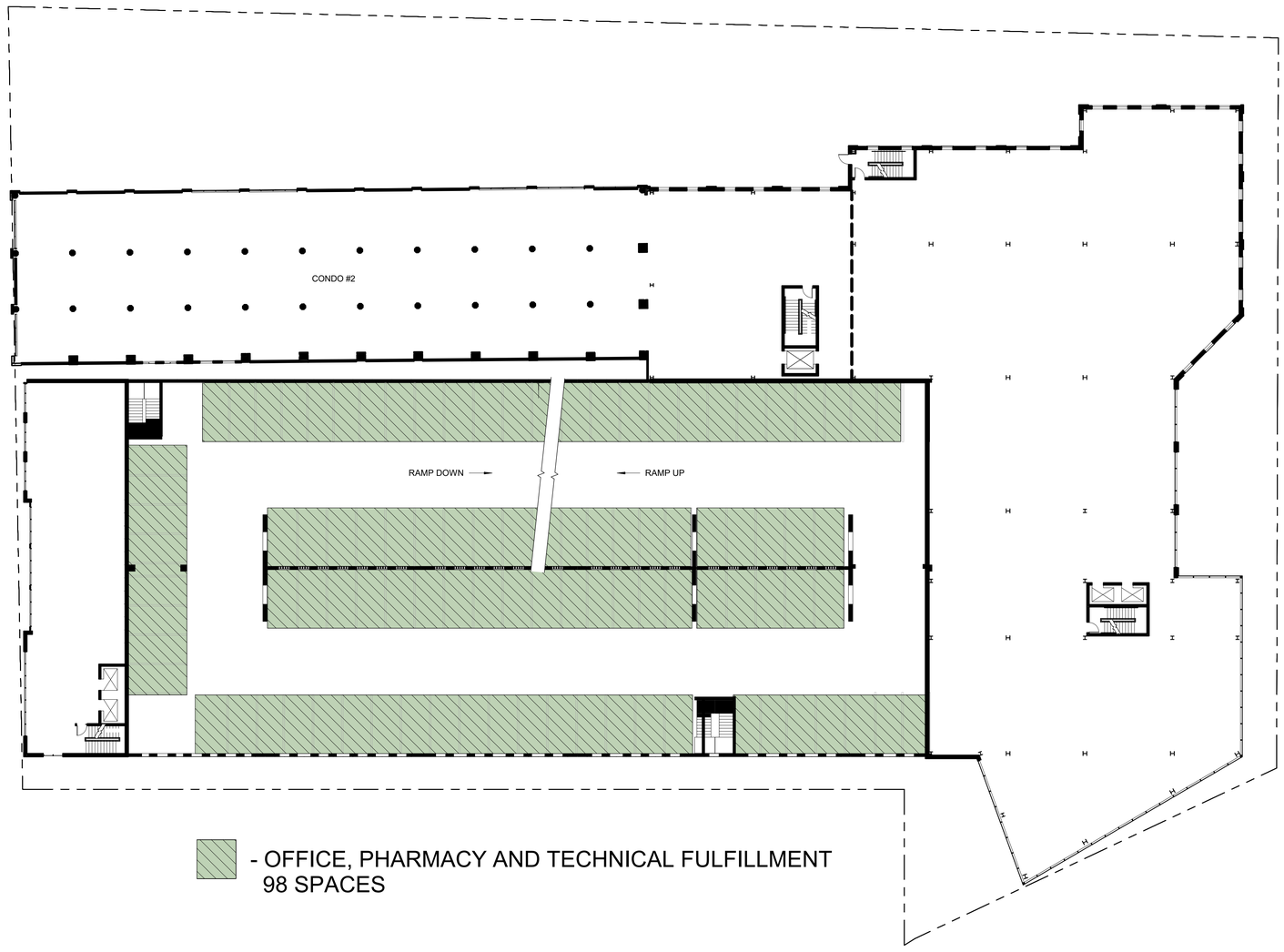
Revisions:

Scale: 1" = 20'-0"

Date: 15 SEPT. 2018

FIRST

1



1 SECOND FLOOR PLAN
1" = 20'-0"

Prepared For:
86 Newbury Street Holding, LLC

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD DEVELOPMENT
PORTLAND, MAINE

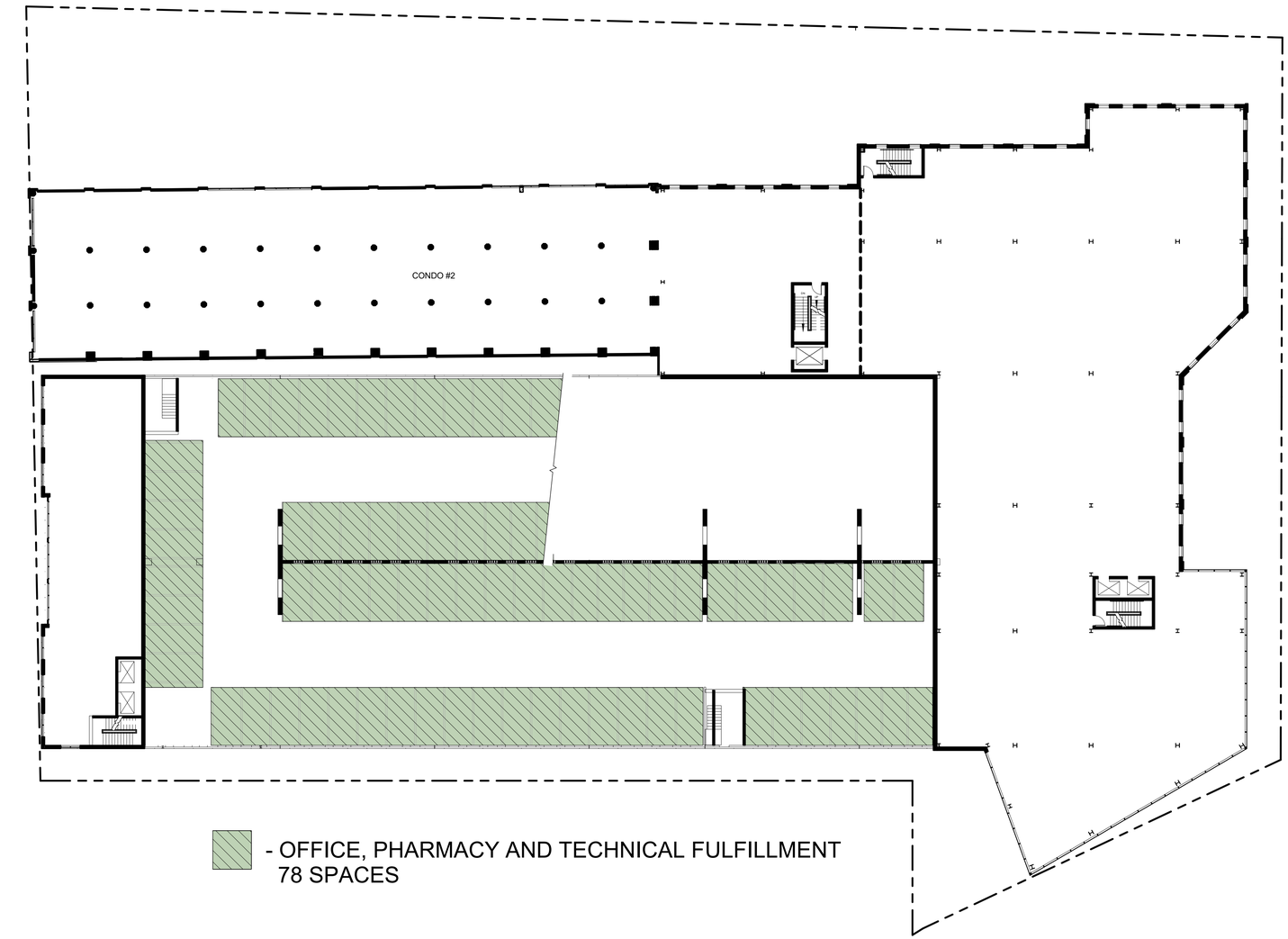
Revisions:

Scale: 1" = 20'-0"

Date: 15 SEPT. 2018

SECOND

2



1 THIRD FLOOR PLAN
1" = 20'-0"

Prepared For:
86 Newbury Street Holding, LLC

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
SHIPYARD DEVELOPMENT
PORTLAND, MAINE

Revisions:

Scale: 1" = 20'-0"

Date: 15 SEPT. 2018

THIRD

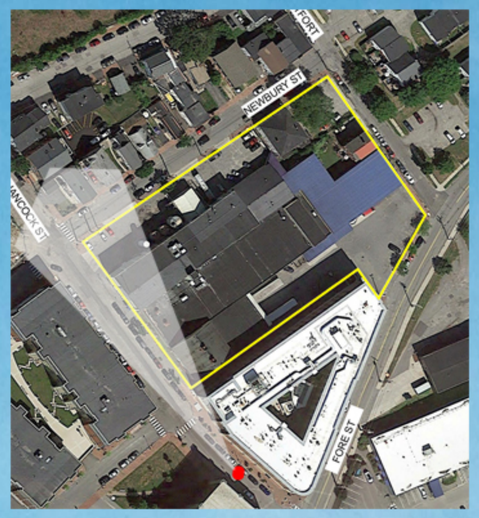
3

Google Earth
Data LEDO/Columbia, IBCF, NOAA
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2018 Google

vetsfirstchoice

vetsfirstchoice

vetsfirstchoice
HAMILTON
MARINE



HANCOCK STREET PERSPECTIVE

Portland, Maine

MAY 2018

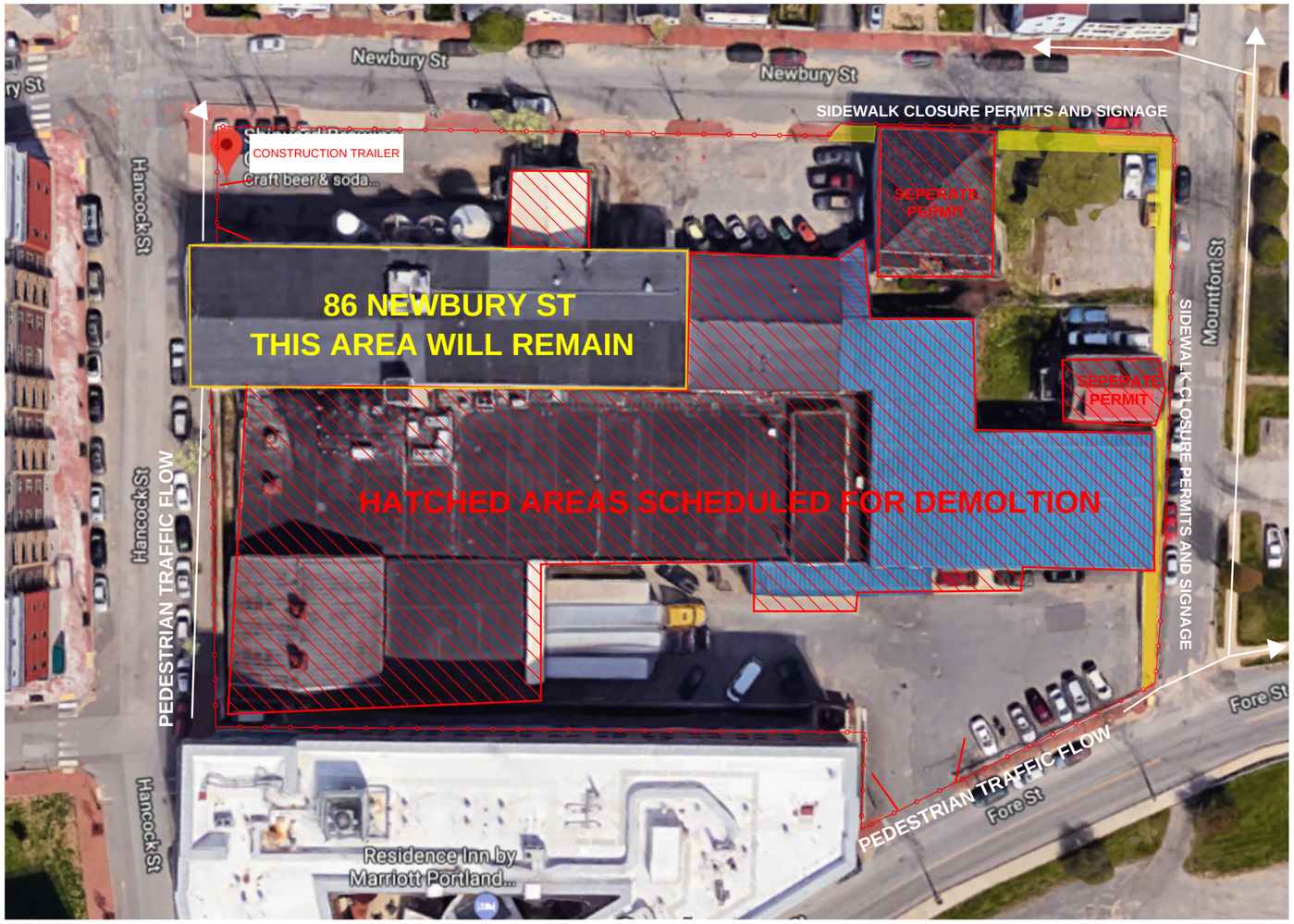
ARCHETYPE architects

NEWBURY STREET PERSPECTIVE

Portland, Maine

SHIPYARD BREWING SITE

CONSTRUCTION MANAGEMENT PLAN - PHASE 1 DEMOLITION



NOTES:

-Construction fencing and gates in place around site perimeter before demolition begins.

-Sidewalk closure permits to be obtained for Mountfort St. and partial Newbury St. sidewalks. Duration of closure approx 2-3 months.

- Sidewalk closure signage to be posted for pedestrian traffic flow as indicated on plan.

-Shipyard Brewing tasting room and 1st floor facility to remain operational during demolition.

-All water, sewer, gas, and electrical feeding the main building (yellow) will remain active, all services within buildings scheduled for demolition will be cut, safe offed, and verified by licensed tradesmen at outlying buildings prior to demolition.

86 NEWBURY STREET, PORTLAND ME

DEMOLITION TIME FRAME - 3 MONTHS
PROJECT WILL THEN ENTER PHASE 2 - CONSTRUCTION

SHIPYARD BREWING SITE

CONSTRUCTION MANAGEMENT PLAN - PHASE 2 CONSTRUCTION

NOTES:

1. Construction phase to start after demolition phase has ended.

2. Construction fencing to be installed with appropriate safety and contact info signage.

2. Sidewalk, parking lane, and travel lane closure permits to be pulled and signage to be posted. All closures to be coordinated with D.P.W.

3. One way traffic down Newbury St., Hancock St. and Mountfort St. during Construction Phase. One way traffic signage to be posted.

4. Pedestrian walkway paths indicated, temporary ADA compliant crosswalk on Fore St. to Mountfort St. to be installed.

5. Snow removal within fenced areas to be completed by AlliedCook Construction.

6. Shipyard Brewing tasting room and 1st floor brewery to remain open during construction.

7. Vets First Choice temporary pharmacy located within existing brewery to remain open during construction. Employee access to space only.

8. If traffic flow will be impacted by construction operations, traffic control will be maintained using flaggers.

9. Construction Management Plan is subject to change during the project.

86 NEWBURY STREET, PORTLAND ME

CONSTRUCTION DURATION - APPROX 24 MONTHS

Construction Management Plan Narrative Draft
AlliedCook Construction – Shipyard Brewing Site
Revised 08/16/18

This narrative shall serve as a supplement to the Draft Construction Management Plan for the Shipyard Brewing Site project, located at 86 Newbury St., 70-72 Newbury St., and 10-12 Mountfort St., Portland, ME. AlliedCook Construction will is the Construction Manager for the project. The project will consist of 2 Phases. The first phase will entail demolition of the existing apartment buildings located at 70-72 Newbury St., and 10-12 Mountfort St.; as well as a partial exterior demolition at 86 Newbury St., Portland ME. This duration will last approximately 3-4 months. The project will then enter the second phase, which will entail construction of the structures shown on the Construction Management Plan, with a duration lasting approximately 24 months. This Construction Management Plan Narrative is subject to change during the project as needed per the project and discussions with the city of Portland.

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that AlliedCook Construction has identified to minimize impacts from the construction, such as noise, truck traffic, pedestrian traffic and other construction related factors to the surrounding buildings and communities.

B. Development Review of Construction Management Plan

The attached Construction Management Plan outlines the overall logistics and safety program for the construction project and its separate phases. Construction fencing will be installed prior to the commencement of construction, including all required safety signage, contact info, etc. as required.

Each phase of construction includes a combination of sidewalk, parking lane, and lane closures (and associated permits) as indicated on the Construction Management Plan. In circumstances involving sidewalk closures, pedestrian traffic on Hancock, Newbury, Mountfort, and Fore Streets will be directed with MUTCD compliant signage as needed per phase. Any temporary routes of pedestrian traffic around the construction site needing ADA accessible ramps will be provided, as shown on the Construction Management Plan (only at intersection of Fore St. and Mountfort St.), by AlliedCook Construction.

Controlled Construction entrances will be installed and maintained throughout the construction project to control dust outside of the construction site. Any major construction deliveries requiring traffic control may have flaggers as necessary.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, AlliedCook Construction shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** All required street opening and street occupancy permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.

D. Construction Administration and Communication

AlliedCook Construction will work diligently to implement a communication strategy as outlined below. The Construction Manager will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. The final construction management plan may provide for the following:

1. Contact Person(s) and contact information for AlliedCook site personnel.
2. Temporary Construction Signage posted on the site with Contact Information for Contractor
3. Direct communication with abutters and/or neighbors as needed.

E. Construction Schedule

The project will consist of 2 Phases. The first phase will entail demolition of the existing apartment buildings located at 70-72 Newbury St., and 10-12 Mountfort St.; as well as exterior demolition at 86 Newbury St., Portland ME. This duration will last approximately 3-4 months. The project will then enter the second phase, which will entail construction of the structures shown on the Construction Management Plan, with a duration lasting approximately 24 months.

1. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18.
2. MDIFW recommends that no demolition or construction occur on bat-occupied structures between June 1 – August 15

F. Security & Public Safety

1. The Construction Management Plan depicts all proposed fencing or other barriers and access gates (with knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. Fire Safety Program. An overall construction and/or demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site monitoring
    - Preservation of existing systems (during partial demolition only)
    - Rapid communication
    - Protection of existing structures and equipment from exposure of fire resulting from construction, alteration, and demolition operations

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: AlliedCook Construction's personnel will work with the Department of Public Works as to coordinate these types of closures.

Any necessary street closure, street opening, or parking spot closure permit will be obtained prior to the closure commencing. **Coordination with D.P.W. and the City of Portland for one way traffic and restrictive movements to be coordinated as needed throughout the Construction Project.**

2. Sewer and Stormwater: AlliedCook Construction will pull any required sewer and/or storm water connection permits required through the Street Opening Clerk at the Department of Public Works.

3. Traffic Control Plans: The Construction Management Plan will show traffic flows around the project site along with lane, parking lane, and sidewalk closures. All lane, parking lane, and sidewalk closure permits to be obtained prior to the closure commencing. In addition, the follow measures may be taken to prevent in traffic obstructions or delays:

    - Construction speed signing may be used as needed to slow traffic, as needed.
    - Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
    - In some situations, flaggers may be required.

H. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris removal from the site on a as-needed basis.
2. Construction Entrances will be entact through the construction process and will limit dirt/debris throughout roadways.
3. The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
4. Rodent Control will be provided, if deemed required.
5. Snow Removal: The following measures will be taken within the work zone:
    1) Remove snow and ice as needed within the work zone, including parking spaces closed by closure permits.
    2) Clear all walkways and sidewalk ramps within the work zone
    3) Sand or Salt as needed within the work zone.
    5) Clear all basins and/or drainage to help snow melt, as needed.

I. Erosion Control and Preservation of Trees

1. AlliedCook Construction shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan. The sitework contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order.

J. Construction Staging Area

1. The Construction Management Plan may depict the location of the material staging areas, the location on onsite temporary construction trailers, the location on onsite truck delivery holding areas, etc. See the Construction Management Plan for laydown area locations.

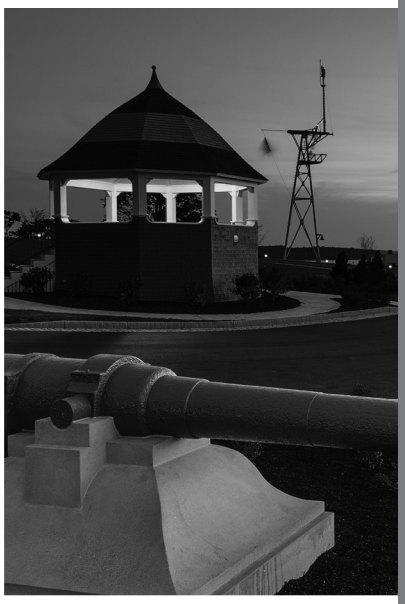
K. Parking During Construction

1. Construction Parking: Some parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided by the contractors in need
2. Truck Routes and Volumes: The Construction Management Plan shall address the designated delivery routes, once determined.

L. Special Measures as Necessary

The Construction Phase of this project will include the installation of both Sheet Piles, as well as Foundation Piles. AlliedCook Construction may elect to, at its own discretion and upon consent from the owners, have neighboring properties photographed and/or video graphed to capture existing conditions (prior to pile installation).

Relationships.
Responsiveness.
Results.



Level III Site Plan and Subdivision Application for 86 Newbury Street Redevelopment Portland, Maine

PREPARED FOR:
86 Newbury Street
Portland, Maine

April 2018

SUBMITTED BY:
Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

May 2, 2018

Barbara Barhydt
Planning and Urban Development Department
City of Portland
Fourth Floor, City Hall
389 Congress Street
Portland ME 04101

Re: Level III Site Plan Application
Proposed Shipyard Brewing Redevelopment
86 Newbury Street (Tax Map 020, Block C, Lot 9 – 127 Fore Street)

Dear Barbara,

On behalf of 86 Newbury Street, LLC, we are pleased to submit the enclosed Level III Site Plan Application for the proposed **Shipyard Brewery Redevelopment** at 86 Newbury Street. The planned four to six story building with a varied foot-print and gross floor area totaling approximately 174,000 sf will accommodate a mix of office and industrial (brewing and specialty pharmacy) uses with limited retail space, a hotel, residential units, and structured parking.

Separately from this Site Plan Application we plan to submit an Application for a Traffic Movement Permit for the project. We will coordinate with the City relative to methodology and peer review.

The site is approximately two acres in size and is currently home to the Shipyard Brewery, two apartment buildings (020 C005 and 020 C002) and some surface parking areas that serve the brewery and residential uses. The site occupies the majority of the block bound by Newbury, Mountfort, Fore and Hancock Streets in Portland. The site generally slopes in a southeasterly direction towards Fore Street. As indicated on the City of Portland zoning map, the property is zoned IS-FBC (India Street Form-Based Code Zone).

The development plan primarily includes 60,000 sf of *office*, 60,000 sf of *specialty pharmacy*, 40,000 sf of *technical fulfillment pharmacy*, 10,000 sf of *brewery,* 8,000 sf of *residential* within a 9-unit / four-story building at the corner of Hancock and Newbury Streets and a 105-room *hotel*. The parking for the proposal is supported by a 360 space three-level garage.

The existing Shipyard Brewing retail shop / tasting room will remain and be expanded in size slightly from 2,500 to 4,000 sf. The existing three-story Shipyard Brewery building will remain and be renovated to accommodate the Specialty Pharmacy, and 10,000 sf for Shipyard to retain some brewing operations on-site. The remaining Shipyard bottling and warehousing facility will be demolished along with the two existing residential buildings on Newbury and Mountfort Street. Shipyard is also pursuing plans to develop the brewery's Portland distribution center (at 182 Read Street) into a more comprehensive production facility that will produce Shipyard beer and its allied beverages.

The proposed redevelopment is planned to be constructed as one phase but is expected to be permitted in phases in order to accommodate the proposed schedule. The permit phasing is anticipated to be as follows:

1. Demolition of the two Existing Residential Structures (separate demolition permits to be submitted)
2. Renovation of the Existing Shipyard Brewery Building (separate building permit to be submitted)
3. Demolition of the balance of the site and construction of the proposed Office and Hotel (this Level III Site Plan)

Submitted via E-Plan you will find this Cover Letter/Project Summary along with a Level III Site Plan Application package and set of plans illustrating the proposal for Final Site Plan Review.

We appreciate the Planning Department's consideration of our proposal and look forward to meeting with City staff, and with the Planning Board to present the proposal and address any questions. If you require any additional information, please don't hesitate to contact our office.

Sincerely,

Gorrill Palmer

Lucas Anthony, P.E.
Project Manager

Copy: Mr. David Bateman, 86 Newbury Street, LLC

LSA/ceh/U:\3184_Shipyard Brewing\P Applications\Local\Level III Site Plan Application\(E-PLAN) Electronic Filing Docs\ Cover Letter-Project Summary.doc

DOC :47967 BK:35153 PG:261
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
09/18/2018, 02:04:22P
Register of Deeds Nancy A. Lane E-RECORDED

CITY OF PORTLAND

CERTIFICATE OF VARIANCE APPROVAL

I, Eric Larsson, the duly appointed Chair of the Board of Appeals for the City of Portland, Cumberland County and State of Maine, hereby certify that on the 6th day of September, 2018, the following variance was granted pursuant to the provisions of 30-A M.R.S.A. Section 4353(5) and the City of Portland's Code of Ordinances.

1. **Current Property Owner: 86 Newbury Street, LLC**

2. **Property: 86 Newbury Street (127 Fore Street)** **CBL: 020-C-009**
   Cumberland County Registry of Deeds, **Book: 34818 Page: 188**
   Last recorded deed in chain of Title: **5/3/2018**

3. **Variance and Conditions of Variance**:
   To grant relief from section 14-275.7 of the Land Use Zoning Ordinance to increase the maximum front yard setback to twelve (12) feet instead of the five (5) feet required by this section to build three mixed use residential and commercial buildings.

IN WITNESS WHEREOF, I have hereto set my hand and seal this 9th day of September, 2018

Eric Larsson, Chair of
City of Portland Zoning Board,
Eric Larsson

STATE OF MAINE
Cumberland, ss.

Then personally appeared the above-named Eric Larsson and acknowledged the above certificate to be his free act and deed in his capacity as Chairman of the Portland Board of Appeals, with his signature witnessed on September 9, 2018.

9/9/2018

Stephen Bither Notary Public

STEPHEN D. BITHER
NOTARY PUBLIC
State of Maine
My Commission Expires
June 25, 2020

My term expires

PURSUANT TO 30-A M.R.S.A. SECTION 4353(5), THIS CERTIFICATE MUST BE RECORDED BY THE PROPERTY OWNER IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS WITHIN 90 DAYS FROM FINAL WRITTEN APPROVAL FOR THE VARIANCE TO BE VALID. FURTHERMORE, THIS VARIANCE IS SUBJECT TO THE LIMITATIONS SET FORTH IN SECTION 14-474 OF THE CITY OF PORTLAND'S CODE OF ORDINANCES.

Bartlett - recused

Gray
McCall
Avery
Larsen
Katsiaficas
Gamboa

CITY OF PORTLAND, MAINE
ZONING BOARD OF APPEALS

IS-FBC India Street Form-Based Code
Practical Difficulty Variance Appeal

DECISION

Date of public hearing: September 6, 2018

Name and address of Appellant:
86 Newbury St., LLC
David Bateman
470 Fore Street, Suite 400
Portland, Maine 04101

Location of property under appeal:
86 Newbury Street
CBL 020 C009001

For the Record:

Names and addresses of witnesses (proponents, opponents and others):

~~David Bateman~~ Nathan Bateman
Lucas Anthony David Lloyd - Architect
Ron Ward

Exhibits admitted (e.g. renderings, reports, etc.):

Application w/ Exhibits

2. Strict application of the provisions of the ordinance would create a practical difficulty, which is defined as a "case where strict application of the dimensional standards of the ordinance to the property for which a variance is sought would both preclude a use of the property which is permitted in the zone in which it is located and also would result in significant economic injury to the applicant." §§ 14-473(c)(3)(a), 14-473(c)(3)(b)(2).

   Significant economic injury exists where, "the value of the property if the variance were denied would be substantially lower than its value if the variance were granted. To satisfy this standard, the applicant need not prove that denial of the variance would mean the practical loss of all beneficial use of the land." § 14-473(c)(3)(b)(3).

   Satisfied ✓ Not Satisfied ____ 5-0

   Reasons and supporting facts:
   W/O variance, building could be precluded on site. Only use available would be parking.
   Value of rental units 2.5 million dollars
   $650,000 Payment to city would be required to city of taking down units

3. The need for a variance is due to the unique circumstances of the property, and not to the general conditions in the neighborhood. § 14-473(c)(3)(a)(1).

   Satisfied ✓ Not Satisfied ____ 5-0

   Reasons and supporting facts:
   Specific concentration of high voltage utilities about this block & can't be relocated.
   Cost of burying utility lines is significant economic injury

4. The granting of the variance will not produce an undesirable change in the character of the neighborhood and will not have an unreasonably detrimental effect on either the use or fair market value of abutting properties. § 14-473(c)(3)(a)(2).

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

desirable change to ~~bring~~ bring neighborhood. ~~about~~ replacing residential building w residential building

No testimony against

5. The practical difficulty is not the result of action taken by the applicant or a prior owner. § 14-473(c)(3)(a)(3).

5-0

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

Difficulty created by State Statutory requirements of set backs from high voltage lines & conflict w/ setback ordenance requirements

6. No other feasible alternative is available to the applicant, except a variance. § 14-473(c)(3)(a)(4).

5-0

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

If ~~P~~ housing units not replaced, 600,000 + payment due to City & City loses housing

burying lines isn't viable option

7. The granting of a variance will not have an unreasonably adverse effect on the natural environment. § 14-473(c)(3)(a)(5).

Satisfied ✓ Not Satisfied ____ 5-0

Reasons and supporting facts:

Highly built up area. Only other alternative is surface parking lot no adverse testimony

8. The property is not located, in whole or in part, within a shoreland area, as defined in 38 M.R.S. § 435, nor within a shoreland zone or flood hazard zone, as defined in this article. § 14-473(c)(3)(a)(6).

Satisfied ✓ Not Satisfied ____ 5-0

Reasons and supporting facts:

Not in Shoreland zone

Decision:

✓ Option 1: The Board finds that the applicant has satisfactorily met all of the standards for a practical difficulty variance and GRANTS the variance without limitation. McCall, Katsiaficas

___ Option 2: Pursuant to § 14-473(d), the Board may impose conditions on a practical difficulty variance. The Board finds that the applicant has met all of the standards described above, however, reasonable conditions are necessary to prevent injurious effects upon other property and improvements in the vicinity or upon public facilities and services, and it GRANTS the variance SUBJECT TO THE FOLLOWING CONDITIONS:

____ Option 3: The Board finds that the applicant has NOT satisfactorily met the standards for a practical difficulty variance and DENIES the variance.

Dated:

9-6-18

Board Chair

CITY OF PORTLAND

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I, Eric Larsson, the duly appointed Chair of the Board of Appeals for the City of Portland, Cumberland County and State of Maine, hereby certify that on the 6th day of September, 2018, the following variance was granted pursuant to the provisions of 30-A M.R.S.A. Section 4353(5) and the City of Portland's Code of Ordinances.

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9/9/2018

Stephen Bither Notary Public

STEPHEN D. BITHER
NOTARY PUBLIC
State of Maine
My Commission Expire
June 25, 2020

My term expires

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Permitting and Inspections Department
Michael A. Russell, MS, Director

Ann Machado, Zoning Administrator

September 11, 2018

86 Newbury St, LLC
Attn: David Bateman
470 Fore St, Suite 400
Portland, ME 04101

Re: 127 Fore St/86 Newbury St, CBL 020-C-009, IS-FBC India Street Form Based Code

Dear Mr. Batemen:

On September 6, 2018 the Zoning Board of Appeals voted 6-0 (Bartels recused) to grant a Practical Difficulty Variance for the above-referenced property, to increase the maximum front setback from the required 5 feet to 12 feet, for a proposed mixed-use development. I am enclosing a copy of the Board's decision.

I am enclosing the Certificate of Variance Approval. **The original must be recorded in the Cumberland County Registry of Deeds within 90 days of the date it was signed.** Failure to record the Certificate will result in it being voided. Our office must be provided with a copy of the recorded Certificate of Variance showing the recorded book and page before a building permit can be approved.

Appeals from decisions of the Board may be filed in Superior Court in accordance with Rule 80B of the Maine Rules of Civil Procedure.

Should you have any questions, please contact me at (207) 874-8695 or cstacey@portlandmaine.gov.

Sincerely,

Christina Stacey
Zoning Specialist

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Traffic Memo	Attachment 8
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Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Submit each Tab as one PDF file and bookmark the items as noted below

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

Checklist	Items to be Provided
Yes NA Plan ✔ ☐ ☐	PROJECT DESCRIPTION • Cover Letter with detailed project description
Yes NA Plan ✔ ☐ ☐	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes NA Plan ✔ ☐ ☐	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements
Yes NA Plan ☐ ☐ ☐	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable under separate cover
Yes NA Plan ✔ ☐ ✔	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes NA Plan ✔ ☐ ✔	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements
Yes NA Plan ✔ ☐ ☐	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table
Yes NA Plan ✔ ☐ ☐	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA Plan ✔ ☐ ☐	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.

Submit each Tab as one PDF file and bookmark the items as noted below

Tab 2 - TRANSPORTATION

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan ✔	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable
Yes NA Plan ✔	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable
Yes NA Plan ✔	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan ✔	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan ✔	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan ✔	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan ✔	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies Under separate cover

Tab 3 - ENVIRONMENTAL AND LANDSCAPE FEATURES

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Preservation of Significant Natural Features (14-526 (b) 1), if applicable** • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes NA Plan ✔	**Landscaping and Landscape Preservation (14-526 (b) 2 a)** • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes NA Plan ✔ ✔	**Site Landscaping (14-526 (b) 2 b)** • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes NA Plan ✔ ✔	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable** • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes NA Plan ✔ ✔	**Street Trees (14-526 (b) 2 b iii)** • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

Tab 4 - ENVIRONMENTAL AND STORMWATER

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)** • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Consistency with City Master Plans (14-526 (c) 1)** • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA Plan ✔	**Public Safety and Fire Prevention (14-526 (c))** • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes NA Plan ✔	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)** • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

Tab 6 - SITE DESIGN

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
Yes NA Plan ✔	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA Plan ✔	**Snow and Ice Loading (14-526 (d) 3)** • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA Plan ✔	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appendix 1)

Yes NA Plan ✔	**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
Yes NA Plan ✔	**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes NA Plan ✔	**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes NA Plan ✔ ✔	**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
Yes NA Plan ✔	**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples

Tab 7 - Construction Management Plan

Check list	
Yes NA Plan	**Construction Management Plan** • Construction Management Document and Plan under separate cover

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan

☑ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☑ Existing Conditions

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☑ Proposed Site Plan

- Ground floor area, and grade elevations for all buildings

☑ Access, Circulation, and Parking

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

☑ Site Considerations

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☑ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☑ **GRADING and DRAINAGE PLAN** including:

- Existing grades and drainage
- Proposed grades
- Proposed stormwater management meeting Technical Manual (Section 5) standards
- Location and proposed alteration of a water course
- Preservation or alteration of wetlands

☑ **EROSION CONTROL**

- Must be in compliance with Technical Manual, Section 5

☑ **LANDSCAPE PLAN** including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping and buffers
- Planting schedule

☑ **RECORDING PLAT**, if applicable

- IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)

☑ **ARCHITECTURAL PLANS & RENDERINGS** including:

- Exterior building elevations, color renderings, illustrations of all sides
- Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

WAIVER REQUEST #1: Chapter 14-526 (a) 4.a.iv. and Technical Manual Figure 1-27 states that parking spaces and aisles shall meet applicable dimensional standards as detailed in Section 1 of the Technical Manual. Figure 1-27 of the Technical Manual, titled Standard Parking Spaces, shows a 24' aisle for 90-degree parking @ 9'x18'.

Justification: The Applicant is requesting a waiver to allow for drive aisles within the parking garage to be 21 feet wide. This equates to a double loaded parking bay that is 57 feet wide versus the typical 60 feet. This waiver request is for a 3-foot reduction in the width of a double loaded parking bay.

The parking garage is dimensionally constrained to a width of 114 feet due to the existing "No-Build Easement" adjacent to the Residence Inn and the existing Shipyard Brewing building on the other side. This 114-foot dimension requires that the parking layout consist of 18-foot-deep parking spaces with a 21-foot drive aisle. The Applicant has contracted with Strescon Limited for construction of the parking garage. Strescon has significant experience in the design and construction of garages in constrained urban areas and has determined that the width reduction of 3 feet will not adversely impact circulation. A letter from Strescon confirming the suitability is attached here, which cites specific examples of existing, operational parking structures with similar dimensions that serve similar types of developments.

In addition, we have researched a number of other garages and found examples that support the request. The Gateway Garage in Portland on High Street, located adjacent to the Westin Hotel has 58-foot parking bays with 18-foot spaces and 22-foot drive aisles. Similarly, the Necco Street Garage in Boston has 56-foot bays with 16-foot spaces and 24-foot drive aisles. The EDIC garage on Drydock Avenue in Boston has 55-foot bays with 23-foot drive aisles and 16-foot spaces. Further spot checks of a number of other garages in Boston resulted in similar findings.

WAIVER REQUEST #2: Section 1.7.2.8 of the Technical Manual states that no more than 2 driveways shall be permitted for ingress and egress purposes to any commercial, industrial or residential (with 10 or more parking spaces) site.

Justification: The site in its existing condition has seven driveways, five of those driveways exceed the typical 24 feet width with one that is 50 feet wide. Along Newbury Street alone there three driveways that total 115 feet in overall width, which equates to almost 30% of the sites frontage. It is the Applicants opinion that the number of driveways proposed is the minimum necessary to accomplish the project goals. Although the request is for a waiver to code, the proposal makes the site significantly less non-conforming than it is today. In addition, the proposed configuration will allow for additional on-street parking due to the decreased number and width of driveways at the site.

Our request is for 4 driveways in total, one is existing on Fore Street and is proposed to remain as noted below. As noted on the Site Plan we also have a 24-foot-wide driveway on Hancock Street to serve the parking garage and a 16-foot-wide driveway on Hancock which connects to Newbury Street.

Due to the mixed-use nature of the project and the fact that the property has frontage on four streets, the Applicant is requesting a waiver to allow two additional driveways. These driveways each serve a distinct and necessary purpose and will provide for efficient access to the various proposed uses. The lower Hancock Street driveway that connects to the garage is the access to the upper 3 levels of the garage and is the location for the proposed Hotel valet desk. The existing driveway on Fore Street is

the access for the lower level of the parking garage and also is the delivery truck access for the Technical Fulfillment portion of the project. The Fore Street driveway is also the only access that the adjacent Residence Inn has for deliveries and trash removal. They Residence Inn has no driveways of its own and as such relies on an access easement to allow for deliveries and trash removal.

The one-way alley that runs from Hancock Street to Newbury behind the proposed residential units serves 2 distinct purposes for the project. First, it provides access to the parking spaces below the buildings that are for the future tenants of the residential buildings. Alternatively, each building would require a separate driveway on Newbury Street to access the parking. This would result in 3 driveways on Newbury and would decrease the available on-street and garage parking. In addition, this driveway serves as truck access for temporary deliveries at the Specialty Pharmacy to be located in the existing Shipyard building.

WAIVER REQUEST #3: Section 1.7.2.7 of the Technical Manual states that Along arterial and collector streets, access driveways to corner lots shall be located a minimum of 150' from the intersection.

Justification: As noted above the existing driveway on Fore Street is proposed to remain and serve as the lower level garage entrance to the project. The driveway is approximately 95 feet from Mountfort Street and has served as the main location for Shipyard's trucks to enter and exit for many years. When in operation the driveway saw truck traffic from Shipyard on a daily basis, with the new use being much less truck reliant the number of trucks using the Fore Street driveway is expected to be reduced. Also, as noted above, this driveway is the only location that the adjacent Residence Inn has for deliveries and trash removal. Due to the critical nature of this driveway, to the Project itself and the Residence Inn the Applicant is requesting a waiver to allow this existing non-conforming condition to be allowed to remain.

WAIVER REQUEST #4: Section 14-499(h) (h) states that all utility lines shall be placed underground unless otherwise approved by the Planning Board.

Justification: During its June 12 Workshop to review the proposed 86 Newbury Street mixed use project it was requested by the Planning Board that the Applicant investigate the potential of converting existing overhead power on Newbury Street to underground service. The Project Team, as part of its due diligence efforts, conducted an extensive design review meeting with CMP Staff to review and evaluate the feasibility of the undergrounding request.

The current pole design and configuration on Newbury Street presents several challenges. These challenges are a result of many factors including the residential nature of the opposite side of Newbury Street, prior undergrounding elsewhere in the area, and the presence of other overhead utilities.

The first challenge is the fact that this section of street contains three riser poles for the primary electric circuit serving this area of the City and a separate fourth riser pole for the other non-electric utilities (telephone/cable) since these other utilities cannot be located on the same pole as electric. In general, riser poles are not able to be combined with other riser poles, so consolidating three poles into one pole is not an option based on our discussions with CMP. As noted above these risers are a result of prior undergrounding work elsewhere, so if a circuit goes below ground it must come out somewhere and this particular street corner happened to be where three circuits all came back above

ground. The Applicant would have to bear the cost of relocating all of this infrastructure and is unlikely to recapture any of the costs in the future. In theory this work would be achievable but would require substantial engineering, design and construction work and cost. Additional coordination and buy-in from all of the utility providers such as cable television and telephone would be necessary to remove all the poles from Newbury Street, which would add another layer of cost.

The second issue which is more prohibitive is the fact that all of the existing housing units on the opposite side of Newbury Street are served by the overhead power. Per CMP these secondary lines that cross Newbury Street and service the housing units are the responsibility of CMP to maintain as long as they remain overhead. In order to eliminate the overhead power these secondary lines would need to be run under the street and connected to the existing buildings. Once these secondary lines are run underground the maintenance and responsibility shifts from CMP to the individual building or unit owner. We would need to obtain written agreements with all of these owners acknowledging that they would be taking on an additional financial obligation for these secondary lines. In CMP's experience this is usually impossible to obtain 100% buy in from the neighbors as it does not benefit the existing users. In addition, the cost of work to switch from overhead to underground would be an additional burden on the owners of these residential properties. Without 100% buy in we would be required to maintain the existing overhead secondary lines serving the housing units, which would mean there would continue to be poles on Newbury Street.

After reviewing these two significant challenges it was determined that the best course of action would be to attempt to reconfigure the existing overhead service to potentially eliminate some of the poles and work to straighten out some of the runs to have a more visually appealing configuration.

As noted above, the four riser poles that exist at the corner of Newbury and Hancock are unsightly and detract from the visual aesthetics of the street corridor. The Applicant recognizes this in the context that they are creating a world-class development, but also recognizes that the cost to underground is not only challenging and cost-prohibitive but in reality, may not actually improve the situation. Similar to other developments that have put the utilities on their street underground, this project would end up shifting these riser poles to the intersection of Newbury and Mounfort Street. In all likelihood these poles, plus at least one additional riser pole would then end up at the end of Newbury Street, directly in line with the view corridor looking east down Newbury. This unintended consequence, as noted above would be costly and not necessarily achieve the goal of improving aesthetics of the Newbury Street corridor. Not only that it may shift the burden to another property, who may contemplate undergrounding in the future.

Recognizing that undergrounding on Newbury Street has benefits and challenges the Applicant would be willing to engage with the City, CMP and other stakeholders to develop a more regional solution to undergrounding existing overhead lines. A strategy to prioritize undergrounding where it's most beneficial would serve the entire Eastern Waterfront Area, especially as it continues to grow and change. This type of approach would also serve to mitigate the unintended consequences noted above of shifting the burden on a street by street basis, with ever increasing costs and complications. However; this process should not hold up the progress of this time-sensitive project.

<u>8/24/18 Update: As requested by the Planning Board the Applicant met with CMP on 8/24/18 to explore the possibility of undergrounding the utilities on Mountfort Street. Email correspondence from CMP summarizing the meeting is attached to this Narrative indicating that undergrounding the</u>

Mountfort Street lines would not be feasible without also undergrounding the lines on Newbury Street.

WAIVER REQUEST #5: Section 1.7.2.4 of the Technical Manual states that the maximum width of a driveway to an industrial use shall be 30 feet.

Justification: This request for a waiver is to allow an existing non-conforming condition to remain, this is a request for variance of 3 feet. The existing driveway on Fore Street currently exists as a 33-foot-wide driveway. Historically this driveway has been used for the shipping/receiving area for Shipyard Brewing and will continue to serve as such for the new development although with less truck traffic. Allowing this driveway to be maintained at its current width serves to facilitate access for large semi-trucks. This additional 3-feet of width is beneficial to truck movement onto a busy street in a predominantly urban area. Permitting this waiver will assist in maintaining safe and efficient deliveries to the basement level receiving area for Vets First Choice and represents only a minor variation from code.

To Whom it May concern, August 17, 2018

Strescon Limited is a major manufacturer of Total Precast Parking Garages in Eastern North America. Over the past ten years Strescon Limited has manufactured several garages with a bay width of 57' (overall clear width of 114'). Each garage had restrictions on site that limited the overall width of the garage. The garages have 90-degree parking with a stall width of 8'6" and a stall depth of 18' providing a travel aisle width of 21'. In each case the garages are functioning well.

Over the past ten years there have been several parking garages built with the same bay width. In all cases it has been due to site constraints. Two of those projects are listed below along with shop drawings for each garage attached.

Bayers Road Parking Garage – Developer is Rank Inc., Architect Noel Fowler, Halifax and Consultant BMR Structural Engineers, Halifax. The garage is 114ft wide by 500ft long with two elevated parking levels. The bay size is 57' wide with a parking stall size of 8'6" x 18". The travel aisle is 21' wide. This garage services a retail mall converted to a business campus.

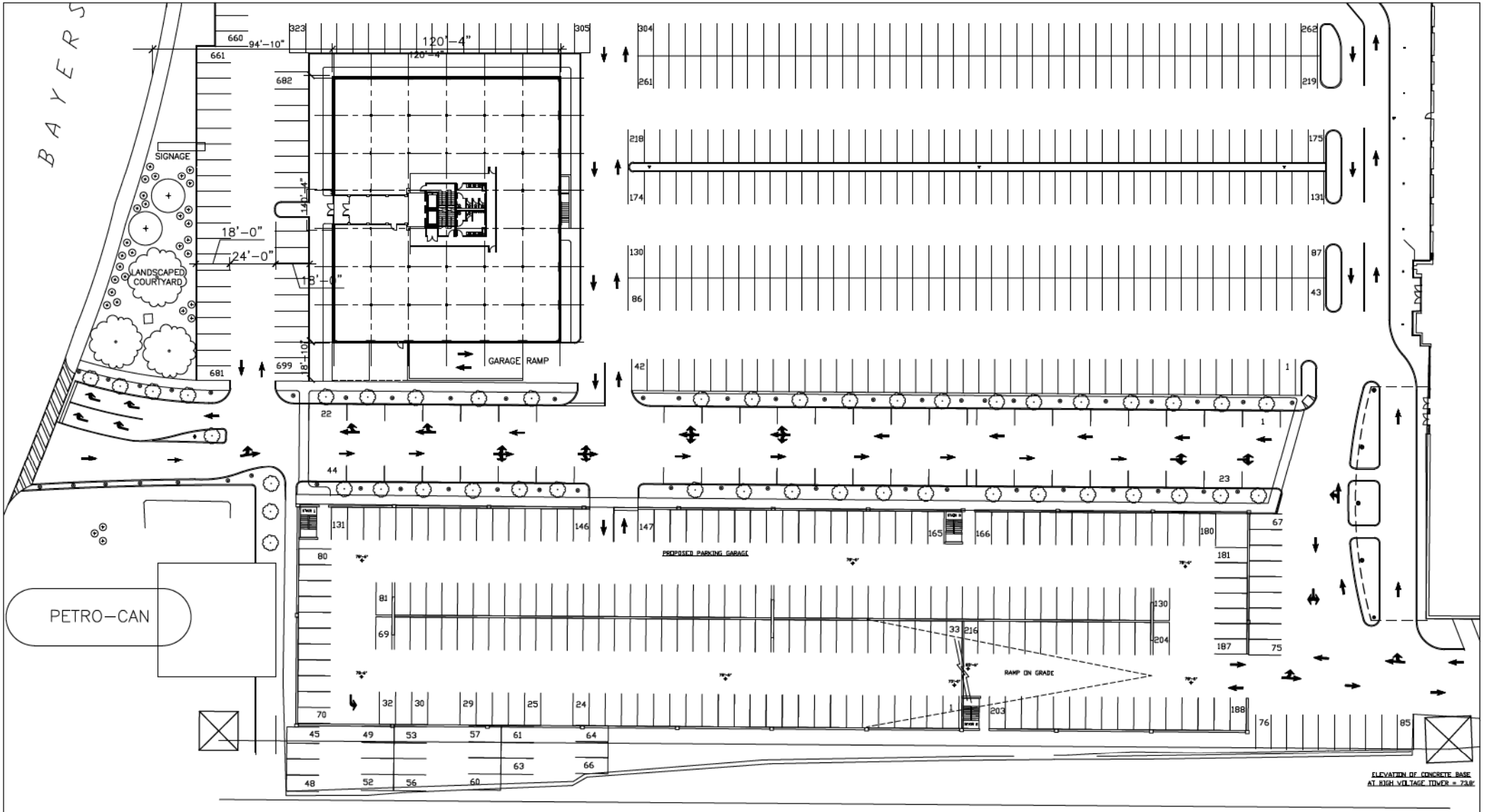
Citadel Parking Garage – Developer is GWL Realty Advisors Inc., General Contractor was Bird Construction, Architect IBI/HB Architects, Vancouver and Consultant Glotman Simpson Engineers, Vancouver. The garage is 114ft wide by 178ft long with four elevated levels. The bay size is 57' wide with a parking stall size of 8'6" x 18". The travel aisle is 21' wide. This garage services a residential development along with two hotels by the Hilton chain.

Several of the garages had an independent third-party traffic flow analysis conducted of the garage and met all regulations.

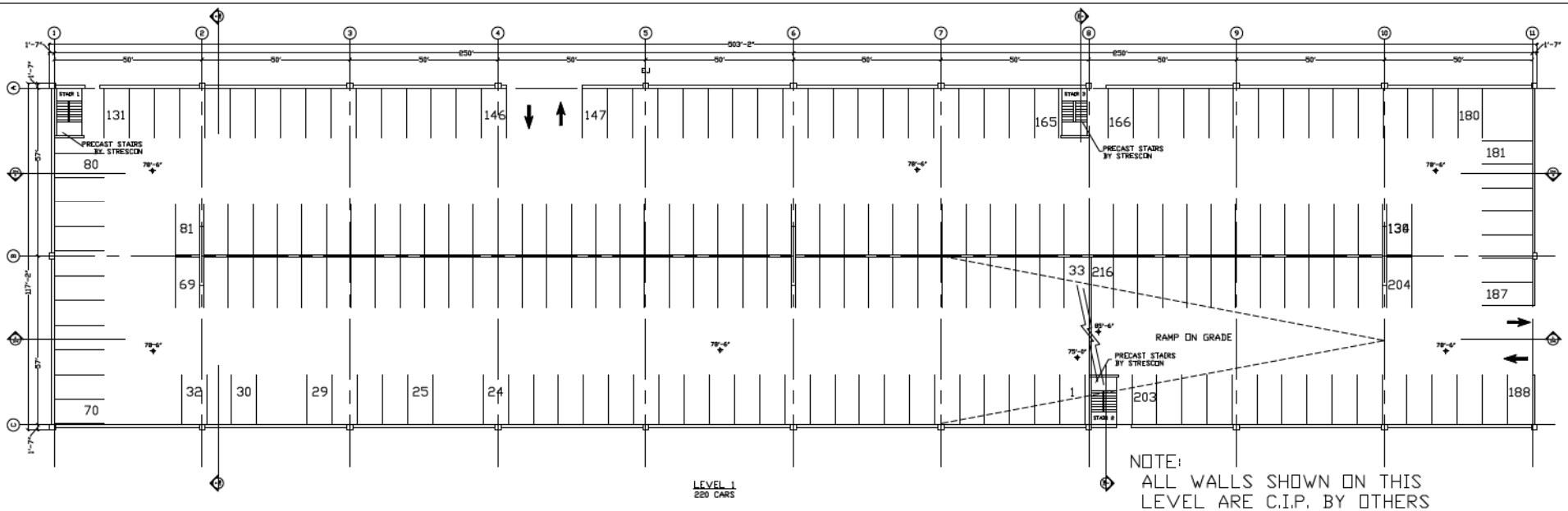
If you require further information, do not hesitate to contact;

Andrew LeVatte

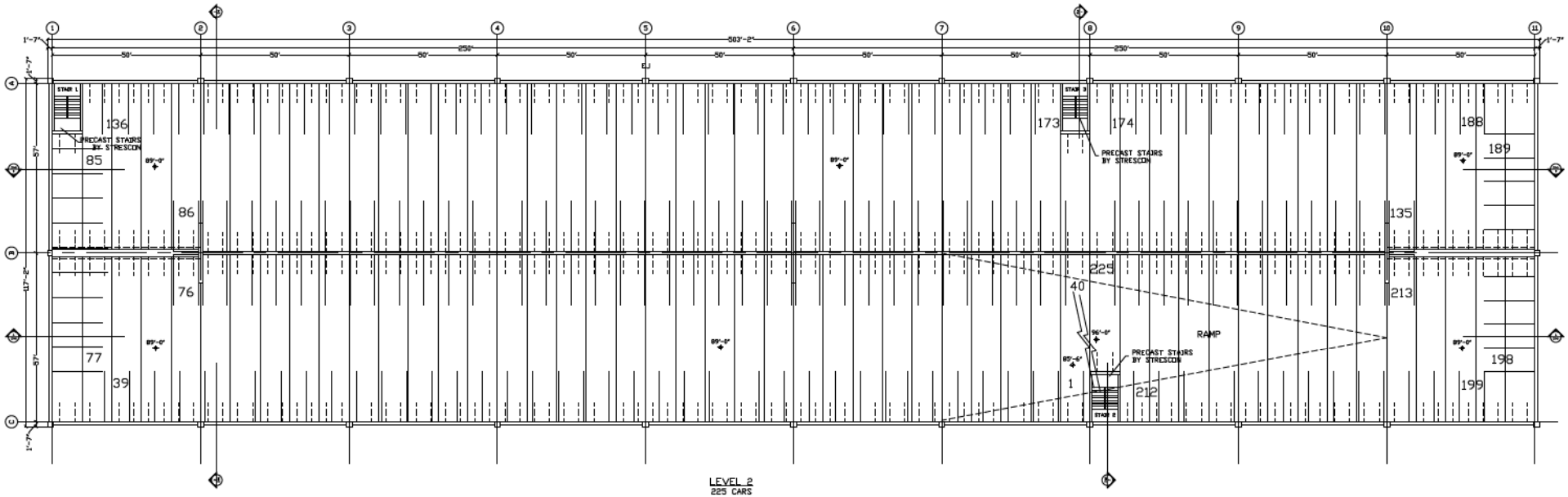
Andrew LeVatte
Business Development
Strescon Limited
Cell; 902-221-1721
Phone; 902-494-7404



STRESCON LIMITED SAINT JOHN, N.B. & BEDFORD, N.S.	BAYERS ROAD PARKING GARAGE SCALE = NTS	4				STAMP:				CUSTOMER: RANK INCORPORATED BAYERS ROAD, HALIFAX, N.S.	GARAGE SITE PLAN
		3									
		2									
		1	THIRD LEVEL REMOVED	07/10/09	AJL	DATE	DRW.	CHKD.	APPRD.		DWG. NO.: SK-1A (FOR CONST.)
		NO.	REVISION	DATE	BY	06/02/09	MWH				



LEVEL 1
220 CARS



LEVEL 2
225 CARS

STRESCON LIMITED
SAINT JOHN, N.B. & BEDFORD, N.S.

BAYERS ROAD
PARKING GARAGE
SCALE = NTS

NO.	REVISION	DATE	BY
4			
3			
2			
1	THIRD LEVEL REMOVED	07/10/09	AJL

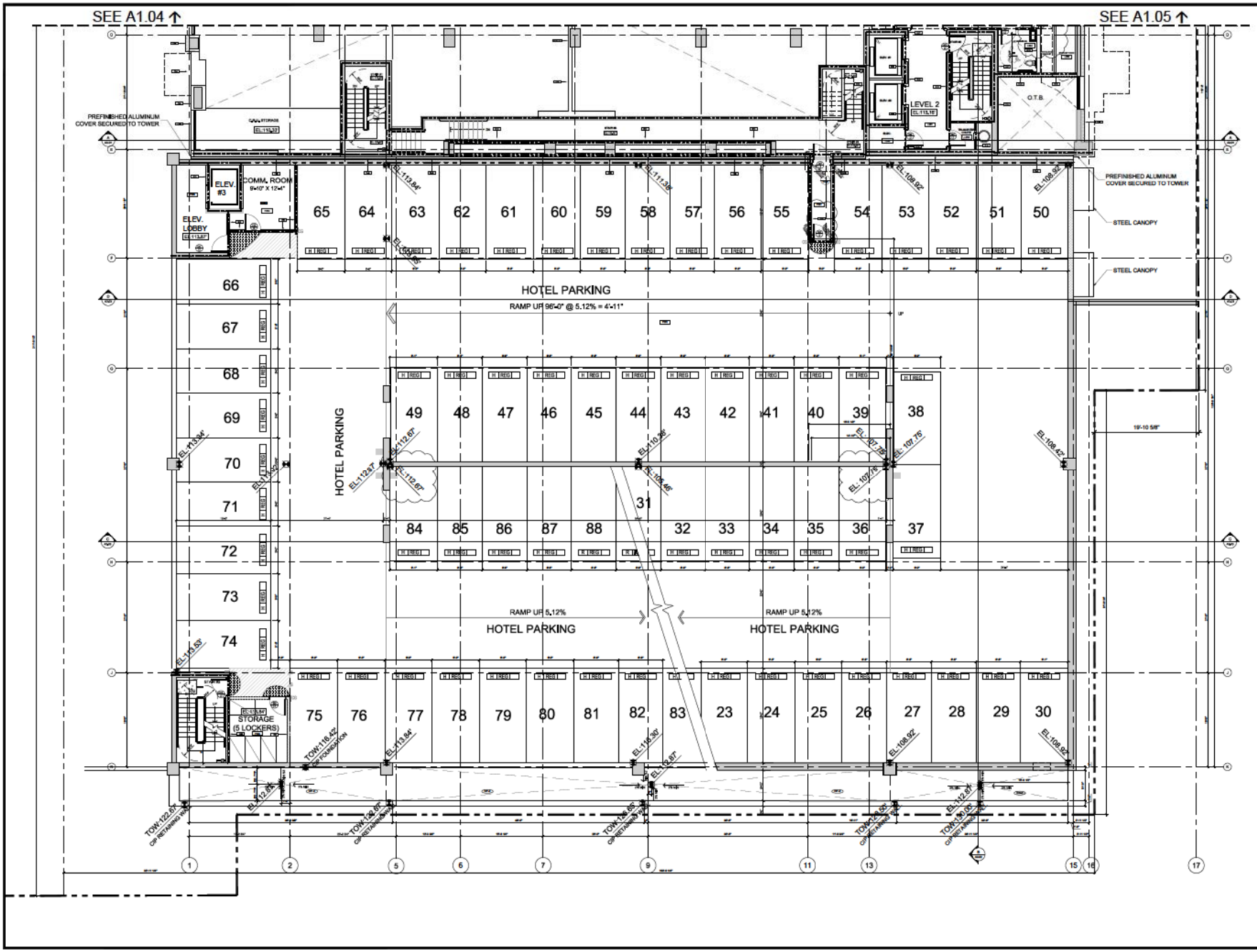
STAMP:

DATE	DRW.	CHKD.	APPRD.
06/02/09	MWH		

CUSTOMER:
RANK INCORPORATED
BAYERS ROAD, HALIFAX, N.S.

LEVEL 1 & 2

DWG. NO.:
SK-2 (FOR CONST.)



CLIENT

GWL Realty Advisors Inc.
3000-650 West Georgia Street
Vancouver, B.C. V6B 4N7

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NO.	DATE	APPR.	DESCRIPTION
REVISIONS			
6	2013/05/01		RE-ISSUED FOR CONST
5	2012/12/06		ISSUED FOR CONSTRUCTION
4	2012/10/29		ISSUED FOR TENDER
3	2012/10/17		ISSUED FOR BUILDING PERMIT
2	2012/06/01		ISSUED FOR BUILDING PERMIT
1	2011/12/01		ISSUED FOR DP
NO.	DATE		DESCRIPTION
ISSUES			

SEAL

SUB-CONSULTANT

PRIME CONSULTANT

IBI GROUP
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Toronto ON M5V 1V6
tel 416 596 1930
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700 - 1285 West Pender St.
Vancouver BC V6E 4B1 Canada
tel 604 683 8797
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PROJECT TITLE
CITADEL HOTEL
REDEVELOPMENT
1920 Brunswick St, Halifax, Nova Scotia

PROJECT NO:	30778
DRAWN BY:	
CHK'D BY:	
SCALE:	1/8" = 1'-0"
DATE:	2013-05-01
REVISION:	1

SHEET TITLE
LEVEL 2 - PARKING

SHEET NUMBER
A1.06

File Location: J:\30778_Cogswell\5.0 Drawings\Architecture\ACAD\Sheets\A1.06 Parking.dwg Last Saved: April 30, 2013, by Alexandra Stanar Plotted: Wednesday, May 01, 2013 5:15:48 PM by Emma Arifa

Lucas Anthony

From: Cough, Jamie <Jamie.Cough@cmpco.com>
Sent: Friday, August 24, 2018 11:36 AM
To: Christi Holmes
Cc: Ripley, Marshall L; Lucas Anthony
Subject: RE: Shipyard Meeting

Christi:

After a site review today, in order to put the Mountfort Street electrical utilities underground, you would also need to put the utilities underground on Newbury Street as well. In order to put Mountfort underground, this all needs to be either underground or overhead because of fusing coordination issues-we can't go underground, rise and go overhead then go underground and rise again in such a short span.

As discussed before, we can move the risers at the corner of Newbury and Hancock Street to the corner of Newbury and Mountfort as per our original conversation, but that does not help you on Mountfort and brings in other complications as well. It does not accomplish the improvements on Mountfort that you were looking for.

I hope this provides the clarity you are looking for. Let me know if you have any questions.

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-629-1489 office
207-626-4082 fax

From: Christi Holmes [mailto:cholmes@gorrillpalmer.com]
Sent: Monday, August 06, 2018 2:46 PM
To: Cough, Jamie
Cc: Ripley, Marshall L; Lucas Anthony
Subject: Shipyard Meeting

Hi Jamie,

We'd like to schedule a meeting with you to discuss the possibility of undergrounding the existing overhead along Mountfort Street, along the Shipyard site. Are you available anytime this week or next? Tuesday and Friday do not work, otherwise we are pretty open.

Thanks,
Christi Holmes | Design Engineer

GORRILL PALMER
707 Sable Oaks Drive, Suite 30 | South Portland, ME 04106
207.772.2515 x292 (office) | 207.263.7263 (mobile)
www.gorrillpalmer.com

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GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

September 17, 2018

Caitlin Cameron
City of Portland Planning Division
389 Congress Street
Portland, Maine 04101

Subject: Shipyard Redevelopment
Summary of Underground Relocation Efforts

Dear Ms. Cameron:

During our last Workshop with the Planning Board on July 24th, the Board requested that the Applicant explore the feasibility of putting overhead power lines on Mountfort Street underground. This letter is intended to summarize the conclusions reached since that meeting.

As background, the Planning Board, at its first Workshop on June 12th requested that the Applicant determine the feasibility of placing the overhead power on Newbury Street below ground. The following is a brief summary of the findings, which are also detailed in the Waiver Justification Letter submitted prior to the July 24th Planning Board Workshop:

- **The costs to underground the overhead utilities on Newbury Street would be approximately $1.6m (see attached Exhibit A cost summary);**
- **Prior undergrounding efforts on nearby streets have resulted in a concentration of riser poles at the intersection of Newbury and Hancock Street;**
- **These riser poles, while unsightly add to the cost and complexity of the undergrounding work;**
- **More challenging is the fact that the eleven (11) overhead services to homes and businesses on the opposite side of Newbury Street would also need to be put underground;**
- **This would require that <u>each</u> of the eleven (11) property owners sign an agreement transferring maintenance responsibility from CMP to the property owner (see attached);**
- **Gaining approval to convert to underground service and assume maintenance responsibility from all eleven (11) property owners is not feasible;**
- **Given the above, it was determined that undergrounding the lines on Newbury was not feasible;**

Having considered the above challenges to undergrounding on Newbury Street, the Planning Board on July 24th, 2018, requested that the Applicant meet with CMP to evaluate the feasibility of putting the overhead utilities on Mountfort Street underground. On August 24th, the Applicant and Gorrill Palmer met onsite with CMP representatives Jamie Cough and Marshall Ripley. The following is a summary of the meeting, also see Exhibit B, correspondence from CMP:

- **The property frontage on Mountfort Street is a short distance and relocating the lines underground just on Mountfort is not feasible due to fusing issues;**
- **CMP would require that all the frontage along Mountfort AND Newbury be undergrounded at the same time (see attached email summarizing the meeting from CMP);**
- **CMP also re-confirmed that the eleven (11) property owners on the other side of Newbury Street would need to agree (by signing the attached form, see Exhibit C) to the transfer in maintenance responsibility involved in switching from overhead to underground service.**

If you require any additional information or have any questions, please don't hesitate to contact our office.

Sincerely,
Gorrill Palmer

Lucas Anthony, PE
Project Manager

cc: Nathan Bateman, David Bateman, David Lloyd

EXHIBIT A

86 Newbury Street, LLC
Estimated Cost for Relocating Overhead Utilities
9/5/2018

RELOCATE CMP UNDERGROUND

Estimated CMP Cost *	$ 1,000,000.00
Other Utilities Tel / Cable **	$ 300,000.00
Site Work Cost ***	$ 350,000.00
Total	$ 1,650,000.00

* CMP cost is based on field estimate from CMP Engineers based on the engineering costs, cost of material and labor for relocation of the primary circuits that exist on this road.

** Other utilities tel / cable is the estimated engineering cost, material and labor to move telephone and cable.

*** Site work cost is for the work provided by developer to trench and run required conduit and structures for CMP, Telephone and Cable. This includes trenching across the street for 11 secondary services that exist overhead.

**** This does not include the contingency liability of assuming ownership of the secondary lines for the 11 services. Estimated liability is $20,000 per service or $220,000. This liability is forever.

EXHIBIT B

Lucas Anthony

From: Cough, Jamie <Jamie.Cough@cmpco.com>
Sent: Wednesday, September 5, 2018 12:31 PM
To: Lucas Anthony; Christi Holmes
Cc: Ripley, Marshall L; nathan@batemanpartnersllc.com
Subject: RE: Shipyard Meeting
Attachments: service relocation form.doc

Lucas:

That is correct. Each property owner would need to sign off on our Service Relocation form that acknowledges that the customer service will be relocated from overhead to underground (customer owned) secondaries.

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-629-1489 office
207-626-4082 fax

From: Lucas Anthony [mailto:lanthony@gorrillpalmer.com]
Sent: Wednesday, September 05, 2018 12:26 PM
To: Cough, Jamie; Christi Holmes
Cc: Ripley, Marshall L; nathan@batemanpartnersllc.com
Subject: RE: Shipyard Meeting

Jamie: thanks again for meeting us onsite to review the potential undergrounding. We are preparing for Planning Board and just want to be clear on CMP Policy/Procedures. As a quick follow up, could I ask that you confirm a discussion we had previously? During our discussion on undergrounding Newbury Street we determined that converting existing overhead services to underground services would require that each of the property owners (on the opposite side of Newbury) would need to agree to own and maintain the underground facilities, by way of a signed agreement with CMP? This is in contrast to an overhead service where CMP is responsible to maintain it up to the meter.

Can you confirm, and/or clarify this requirement if I've misstated it? Thanks for all your help on this.

Lucas Anthony, P.E. | Project Manager

GORRILL PALMER

207.772.2515 x245 (office) | 772.713.4425 (mobile)

From: Cough, Jamie <Jamie.Cough@cmpco.com>
Sent: Friday, August 24, 2018 11:36 AM

To: Christi Holmes <cholmes@gorrillpalmer.com>
Cc: Ripley, Marshall L <Marshall.Ripley@cmpco.com>; Lucas Anthony <lanthony@gorrillpalmer.com>
Subject: RE: Shipyard Meeting

Christi:

After a site review today, in order to put the Mountfort Street electrical utilities underground, you would also need to put the utilities underground on Newbury Street as well. In order to put Mountfort underground, this all needs to be either underground or overhead because of fusing coordination issues-we can't go underground, rise and go overhead then go underground and rise again in such a short span.

As discussed before, we can move the risers at the corner of Newbury and Hancock Street to the corner of Newbury and Mountfort as per our original conversation, but that does not help you on Mountfort and brings in other complications as well. It does not accomplish the improvements on Mountfort that you were looking for.

I hope this provides the clarity you are looking for. Let me know if you have any questions.

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-629-1489 office
207-626-4082 fax

From: Christi Holmes [mailto:cholmes@gorrillpalmer.com]
Sent: Monday, August 06, 2018 2:46 PM
To: Cough, Jamie
Cc: Ripley, Marshall L; Lucas Anthony
Subject: Shipyard Meeting

Hi Jamie,

We'd like to schedule a meeting with you to discuss the possibility of undergrounding the existing overhead along Mountfort Street, along the Shipyard site. Are you available anytime this week or next? Tuesday and Friday do not work, otherwise we are pretty open.

Thanks,
Christi Holmes | Design Engineer
GORRILL PALMER
707 Sable Oaks Drive, Suite 30 | South Portland, ME 04106
207.772.2515 x292 (office) | 207.263.7263 (mobile)
www.gorrillpalmer.com

EXHIBIT C

DATE_____

NOTIFICATION #_____

DEAR CUSTOMER:

Your neighbor at _____ has contacted Central Maine Power
(service address)

Company (CMP) to request _____
(Scope of work)

To complete the requested work it is necessary that your electric service be relocated. Any relocation charges from CMP will be the responsibility of the customer requesting the work (your neighbor) and is collected prior to the work commencing.

For CMP to relocate your service at the request of another customer, we must first get your permission to do so.

We suggest that you discuss the scope of this project with your neighbor prior to granting permission.

This permission must be given by the deeded owner. If you are not the deeded owner of this property, please forward this to the appropriate party.

If you are in agreement with this proposed project, please sign and return one copy to CMP. The work will not commence without your written permission.

I, _____ give CMP permission to relocate my
(your name)
electric service at _____
(your service address)

Should you require additional information, please contact me directly.

F/P Name:
1-800-565-0121
Ext #:

86 Newbury Street, LLC

470 Fore Street, Suite 400
Portland, ME 04101

March 5, 2018

Re: **Agent Authorization**
Shipyard Redevelopment
Portland, Maine

To Whom It May Concern:

86 Newbury Street LLC ("Developer") is in the process of re-developing a site (the "Site") in the state of Maine, Cumberland County, located at the existing Shipyard Brewery property in Portland. On behalf of the Developer, I hereby authorize Gorrill Palmer, (the "Engineer") to act as agent for the purpose of obtaining permits and approvals related to the development of the Site.

In such capacity, the Engineer's authority is expressly limited to signing and delivering applications for permits and approvals that are related to the development of the Site, advancing nominal funds as are required to file such applications and representation at meetings and hearings for the applications. The Engineer is not authorized to negotiate on the Developer's behalf or to bind or obligate the Developer in any manner whatsoever, including without limitation accruing any obligations on the Developer's behalf to pay for or construct improvements without additional authorization in writing.

This authorization is effective as of the date of this correspondence, and will remain valid until revoked in writing.

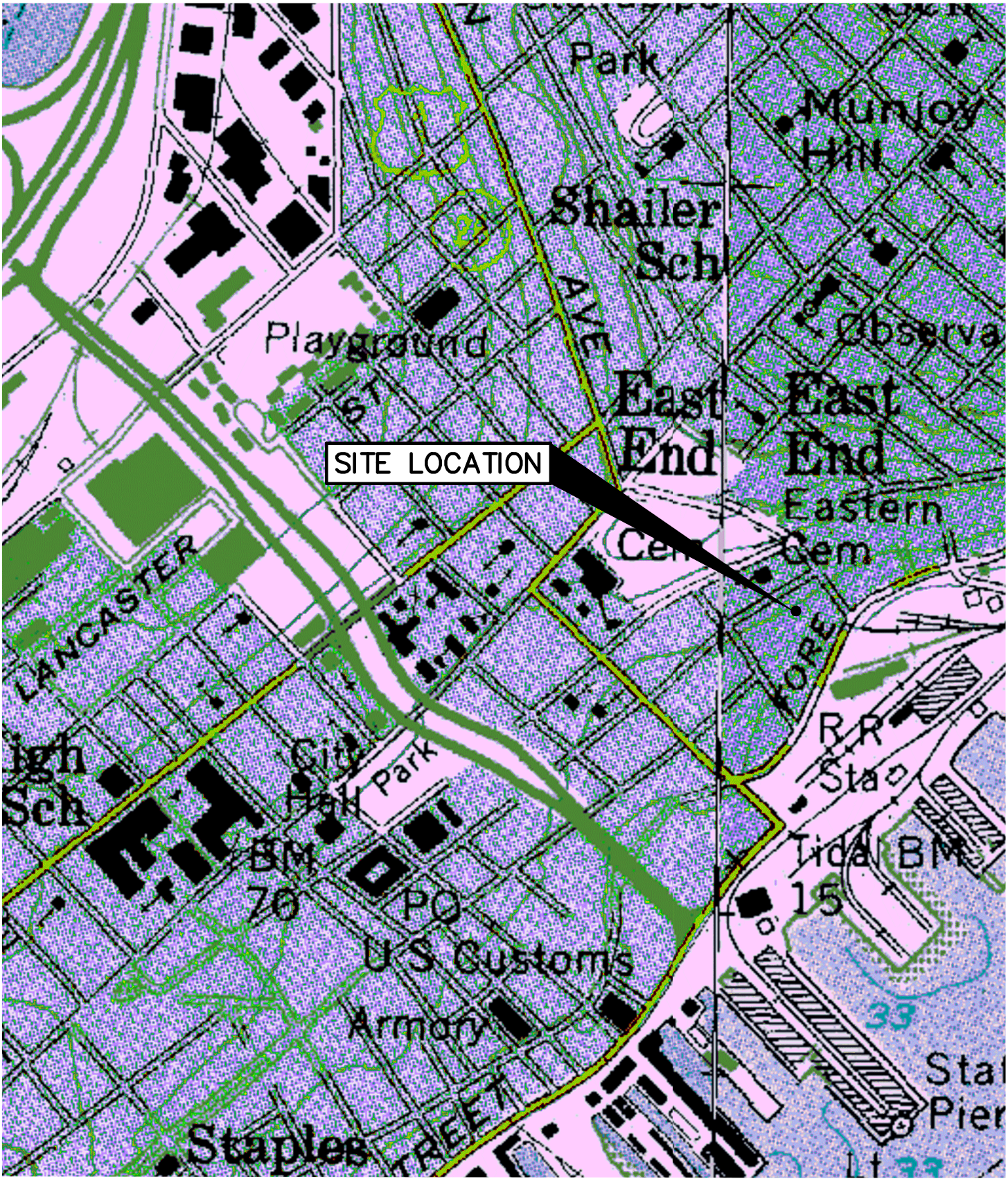
If you have any questions or if I can be of any further assistance, please contact me at (207) 772-2992.

Very truly yours,

86 Newbury Street LLC

David Bateman

It's: MEMBER



U.S.G.S. Location Map

Shipyard Brewing Company - Portland, Maine

U.S.G.S. Portland East/West, Maine -7.5 Minute Series (Topographic)

Design: BMG	Date: MARCH 2017
Draft: CG	Job No.: 3184
Checked: LSA	Scale: None
File Name: 3184-LOCATION.dwg	

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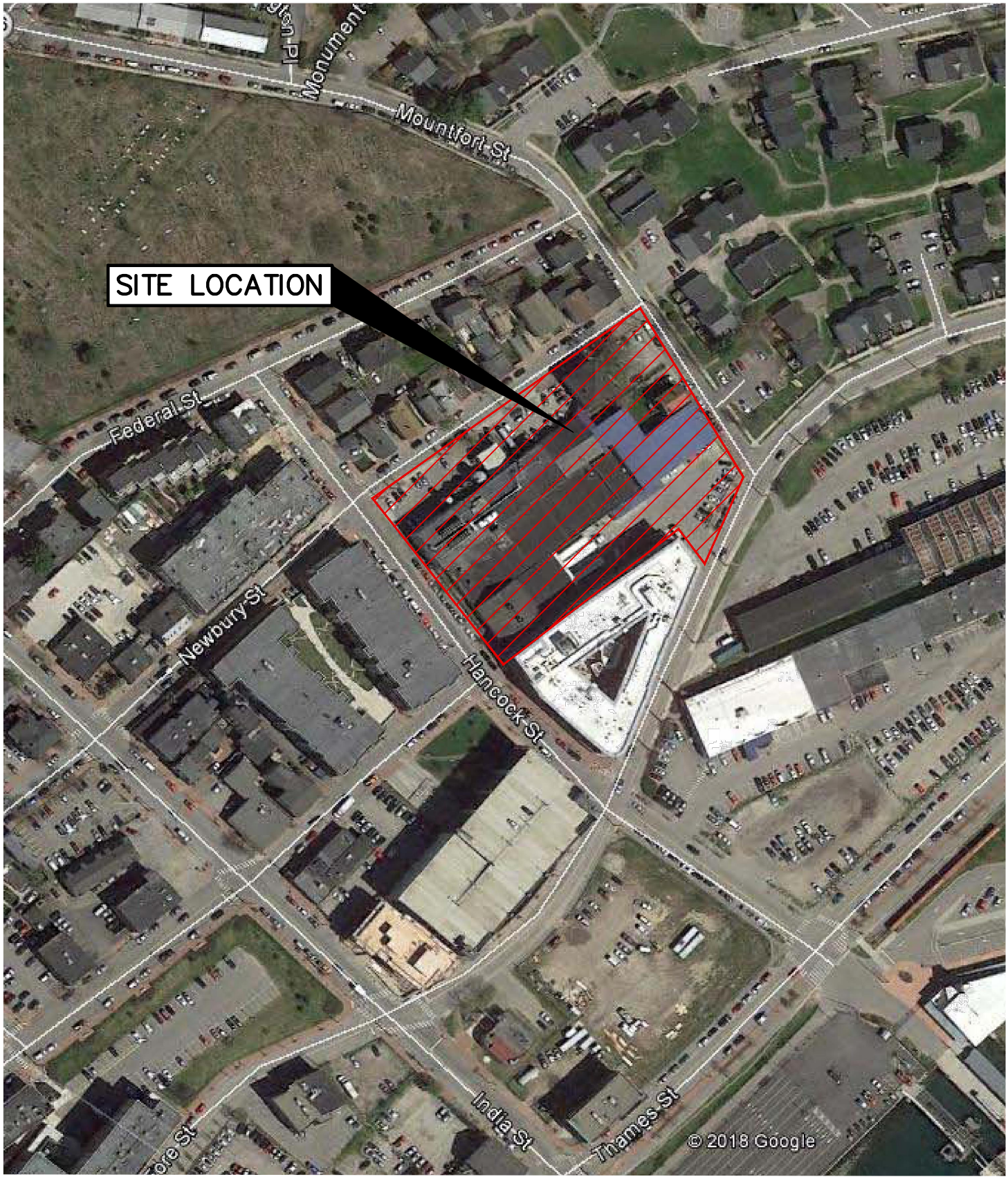
Figure 1



Aerial Location Map

Shipyard Brewing Company - Portland, Maine

Design: CH	Date: MARCH 2018
Draft: CH	Job No.: 3184
Checked: LSA	Scale: None
File Name: 3184-LOCATION.dwg	

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Figure 2

Flood Map- 1986 Effective

Shipyard Brewing Company - Portland, Maine
from Portland, Maine Flood Map Viewer

Design: CH	Date: MARCH 2018	
Draft: CH	Job No.: 3184	
Checked: LSA	Scale: None	
File Name: 3184-LOCATION.dwg		

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Figure
3

NARRATIVE – Level III Site Plan

Project Description

The project site is approximately two acres in size and is currently home to the Shipyard Brewery, two apartment buildings and surface parking areas that serve the brewery and residential uses. The site occupies the block bound by Newbury, Mountfort, Fore and Hancock Streets in Portland. The parcel consists of Tax Map 20C Lots 1, 2, 5, 9, and 15. The site generally slopes in the southeasterly direction with slopes in the range of 3% to 7%. The property is zoned IS-FBC, India Street Form-Based Code Zone. Refer to Attachment 3 for the Location Map.

The proposed redevelopment project consists of approximately 175,000 sf of new mixed office, industrial and limited retail uses; comprised of 107,000 sf office space, 24,000 sf Specialty Pharmacy, 35,000 sf Technical Fulfillment. The project includes renovation of approximately 15,000 to accommodate the scaled down brewing operation and existing tasting room and retail space. The existing three-story Shipyard Brewery building will remain and be renovated and repurposed to accommodate the Specialty Pharmacy, while the current Shipyard bottling and warehousing facility will be demolished along with the two existing residential buildings on Newbury and Mountfort Street. In addition to the 175,000 sf of mixed uses described above, the proposed redevelopment includes a 105-room hotel (73,000 sf) and ten (10) residential units. All of the proposed uses are to be supported by structured parking provided within a four-level garage, with a total of 380 spaces. The residential buildings will have parking beneath the buildings.

As noted above, Shipyard Brewing will retain a presence at the site in the form of a scaled down brewing operation with the associated tasting room and retail store. The balance of the brewing, shipping receiving, and storage operations of Shipyard will be relocated to a site within the City of Portland.

The proposed construction is planned to occur in overlapping phases, with a brief description as follows:

1. Demolition of the two Existing Residential Structures (separate demolition permits to be submitted)
2. Renovation of the Existing Shipyard Brewery (separate Building Permit to be submitted)
3. Demolition of the balance of the site and construction of the proposed Office and Hotel (this Level III Site Plan)

Existing Conditions

The project site is currently the home of Shipyard Brewing and has existed as a mix of residential and industrial uses for over two centuries. The Shipyard facility occupies more than half of the block bound by Fore, Mountfort, Newbury and Hancock Streets, with the balance of the property occupied by the Residence Inn. Shipyard Brewing's operations at the site consist of brewing, bottling, warehousing, storage, shipping, receiving, office space, retail shop and a tasting room. The retail space and tasting room are located on the Hancock Street frontage, while the Newbury Street area is more industrial with an area for delivery and receiving of raw materials, silos for

storage, some surface parking and the entrance to the Shipyard offices. Further down Newbury Street, an existing three-story building which was constructed in 1893 houses six apartment units. On Mountfort Street, another 3-unit apartment building is located approximately halfway down the block. Fore Street provides the main entry to the shipping and receiving area of the Shipyard Brewery, along with some surface parking. Photos of the existing site area included in Attachment 7.

The Shipyard facility is made up of a number of buildings constructed over the years for various purposes. The existing 3-story building that fronts on Hancock Street and is home to the Shipyard retail store and tasting room was constructed between 1914 - 1920. This building will be renovated as part of the proposed development, while the balance of the buildings on site will be razed. The renovation of the building will be used for continued brewing operations for Shipyard on the lower floor while the upper floors will be renovated for pharmacy and fulfillment space. The retail store and tasting room will be housed next to the proposed hotel with a new storefront on Hancock Street.

The site is currently served by existing utilities including water, sewer, drainage, electric, gas, cable tv and telephone which are available on all four sides of the site. The site is mostly impervious and slopes generally from elevation 50' on Newbury Street to 25' on Fore Street (NGVD). The site is within Flood Zone C according to FEMA 230051 0014 B, which is listed as an area of minimal flooding. With the exception of the 3-story building to be preserved, the balance of the site will be disturbed during construction.

At this time a geotechnical exploration has not been performed, however, surrounding conditions are known to exist of loose surficial fills on top of medium to soft glaciomarine clays overlying loose to medium dense glaciofluvial sands overlying loose to dense glacial till overlying bedrock at depths varying from 22 to 42 feet below the ground surface. Groundwater depths are anticipated to vary across the site depending on location but can be expected within six feet of the existing ground surface.

Evidence of Right, Title and Interest

The subject property is made up of one parcel, which is controlled by the Applicant- 86 Newbury Street, LLC. Evidence of the right to file this application is included in Attachment 14.

Evidence of State and/or Federal Permits

Traffic Movement Permit - Based on the traffic assessment memo (Attachment 8), this project will generate greater than 100 trips which will require a Traffic Movement Permit issued by the City under its delegated authority. This permit application will be submitted under separate cover from this Level III Site Plan Application.

DEP Permitting – The proposed construction will disturb over one acre; a Maine Construction General Permit (CGP) and Permit by Rule (PBR) applications will be filed with the Maine DEP.

Zoning Assessment

The project site is located in the India Street Form-Based Code Zone (IS-FBC) with frontage along the subdistricts *Urban Neighborhood* (UN) and *Urban Transitional* (UT). The zone places a primary emphasis on a building's physical form and its relationship to the street with the intent to establish a vibrant, walkable, and mixed-use urban district.

The proposed development is aligned with the zone's guiding principles and is designed to realize the objectives of the subdistricts and the overall IS-FBC. The zoning objectives for the portion of the site abutting Newbury Street (*Urban Neighborhood*) and Hancock, Mountfort and Fore Streets (*Urban Transitional*) are listed below for reference.

Section 14-275.7(a) Urban Neighborhood (UN) subdistrict: "The intent of this subdistrict is to maintain and promote a small-scale, less active urban fabric. Buildings may be more private in character and have smaller footprints with building types including, but not limited to, single-family, rowhouses, duplexes, triple-deckers, and double-triples. Building frontages may be less transparent and entries may be raised above sidewalk level with frontage types including raised, recessed doorways, porches, and stoops. The streetscape has variable setbacks and landscaping with many buildings within one block and streets tend to be narrow."
Section 14-275.7(b) Urban Transitional (UT) subdistrict: "The intent of this subdistrict is to encourage higher density, mixed-use building types that accommodate any use. Building frontages are a mix of activity level, have larger footprints, and the most flexibility of height and scale. Building ground floor spaces tend to accommodate flexible and changing uses with frontage types including doorways, forecourts, arcades, and storefronts. The streetscape may be less active than the UA subdistrict with wide sidewalks, street trees, and setbacks and stepbacks providing relief from large building masses."

The project architect (Archetype Architects) has prepared a narrative that addresses the design of the buildings relative to the IS-FBC along with the average building grade calculations. See below for the Architect's narrative. A Zoning Assessment Table is provided as Attachment 18.

In general, the proposed development conforms to the key zoning requirements of the IS-FBC in the following manner:

(a) Prohibited uses. - The development's proposed uses are not listed among the IS-FBC's prohibited uses

(b) Siting standards – The proposed development will comply with the following:

1. Mid-block permeability. Not required within the location of the proposed development based on the IS-FBC Regulating Plan.
2. Frontage requirements. The proposed development conforms to the minimum street frontage. Building length and massing requirements and structured parking exceptions are covered under the Architects Narrative.
3. Setbacks. With the exception of Newbury Street and the UN subdistrict, the proposed building conforms to the required setbacks, with more details outlined in the project architect's plans.
4. Landscape and screening. There is no surface parking proposed, all parking is within the proposed parking structure and beneath the proposed residential buildings. Public spaces and the streetscapes along Newbury and Mountfort, have been designed with plantings and street trees to enhance the space and the pedestrian environment.
5. Building additions. The proposed development will be reviewed as a Level III Site Plan.

(c) Height standards. - The proposed development includes bonus stories as part of the height bonus provision in the IS-FBC. Please refer the Floor Plans provided by the Architect provided within Attachment 16. The Applicant is proposing a green roof in order to qualify for the bonus story.

(d) Parking standards. - The proposed 380 space four-level garage conforms to the standards in the City of Portland Design Manual, and more details can be found in the Architect's plans. Parking requirements for proposed uses are outlined in a table included on the Site Plan (Sheet C100).

Architectural

The site is bordering four distinct streets and includes the Urban Neighborhood (UN) subdistrict and the Urban Transitional (UT) subdistrict within the India Street Form Based Code (IS-FBC) Zone. The designs were based upon the intent of each district criteria. Therefore, the project presents an architecture which is a reflection of the district as outlined in the IS-FBC.

The UT zone runs along Fore street then up both Mountfort and Hancock Streets. The architecture directly facing Fore Street is open and presents a full glass façade, as we move up Hancock and Mountfort the architecture modifies to reflect the transition to the UN zone. Per our critique from staff we have modified the Mountfort Street elevations to have more brick with punched openings, thus addressing the more residential nature of those streets.

After discussions with Planning Staff we have modified the Hancock Street face on the hotel to remove some of the asymmetry in favor of symmetry. Along Newbury Street we now have three apartment buildings which meet the intent of the UN with small scale less urban fabric. Each building is entered from Newbury Street thru a courtyard for residential access. Two of the buildings on the westerly end have small commercial space at street level. We have incorporated a back alley for vehicular access to the residential buildings. The alley will also allow for deliveries to the Pharmacy use which will be located in the former brewery building. In addition, the new window openings being installed in the existing Brewery have been modified per staff suggestion to be less horizontal. The remaining area to the east of these structures will be developed as a park and a court yard will be developed directly across the street from the historically significant Abyssinian Church.

Easements or Other Burdens

An existing loading and access easement that benefits the adjacent Residence Inn is shown on the Site Plan. The easement coincides with the existing driveway along Fore Street and is approximately 40 feet wide. The easement is intended to allow truck access to the Residence Inn dumpster enclosure which is at the rear of the building. The easement, and associated driveway will be impacted by the proposed redevelopment. The Applicant will attempt to negotiate an alternate arrangement with the owner of the Residence Inn to address the proposed impact to the access easement. There is also a 10-foot wide no-build easement benefiting adjacent Residence Inn property that runs along the developments southeasterly boundary and is also shown on the Site Plan. A copy of the recorded document containing both easements can be found in Attachment 14A.

Proposed Waivers

A breakdown of the requested waivers is included in the Waiver Table in Attachment 1B of this application.

Financial and Technical Capacity

Please see Attachment 6 for a summary of the Applicant's technical experience and financial capacity.

The Applicant has retained a highly-qualified team of professionals to undertake planning, permitting and design tasks on this project. Services will be provided by the following companies:

Architect	David Lloyd Archetype, PA 48 Wharf Street Portland, ME 04101 (207) 772-6022 lloyd@archetypepa.com
General Contractor	Joe Dillavou Allied Cook Construction PO Box 1396 Portland, ME 04104 (207) 772-2888 jdillavou@alliedcook.com
Civil Engineer	Lucas Anthony, P.E. Gorrill Palmer 707 Sable Oaks Drive, Suite 030 South Portland, ME 04106 (207) 772-2515 lanthony@gorrillpalmer.com
Traffic and Transportation Consultants	Randy Dunton, P.E. (Traffic Impact Study) Gorrill Palmer 707 Sable Oaks Drive, Suite 030 South Portland, ME 04106 (207) 772-2515 rdunton@gorrillpalmer.com Sarah Cushman (TDM) Cushman Transportation Consulting, LLC 94 Beckett Street, 2nd Floor Portland, ME 04101 (207) 200-1910 sarah@sarahcushman.com
Surveyor	Randy R. Loubier, PLS Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, ME 04105 (207)774-0424 rloubier@owenhaskell.com
Landscape Architect	Chris Di Matteo, PLA Gorrill Palmer 707 Sable Oaks Drive, Suite 030 South Portland, ME 04106 (207) 772-2515 cdimatteo@gorrillpalmer.com
Geotechnical Consultant	William Peterlein, P.E.

	Summit Geoengineering Services 145 Lisbon Street, Suite 601 Lewiston, ME 04240 (207) 576-3313 bpeterlein@summitgeoeng.com
Electrical Engineer	Will Bennett Bennett Engineering 7 Bennett Drive Freeport, ME 04032 (207) 865-9475 will@bennettengineering.net

Construction Management Plan

A preliminary construction management plan has been prepared by the General Contractor and is included with this submittal. Similar to the site and architectural plans, the construction management plan will be refined as the project progresses and input from Staff and the Planning Board is incorporated.

Traffic Study and Access Conditions

A memo summarizing the Traffic Study for this project is provided in Attachment 8. An application for a Traffic Movement Permit will be submitted subsequently under separate cover.

As noted earlier in this narrative, the site is bordered by Fore, Mountfort, Newbury and Hancock Streets. The site has a total of seven (7) existing driveway openings, one on Fore, two on Mountfort, three on Newbury, and one on Hancock Street. The proposed redevelopment will reduce the number of driveways from seven to four. Two primary driveways will provide ingress/egress to the parking garage, while a more minor driveway located on Hancock Street is proposed to access the parking beneath the proposed residential buildings along Newbury Street.

Code allows for 2 driveways, as such we are requesting a waiver to code to allow 4 driveways. This waiver request reduces the existing non-conformities present on the site and may increase the number of on-street parking spaces. No driveways are proposed on Mountfort Street.

Significant Natural Features

The site contains no significant natural feature and is nearly 100% impervious consisting of buildings and paved areas. Letters from the Maine Department of Inland Fisheries and Wildlife, and the Maine Natural Areas Program state there are no significant natural features on the property. Letters are included in Attachment 13.

Stormwater Management Plan

Section 14-526.b.3.b of the Land Use Ordinance states that all development other than Level I residential shall comply with Section 5 of the Technical Manual including Basic, General, and Flooding standards as applicable to prevent and control the release of pollutants to waterbodies, watercourses, wetlands and groundwater, and reduce adverse impacts associated with increases or changes in flow, soil erosion and sedimentation.

Section 5.II.b and Section 5.11.c of the Technical Manual states that Level II and III site plans shall be required to submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including Basic, General and Flooding standards. The Basic Standard will be met by implementation of erosion control measures as outlined in the Erosion and Sedimentation Control Report submitted with this application in Attachment 10. The General and Flooding Standards are addressed in the Stormwater Management Report for the project which is provided in Attachment 9.

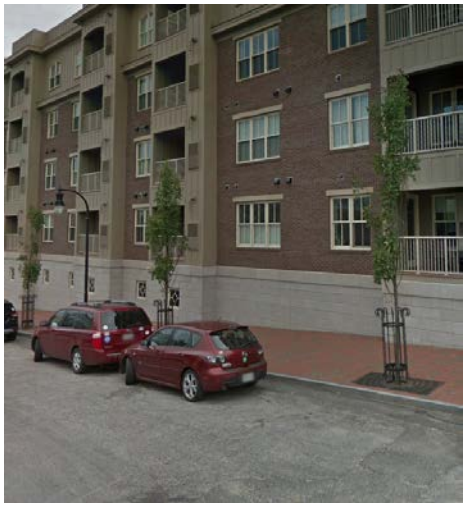
Project's Consistency with Portland's Comprehensive Plan

The proposed development is located within one of the City's priority growth areas, a district that has recently been re-zoned to utilize Portland's first form-based zoning code. The proposed mix of uses is consistent with the objectives of the India Street Form-Based Code Zone and the Future Land Use Plan city wide. The proposed development increases economic development at the City's core, *reinforcing the center*, while not sacrificing housing accommodations.

The Comprehensive Plan or "Portland's Plan 2030", is organized around six interconnected themes which constitute the vision statement for the City. The following briefly summarizes the goals of this project relative to these six themes:

Equitable – The project includes 12 housing units to replace the existing units to be removed. A portion of those meeting the City's Inclusionary Zoning Standards, are planned to be affordable workforce housing units.

Sustainable – The site in its current condition has no provisions for the treatment of stormwater runoff. The proposed development will provide measures to improve water quality of the runoff from non-roofed impervious areas. In addition, the building will incorporate a green roof to further reduce impervious areas and runoff.



Dynamic – The mixed-use development will activate the Hancock Street frontage by relocating and enhancing the existing Shipyard Brewing tasting room and retail shop, while also incorporating the main entry to the new hotel. These uses will add pedestrian activity, and the sidewalk and streetscape improvements will complement the redevelopment that has occurred on the opposite side of Hancock Street and the broader area.

Secure – The proposed redevelopment constitutes an investment that will enhance the City's tax revenue base while retaining existing jobs and creating new ones both during and after construction. Shipyard Brewing will maintain a presence at the site, while relocating some operations to another location in Portland. The new office component of the project will retain existing jobs and create opportunity and space to allow the tenant to grow its workforce. The hotel use will serve Portland's already thriving tourism industry and provide new job opportunities at the same time.

Authentic – The proposed redevelopment represents a significant investment in the City but recognizes that blending in with the neighborhood is critical. Elements considered include: enhancing the walkability of the neighborhood by improving sidewalks and streetscapes on all four streets and respecting the transitional nature of the existing uses along Newbury Street by using indigenous, local materials in the architecture. Further, the plan maintains Shipyard's tasting room and brewing presence at this historical, authentic location for the company.

Connected – The site's location relative to the Eastern Waterfront, Commercial Street and the Old Port, Ocean Gateway and other new and exciting nearby development, along with the existing transportation infrastructure will provide great connections for all modes of travel. With new sidewalk improvements, bike infrastructure, a close connection to the METRO system and the ferry, and marine transportation, this site is ideally located and will cater to all these modes of travel and can lessen visitors, guests and employees dependency on car use.

Utility Capacity to Serve

Letters were sent to the Portland Water District, Central Maine Power, Fairpoint, Spectrum and Unitil requesting confirmation of their ability to serve the project. Responses are provided in Attachments 12A-E. Outstanding responses will be forwarded to the City upon receipt.

NFPA 1 and Fire Department Technical Standards

A fire code summary is provided in Attachment 15. Existing fire hydrants are located near the northwest corner of the parcel at the intersection of Hancock Street and Newbury Street, north of the parcel on Newbury Street, and the southeast corner of the parcel at the intersection of Mountfort Street and Fore Street.

Conformity with Applicable Design Standards

The following narrative discusses the projects compliance with the design standards of Section 14-526 of the City Land Use Code as noted below:

A. Transportation Standards

1. **Impact on Surrounding Street Systems**
   The project is projected to generate in excess of 100 trip ends during the peak hour which will require a Traffic Movement Permit. This permit will be submitted under separate cover from this Site Plan Application.

2. **Access and Circulation**
   a. Site Access and Circulation
      i. The project is designed to provide safe and reasonable access and internal circulation for the entire site and will be designed to comply with the standards set forth in Section I of the Technical Manual.
      ii. Points of access are located to avoid conflicts with existing turning movements and traffic flows. The existing driveway on Fore Street does not meet the required distance to the intersection at Mountfort Street. Given this, the Applicant is requesting a waiver to allow the driveway to remain in its current location in order to allow access to the ground floor parking

and truck access to the loading dock. The existing distance is 120 feet, while the required is 150 feet.

iii. The project does not propose drive up features.

b. Loading and Servicing

i. The project is designed to provide a safe loading and service area that does not impede site access, vehicle circulation, pedestrian movements, or parking. Loading will occur within the site parking garage and be accessed, as it is today, from the existing driveway on Fore Street. As noted on the elevations, the floor height of 14' feet for the ground floor level parking will allow enough clearance for ambulances.

c. Sidewalks

i. The project provides sidewalks on all building frontages.

ii. Existing sidewalks within the area of work will be repaired or replaced in conformance with Chapter 25 of the City Code and Section 1 of the Technical Manual.

iii. The project is designed to provide continuous internal walkways between existing and planned public sidewalks, street crossings, and building entrances.

3. Public Transit Access

a. The project will result in the construction of at least 20,000 square feet of gross floor area for commercial use and is further than 0.25 miles from an existing transit shelter. The nearest Public Transit is the Metro M8 Local Service bus route which has stops at Casco Bay Lines and Franklin Towers. The Breez Express Service has a stop at India and Congress Street. Both of these locations are slightly over 0.25 miles away, as such the Applicant is willing to coordinate with Greater Portland Transit (Metro) to locate a bus stop at the property.

b. See above

c. See above

4. Parking

a. Location and Required Number of Vehicle Parking Spaces

i. Off-street parking as proposed will meet the applicable zoning requirements. 323 spaces are required by code and the proposed parking garage will have approximately 360 spaces. Excess spaces are anticipated to be offered for monthly lease which would help to satisfy the demand for parking in the Eastern Waterfront area.

ii. A TDM is being prepared and will be submitted under separate cover.

iii. The project is anticipated to exceed the minimum parking requirement by more than 10%. However; given the demand for parking in the Eastern Waterfront area the Applicant anticipates that the additional spaces can be leased on a monthly basis to help satisfy some of area-wide parking demand.

iv. Parking spaces meet applicable dimensional standards. A waiver is requested for the drive aisle width in the parking garage, see Waiver Table in Attachment 1B.

v. Parking is provided within the proposed parking structure and will be constructed of permanent and durable hard surface that is not subject to ponding or erosion.

b. Location and Required Number of Bicycle Parking Spaces

i. The project provides secure bicycle parking in conformance with Section 1 of the Technical Manual.

a. The project meets the requirement for two bicycle parking spaces for every five dwelling units by providing a minimum of two bike parking spaces, which will be located within the ground floor parking area under the residential building.
b. The project provides for two bicycle parking spaces for every ten vehicle parking spaces for the first one hundred required vehicle parking spaces, plus one bicycle parking space for every twenty-required motor vehicle parking space over one hundred required vehicle parking spaces. Based on the current parking count, 33 spaces would be required. The Applicant plans to meet this requirement through the use of exterior bike racks and an interior bike storage room for office commuters.
c. The project creates more than ten required vehicle parking spaces. The bicycle parking spaces standard is met by the number of required spaces from Section 14-526.a.4.b.i.b above.

c. Motorcycle and Scooter Parking
   i. The site plan accommodates access and parking for two-wheeled motorized vehicles. As detailed design proceeds, an area within the parking garage will be designated for two-wheeled vehicles.

d. Snow Storage
   i. Limited area onsite is available for snow storage, as such it is anticipated that the site will be managed with a maintenance contract that provides for the removal of snow from the site.
   ii. With a maintenance contract in place, it is not anticipated that encroachment by snow storage on parking requirements, pedestrian walkways, or stormwater management systems would occur for any extended periods of time.

5. Transportation Demand Management

a. A TDM plan will be submitted under separate cover which complies with the City of Portland TDM standards as described in Section 1 of the Technical Manual.

B. Environmental Quality Standards

1. Preservation of Significant Natural Features

a. The project site does not contain any significant natural features according to the Maine Natural Areas Program. The Maine Department of Inland Fisheries and Wildlife indicated that there may be State Endangered bat species and bat species of Special Concern occupying the structure(s) on site. The Department recommends that construction or demolition work on bat-occupied portions of the structure not occur between June1 and August 15, when young bats are unable to fly. The site does not contain habitat for waterfowl and wading birds, does not contain aquifers, wetlands, watercourses, significant vernal pools, or floodplains.
b. The project does not contain areas set aside for preservation.

2. Landscaping and Landscape Preservation

a. Landscape Preservation
   i. The project site contains only one tree of any size. The tree is not in a location or elevation that would allow it to be preserved.
   ii. The project will include street trees as specified in Section 4 of the Technical Manual to the extent possible, however, none are in a condition that warrants preservation. There is no significant vegetation on site that warrants preservation. As noted above, one tree exists on Newbury Street that is not in a location that would allow preservation and also is in conflict

with the existing overhead utilities. Given the proposed excavation work in the vicinity of the tree it would not be possible to preserve the tree.

iii. See above, no trees are proposed for preservation.

iv. The landscaping proposed for this site will provide well in excess of the required replacement for the one tree to be removed.

v. Project is not located within the Shoreland Zone.

b. Site Landscaping

i. Landscaped Buffers

a. Loading and servicing areas, dumpsters, and storage areas and utility structures will be appropriately screened from view from public sidewalks, streets and adjacent properties.

b. Understory planting within the setbacks will be provided to meet the requirements of this section.

c. The residential component of the project will incorporate a landscape buffer of at least 10 feet wide and 6 feet tall, between the residential and commercial uses. An area is currently reserved on the plans and will be designed to meet the requirements of this section as the project design development progresses.

d. See item c. above.

ii. Parking Lot Landscaping

a. No surface parking is proposed, all parking will be within the proposed parking structure.

iii. Street Trees

a. Street trees are proposed in general accordance to Section 4 of the Technical Manual.

3. Water Quality, Stormwater Management and Erosion Control

a. A site specific Stormwater Management Plan has been prepared and is included in Attachment 9.

b. The project complies with the standards of Section 5 of the Technical Manual, please refer to the storm.

c. The project is not located within the watershed of an Urban Impaired Stream.

d. The project is not a level 1 minor residential development. However, basic erosion control standards are met.

e. The project is not anticipated to pose a risk of groundwater contamination either during or post-construction as described in Sections 5 and 9 of the Technical Manual. The project will be served by a public sewer system.

f. The project proposes to connect to public sanitary system as shown on the plans.

C. Public Infrastructure and Community Safety Standards

1. Consistency with City Master Plans

a. The development has been designed to be consistent with the City's Zoning Ordinance and Master Plan relative to offsite infrastructure including sewer, stormwater, sidewalks and streets.

b. The project will include suitable easements, rights and improvements to connect or continue off-premises public infrastructure.

2. Public Safety and Fire Prevention

a. The project design has not advanced to the stage where details have been developed that incorporate all public safety principles for Crime Prevention through Environmental Design (CPTED). The site will be designed with the intent to enhance the security of public and private spaces and to reduce the potential for crime through the following:

i. The project allows for natural surveillance that promotes visibility of public space and areas.

ii. The project allows for controlled access that promotes authorized and appropriate access to the site.
iii. The project promotes a sense of ownership and responsibility through environmental design.

b. The project will be designed for adequate emergency vehicle access to the site in accordance with City standards for street widths and turning radii as described in Section I of the Technical Manual.

c. The project is consistent with City public safety standards, Section 3 of the City of Portland Technical Manual. The site is proposed to be served by the Portland Water District with buildings to be sprinklered. Fire hydrants are located to the southeast of the parcel at the corner of Mountfort and Fore Street, to the north of the parcel on Newbury Street, and to the northwest of the parcel at the intersection of Newbury and Hancock Street.

3. Availability and Adequate Capacity of Public Utilities

a. The project is not anticipated to overburden sanitary sewers and storm drains, water lines, or other public infrastructure and utilities. Water and sewer usage are expected to be reduced given the proposed relocation of Shipyard's brewing operations to another site in the City of Portland. Letters from the various utilities indicating their ability to serve the project are included in Attachment 12.

b. Electrical service for the project will be underground. There is existing overhead electrical along Newbury, Mountfort and Fore Streets, which includes services to surrounding properties not owned by the Applicant. Due to the extreme cost to retrofit the properties, existing electrical service on aforementioned streets will remain overhead.

c. The plans shall be designed meet all the provisions within Section 2 and 9 of the Technical Manual for installation of new or upgrades to existing sanitary sewers, storm drains, water lines, or other utilities.

d. The project is within 200 feet of a public sanitary collection and treatment system. The project will connect to the nearest available public sewer.

e. All sanitary sewer and stormwater utilities proposed as part of the project will be designed to City standards.

f. The project will incorporate dumpsters or a compactor that will be screened from public sidewalks, streets, and adjacent properties. Details of this are forthcoming as detailed design proceeds and is dependent on negotiation with the adjacent Residence Inn.

D. Site Design Standards

1. Massing, Ventilation and Wind Impact

a. The bulk, location, and height of the proposed buildings and structures is not anticipated to result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate. Please refer to the Architects narrative for additional details.

b. The bulk, location, and height of the proposed buildings and structures minimize, to the extent feasible, any substantial diminution in the value or utility to neighboring structures under different ownership. Please refer to the Architects narrative for additional details.

c. HVAC venting mechanisms direct exhaust away from public spaces and residential properties directly adjacent to the site.

2. **Shadows**
   a. The development will not result in shadows that fall on publicly accessible open space. There are no public open spaces directly adjacent to the site.

3. **Snow and Ice Loading**
   a. Project buildings and structures will be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties and public ways.

4. **View Corridors**
   a. The project is not located within a Viewing Protection Corridor as identified on the View Corridor Protection Plan with the Design Manual.

5. **Historic Resources**
   a. The site is not located within the historic preservation district, nor have any buildings been identified designated as landmarks. The Applicant has received correspondence from the Maine Historic Preservation Commission (MHPC) which identified two of the existing buildings as the William Mundy House and the William Mundy Block, respectively. The Commission has requested additional information on the two buildings. The two buildings are not identified as local Historic Landmarks as shown on the "Historic Districts with Historic Landscapes, Cemeteries & Individual Landmarks City of Portland Peninsula Effective April 15, 2009". Therefore, at this time, a Certificate of Appropriateness is not required.
   b. The Maine Historic Preservation Commission identified the National Register Listed Abyssinian Meeting House as being adjacent to the project. The project location is adjacent to, but not within the India Street Historic District.
   c. At this time, no state or local archaeological resource is known to exist on the site. As noted in the letter from the MHPC, a Phase 1 Archeological Survey is recommended for the area surrounding the two existing residential structures and the associated nearby parking area.

6. **Exterior Lighting**
   a. Site Lighting
      i. All exterior site lighting, including lighting of building entrances will be full cut off with no light emitted above the horizontal plane or spilled onto adjacent properties and streets. The project lighting plan will be designed to conform to the applicable standards of Section 12 of the Technical Manual.
      ii. Exterior lighting along Newbury and Hancock Streets which abut residential uses will be employ house-side shielding.
   b. Architectural and Specialty Lighting
      i. Architectural and specialty lighting of features such as architectural details, monuments, public art, or other site features will be designed to illuminate specific details or attributes only and meet the standards of Section 12 of the Technical Manual.
      ii. No up-lighting is proposed.
   c. Street Lighting
      i. Street lighting will be provided as shown on the plans and will utilize fixtures as required by City Technical standards

7. **Noise and Vibration**
   a. HVAC and Mechanical Equipment
      i. All heating, Ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will be designed by a professional to meet all state and federal emissions requirements, and will:
         a. Be located to the interior of the site, away from abutting residential properties.
         b. Be screened from view from any public street and from adjacent sites by structure walls, evergreen landscaping, fencing, masonry wall or a combination thereof.
      ii. Emergency generators, if provided, will not be activated for more than one hour per week for routine maintenance and testing. Noise levels will not exceed City standards except in designated emergencies or for emergency generator testing. Emergency generator testing will only occur during the permitted hours of 9:00 a.m. and 5:00 p.m., Monday through Friday.

8. **Signage and Wayfinding**
   a. All signage will be designed to meet the applicable requirements of Division 22 of the City Code and the following provisions:
      i. Not applicable, the project is not located on a Historic Landmark or within a Historic District or Historic Landscape District.
      ii. The size, scale, proportions, design, materials, placement and source and intensity of illumination of all permanent or freestanding building signs shall be designed to complement the building and its immediate context as follows:
         a. Signage will be designed to conceal architectural features such as window sills, lintels or cornices from view.
         b. Signs will be designed and sized to fit the scale and proportions of the building and the feature or area of the building to which it is affixed.
         c. Freestanding signs will be designed to not adversely affect visibility at intersections or access drives.
         d. Sign lighting will be downwardly directed, internally illuminated and/or shielded to avoid glare and light spillover towards the sky.
         e. Signs will not be affixed to rooftop mechanicals, mechanical penthouses or other rooftop appurtenances unless those appurtenances have been screened and integrated into the architecture of the development.
      iii. On-site directional traffic signage will be designed to enable users to safely and easily navigate the site and not adversely affect visibility.

9. **Zoning Related Design Standards**
   a. Development is not located in zones specified in Section 14-526(d)9.
   b. A Master Development Plan is not proposed.

BATEMAN PARTNERS LLC
DEVELOPERS & CONSULTANTS

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Bateman Partners, LLC was created specifically to develop and manage real estate, which the principals have done since 1979. The principles have developed projects in southern Maine in excess of $200 million dollars from 1979 through 2017. Many of these projects Bateman Partners, LLC and / or its principals still own and / or manage.

The Principals of Bateman Partners, LLC initially developed both elderly and family subsidized housing in conjunction with the New Hampshire and Maine State Housing Authorities. The focus of development eventually spread to market rate housing and commercial office buildings as the City of Portland grew throughout the 1980's. Recreational developments included the Falmouth Country Club and its adjacent residential subdivision, as well as Diamond Cove, a 193-acre island resort community.

Over the last seven years Bateman Partners, LLC has used their combined knowledge to develop over 60,000 SF of medical office, 300 units of affordable housing as well as multiple single family home subdivisions. The Principals of Bateman Partners are David Bateman, Nathan Bateman, and Aaron Bateman.

David Bateman is the president of Bateman Partners, LLC. David is a trained architect with extensive experience in the field of design and construction. David is responsible for all day-to-day management of the Bateman Partners, LLC entities and their assets

David has extensive experience in the following specific areas:

- Feasibility and market analysis
- Project design and master planning
- Local, State and federal approvals and permitting
- Project financing
- Equity syndication
- Contract negotiation
- Construction supervision and estimating
- Project management
- Sales and Marketing

Since 1979 David has been responsible for the acquisition, development, and management of real estate projects with a combined development cost in excess of $200 million dollars.

David's personal goal has been to provide Maine with innovative projects, which improve the quality of life for its residents. Whether it be pioneering the concept of "scattered site" family housing, (a method which blends subsidized housing into existing neighborhoods), creating Maine's first elderly congregate care facility, or through traditional commercial and resort developments, the basic commitment to quality of life has never been compromised.

Nathan Bateman is the Vice President of Bateman Partners, LLC. Nathan holds a bachelors degree with a focus of Finance and Entrepreneurial studies from Babson College. Nathans responsibilities include all the day-to-day management of the Bateman Partners, LLC entities and their assets. Nathan's responsibilities also include creating feasibility studies for potential projects, obtaining local and state approvals, securing financing and overall project management.

Nathan is also the Vice President and co-owner of both Phoenix Management and Phoenix Property Services located in Saco, Maine.

Aaron Bateman is the Treasurer of Bateman Partners, LLC. Aaron holds a bachelors degree with a focus in Finance from Babson College. Aaron's role at Bateman Partners is that of Asset management and financial planning.

Aaron is also the President and co owner of Phoenix Management and Phoenix Property Services located in Saco, Maine. Aaron has grown both of these companies over the last 10 years from an employee base of 3 to a staff of 40 employees that manages over 1,000 units of housing, 250,000 SF of commercial buildings and multiple home owner and condo associates. www.phoenixmanagementcompany.com

REAL ESTATE PROJECTS DEVELOPED BY DAVID BATEMAN AND BATEMAN PARTNERS, LLC

Subsidized and Market Rate Housing Projects	**Development Costs**
- Summer Street / 32 units of elderly and family housing Located in Biddeford, Maine	1.40 M
- Presidential Housing / 45 units of elderly housing Located in Biddeford, Maine	2.00 M
- Central Block / 24 units of elderly housing Located in Farmington, New Hampshire	1.10 M
- Bay View Apartments / 71 unit market rate rental complex Portland, Maine	2.40 M
- Bethel Housing / 20 units of elderly housing Located in Bethel, Maine	.98 M
- Pleasant Street / 45 units of elderly and family housing Located in Saco, Maine	2.40 M
- Lincoln Street / 21 units of scattered site family housing Located in Saco, Maine	1.60 M
- Pierson Lane / 68 units of scattered site family housing Located in Biddeford, Maine	4.90 M
- Front Street / 36 units of elderly housing	1.90 M

Located in Sanford, Maine	
- Falls I / 61 units of family housing	3.40 M
Located in Saco, Maine (moderate income)	
- Cummings Mill / 48 Luxury Apartments	5.60 M
Located in the historic Cummings Mill,	
South Berwick, Maine	
- Forest Green Associates, L.P. / 40 units of family housing	4.60 M
Located in Biddeford, ME	
- York Manor Associates, L.P. / 45 units of elderly housing	3.20 M
Located in Biddeford, ME	
- Sullivan School / 34 units of family housing	4.60 M
Located in Berwick, ME	
- Drowne School Associates, L.P. / 38 Unit elderly housing	4.50 M
Located in Cumberland, ME	
- Boiler House Lofts / 36 units of family housing	7.20 M
Located in Saco, ME	
- Eliot Commons / 38 Units of market rate senior housing	4.80 M
Located in Eliot, ME	
	56.58 M

Commercial, Subdivisions and Master Plan Projects

- Marineast Complex / 87 market rate rental town homes	6.00 M
10,000 sq'. Commercial building	
South Portland, Maine	
- Safford House / historic rehabilitation	.83 M
9,000 sq'. commercial office building	
Portland, Maine	
- Harbor Plaza / 60,000 sq'. commercial office building	7.50 M
and 200 car parking facility	
Portland, Maine	
- Lowell St. Medical Building / 30,000 sq'. medical building	1.80 M
with offices and ambulatory clinic facility	
Portland, Maine	
- Ocean View Retirement Complex / 70 unit congregate care facility	4.50 M
Falmouth, Maine (Phase I)	
- Falmouth Country Club / 18 hole championship golf course	4.73 M
and related private club facilities	
Falmouth, Maine	
- Falmouth on the Green Subdivision / 122 lot residential	5.70 M
subdivision encompassing 450 acres, which surround	
the Falmouth Country Club	
Falmouth, Maine	
- Diamond Cove McKinley Estates / 197 acre resort development	16.00 M
Located on Great Diamond Island	
Portland, Maine	
- Portland Harbor Hotel / 100 room boutique	13.00 M
Hotel located in the "Old Port" Commercial	
Area of Portland, Maine	
- OHM Properties, LLC 6,000 sq' medical office building	1.50 M
Located in Falmouth, ME	

- 468 Fore Street / 16,000 sq' of office, retail and hotel facility. This facility supports the existing Portland Harbor Hotel Located in Portland, ME	5.70 M
- 74 County Road, LLC / 10,336sq' medical office building for Mercy Hospital Located in Gorham, ME	2.80 M
- Tidewater LLC / 50 Lot Single Family Home Subdivision Located in Falmouth, ME	8.00 M
- Tidewater Village / Road and Utility upgrades to support 4 Commercial building pad sites in Falmouth, ME	2.00 M
- Clearwater II, LLC / 20,000 sq' Mixed use building consisting of 7 residential condos and 5 commercial / medical condos	5.00 M
- 385 Route One, LLC / 10,500 sq' Medical office building for Mercy Hospital Located in Yarmouth, ME	3.00 M
-7 West Falmouth Crossing, LLC / 6,120sq' medical office for Mercy Hospital located in Falmouth, ME	2.00 M
- The Inn at Diamond Cove / 22 unit Condo Hotel Located on Great Diamond Island, Portland ME	9.50 M
- Village Green Cumberland / 58 unit single family home subdivision Located in Cumberland, ME	6.50 M
- 1 Independence Drive / 15,000 sq.' medical building for New England Cancer Specialists Located in Kennebunk, ME	4.10 M
- 185 Fore Street / 9 Unit mixed use condo project Located in Portland, ME	7.50 M
- 179 Foreside Road / 8 Lot Subdivision that included providing a Beach to the Town of Cumberland / Located in Cumberland, ME	8.70 M
- 16 Middle Street / 50,000 sq.' Office Building Located in Portland, ME	9.00 M
- Eliot Commons / 38 Units of market rate senior housing Located in Eliot, ME	4.80 M
	135.36 M

Projects Currently Under Development / Construction

- Tidewater Farm / 40 unit elderly housing project Located in Falmouth, ME	8.00 M
- Fisherman's Wharf Hotel / 100 Room Hotel Located in Portland, ME	25.00 M
- Fisherman's Wharf Office Building / 60,000 SF Office and Retail Located in Portland, ME	22.00 M
- Fisherman's Wharf Parking Garage / 511 Car Parking Garage Located in Portland, ME	13.50 M
- 86 Newbury Street Garage / 277 Car Parking Garage Located in Portland, ME	10.00 M
- 86 Newbury Street Hotel / 132 Room Hotel Located in Portland, ME	27.5 M
- 86 Newbury Street Office Building / 120,000 SF Office building Located in Portland, ME	36.5 M
- 105 Topsham Medical building / 47,000 sq.' medical building Located in Topsham, ME	11.5 M
	154.00 M

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86 Newbury Street Photo Sheet

Photo 1: Looking North from at intersection of Middle and Hancock Streets

Photo 2: Looking south from Newbury Street

Photo 3: Looking west from Mountfort Street

Photo 4: Looking west at corner of Mountfort and Fore Streets

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Preliminary Traffic Assessment
Shipyard Redevelopment – Portland, Maine
(JN 3184)

Date: April 18, 2018
Subject: Preliminary Traffic Assessment
Proposed Shipyard Redevelopment, Portland, Maine
To: File
From: Randy Dunton / Emily Tynes, Gorrill Palmer

Introduction

Gorrill Palmer (GP) has prepared this traffic assessment for the proposed redevelopment of 86 Newbury Street in Portland, Maine. The site is located between Fore Street, Newbury Street, Mountfort Street, and Hancock Street in Portland, Maine. The site is identified on City Tax Maps F10NE and G10SE, Lots 020 C009, 020 C002, 020 C005, 020 C015, and 020 C001.

The existing site has a single full movement access on the following streets: Hancock Street, Fore Street, Mountfort Street, and three full movement accesses on Newbury Street. The existing site has the following land uses:

- Manufacturing (brewing, bottling, storage, loading, and mechanical/boiler room): 63,045 sf
- Apartment: 8 dwelling units
- Office: 6,082 sf
- Retail: 1,250 sf
- Tasting Room: 1,250 sf

The redevelopment is proposed to include a multi-level parking garage with approximately 360 spaces and the following land uses:

- Manufacturing (online-order pharmacy, mechanical/boiler room): 111,525 sf
- Hotel: 105 rooms
- Office: 60,000 sf
- Retail: 2,000 sf
- Tasting Room: 2,000 sf
- Apartment: 9 dwelling units

The site is proposed to be accessed via four site accesses, two less than the current site. The first floor of the proposed parking garage will be accessed through an existing access on Fore Street, and the upper levels of the garage are proposed to be accessed via two new full movement entrances; one on Hancock Street and one on Mountfort Street. The existing northerly site access on Hancock Street is proposed to be used by the new residential units.

The following is a summary of the preliminary traffic evaluation for the proposed project:

Trip Generation

Proposed

The trip generation for the proposed site was calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, Seventh Edition. More recent editions of ITE are available, however, the Seventh Edition is the most recent edition accepted by MaineDOT. The trip generation for the proposed site has been based on the following uses and sizes:

- Manufacturing (online-order pharmacy, mechanical/boiler room): 111,525 sf
- Hotel: 105 rooms
- Office: 60,000 sf
- Retail: 2,000 sf
- Tasting Room: 2,000 sf
- Apartments: 9 dwelling units

The following summarizes the ITE Land Use Codes (LUCs) used to calculate the trip generation for the proposed site:

- LUC 140 – Manufacturing
- LUC 220 – Apartment
- LUC 310 – Hotel
- LUC 710 – General Office Building
- LUC 814 – Specialty Retail
- LUC 936 – Drinking Place

The following table summarizes the ITE trip generation for the proposed site. The trip generation calculations are attached.

ITE Trip Generation Summary

Building Use	Size	ITE Trip Generation				
		AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Office	60,000 sf	125	125	120	120	33
Specialty Retail	2,000 sf	1	14	5	10	13
Drinking Place	2,000 sf	---	---	23	31	33
Hotel	105 rooms	59	55	62	64	76
Manufacturing	111,525 sf	81	87	83	84	31
Apartment	9 Units	5	5	6	6	5
Site Total		**271**	**286**	**299**	**315**	**191**

As shown in the table, during the peak hours of the generator, the site is forecast to generate 286 and 315 trip ends during the AM and PM peak hours of the generator respectively. A trip end is a trip into or out of the site, thus a round trip is equal to two trip ends.

Shared Use Reduction – Proposed Site

Since the project is a mixed use development with complementary uses, a shared use reduction can be applied to the site trip generation. GP has used the National Cooperative Highway Research Program (NCHRP) 684 Internal Capture Estimation Tool to estimate the traffic that will visit more than one destination without leaving the site. The NCHRP 684 spreadsheet uses the ITE forecast trip generation for each type of land use (office, retail, restaurant, residential, hotel, and other) and estimates the trips that will travel between two uses without leaving the site. This yields an internal trip capture percentage, which is the percentage of trip ends that will travel between two uses. For the purpose of this evaluation, GP classified the tasting room (drinking place) as a restaurant. The following tables summarize the AM and PM peak hour internal trip capture percentages for the proposed site:

AM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	113	12	3%	0%	3	0	3
Retail	1	0	0%	0%	0	0	0
Restaurant	0	0	0%	0%	0	0	0
Residential	1	4	0%	0%	0	0	0
Hotel	35	24	0%	13%	0	3	3
Other	61	20	N/A	N/A	0	0	0
Total	**211**	**60**	**1%**	**5%**	**3**	**3**	**6**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

AM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	113	12	4%	17%	5	2	7
Retail	7	7	29%	29%	2	2	4
Restaurant	0	0	0%	0%	0	0	0
Residential	2	3	0%	0%	0	0	0
Hotel	30	25	0%	12%	0	3	3
Other	61	26	N/A	N/A	0	0	0
Total	**213**	**73**	**3%**	**10%**	**7**	**7**	**14**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	18	102	0%	0%	0	0	0
Retail	2	3	50%	67%	1	2	3
Restaurant	15	8	13%	38%	2	3	5
Residential	4	2	50%	0%	2	0	2
Hotel	34	28	3%	4%	1	1	2
Other	29	54	0%	0%	0	0	0
Total	**102**	**197**	**6%**	**3%**	**6**	**6**	**12**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	18	102	0%	0%	0	0	0
Retail	6	4	67%	50%	4	2	6
Restaurant	22	9	9%	56%	2	5	7
Residential	4	2	50%	50%	2	1	3
Hotel	38	26	3%	4%	1	1	2
Other	42	42	N/A	N/A	0	0	0
Total	**130**	**185**	**7%**	**5%**	**9**	**9**	**18**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

The NCHRP 684 spreadsheet does not have information for the Saturday peak hour of the generator. To estimate a reduction for a Saturday the AM and PM trip capture percentages were

averaged and applied to the Saturday peak hour of the generator. This resulted in a Saturday internal trip capture of approximately 4% of total trips which results in a reduction of 8 trip ends (4 entering and 4 exiting).

The following table summarizes the reduced trip generation for the proposed site due to shared use trips:

Reduced Trip Generation Summary

Building Use	Trip Generation				
	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
ITE Total	271	286	299	315	191
Shared Use Reduction	-6	-14	-12	-18	-8
Reduced Site Total	**265**	**272**	**287**	**297**	**183**

As shown in the table, the proposed site with the shared use reduction is forecast to generate 272 trip ends and 297 trip ends during the AM and PM peak hours of the generator respectively.

Other Modes of Transportation Reduction – Proposed Site

Since the site is located in an urban environment, it is expected that a portion of site traffic will use alternative modes of transportation to get to and from the site. These other modes could include options such as transit, biking, or walking. A trip generation reduction due to other modes of transportation has been applied to the proposed site trip generation with the shared use reduction. The other modes reduction has been evaluated separately for the non-residential site uses and the proposed hotel.

Residential: The other modes reduction for residential land uses is based on information from the 2009-2013 American Community Survey (ACS) Five-Year Estimate by Census Tract for the City of Portland. Rick Harbison, Planner and GIS Specialist for the Greater Portland Council of Governments, used this data to create maps (attached) that show the estimated percentage of workers living in each Portland Census Tract that use each mode of transportation to travel to work. The site is located on the southeast corner of Census Tract 5, which is a predominantly commercial area. Census Tracts 2 and 3 border the site, so the reduction was calculated by dividing the estimated number of people walking, bicycling, and taking the bus to work in the three Census Tracts by the estimated total number of working people in the same three Census Tracts. This calculation yields a reduction of 35.8%. This methodology was approved by the City as part of the nearby 58 Fore Street redevelopment project.

Non-Residential: The other modes reduction for non-residential land uses was based on 2010 Consensus Transportation Planning Products (CTPP) means of transportation to work data for Census Tract 5, where the site is located. This data indicates that the ratio of cars to workers

is 85% in the area (calculations attached), indicating that approximately 15% of employees use modes of transportation other than a car to commute to work. A reduction of 15% was applied to the non-residential uses. It should be noted that the methodology used to calculate this reduction was approved by the City of Portland as part of the nearby 58 Fore Street redevelopment project.

Hotel: There is limited data available for hotels, so a conservative reduction of 10% was used for the hotel trip generation. It should be noted that this hotel other modes reduction was approved by the City of Portland as part of the nearby 58 Fore Street redevelopment project.

The following table summarizes the other modes of transportation reduction for the site trip generation:

Other Modes of Transportation Reduction Summary

Trip Generation	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Site Trip Generation					
Residential Trip Gen	5	5	4	3	5
Non-Residential Trip Gen	204	215	223	232	106
Hotel Trip Gen	56	52	60	62	72
Subtotal	**265**	**272**	**287**	**297**	**183**
Other Modes Reduction					
Residential Reduction	2	2	1	1	2
Non-Residential Reduction	31	32	33	35	16
Hotel Reduction	6	5	6	6	7
Total Reduction	**39**	**39**	**40**	**42**	**25**
Reduced Trip Generation	**226**	**233**	**247**	**255**	**158**

As shown in the table, the forecast trip generation for the proposed site, including the shared use reduction and the other modes reduction, is 233 trip ends during the AM peak hour of the generator and 255 trip ends during the PM peak hour of the generator.

Trip Generation Credit

When determining the need for a MaineDOT Traffic Movement Permit (TMP), MaineDOT allows a trip generation credit to be taken for on-site uses that have been operational within the last 10 years. All of the existing land uses on the site are eligible for credit. The trip generation credit for the existing site has been calculated using ITE *Trip Generation*, Seventh Edition. The following LUCs were used to calculate the trip generation for the existing site:

- LUC 140 – Manufacturing
- LUC 220 – Apartment
- LUC 710 – General Office Building
- LUC 814 – Specialty Retail
- LUC 936 – Drinking Place

The following table summarizes the ITE trip generation for the existing site

ITE Trip Generation Summary

Building Use	Size	ITE Trip Generation				
		AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Manufacturing	63,045 sf	46	49	47	47	18
Office	6,082 sf	20	20	19	19	5
Apartment	8 dwelling units	4	4	5	5	4
Specialty Retail	1,250 sf	1	9	3	6	8
Drinking Place	1,250 sf	---	---	14	19	21
Site Total		**71**	**82**	**88**	**96**	**56**

As shown in the table, the site is forecast to generate 82 trip ends during the AM peak hour of the generator and 96 trip ends during the PM peak hour of the generator.

Shared Use Reduction – Existing Site

Consistent with the proposed trip generation calculations, the existing site is a mixed use development with complementary uses and therefore a shared use reduction can be applied to the overall site trip generation. GP used the same NCHRP 684 spreadsheets as those used for the proposed site to calculate the shared use reduction for the existing site. The following tables summarize the AM and PM peak hour internal trip capture percentages for the existing site. Detailed calculations are attached.

AM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	18	2	0%	0%	0	0	0
Retail	1	0	0%	0%	0	0	0
Restaurant	0	0	0%	0%	0	0	0
Apartment	1	3	0%	0%	0	0	0
Other	35	11	N/A	N/A	0	0	0
Total	**55**	**16**	**0%**	**0%**	**0**	**0**	**0**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

AM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	18	2	6%	50%	1	1	2
Retail	5	4	20%	25%	1	1	2
Restaurant	1	3	0%	0%	0	0	0
Apartment	0	0	0%	0%	0	0	0
Other	34	15	N/A	N/A	0	0	0
Total	**58**	**24**	**3%**	**9%**	**2**	**2**	**4**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	3	16	0%	0%	0	0	0
Retail	1	2	0%	50%	0	1	1
Restaurant	9	5	11%	0%	1	0	1
Apartment	3	2	0%	0%	0	0	0
Other	16	31	N/A	N/A	0	0	0
Total	**32**	**56**	**3%**	**2%**	**1**	**1**	**2**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	3	16	0%	0%	0	0	0
Retail	3	3	33%	67%	1	2	3
Restaurant	13	6	8%	17%	1	1	2
Apartment	3	2	33%	0%	1	0	1
Other	24	23	N/A	N/A	0	0	0
Total	**46**	**50**	**7%**	**6%**	**3**	**3**	**6**

*These values are taken directly from the NCHRP spreadsheets (attached), which may not match exact calculations due to rounding in the spreadsheet.

The NCHRP 684 spreadsheet does not have information for the Saturday peak hour of the generator. To estimate a reduction for a Saturday the AM and PM trip capture percentages were averaged and applied to the Saturday peak hour of the generator. This resulted in a Saturday internal trip capture of approximately 3% of total trips which results in a reduction of 2 trip ends (1 entering and 1 exiting).

The following table summarizes the reduced trip generation for the existing site:

Reduced Trip Generation Summary

Building Use	Trip Generation				
	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
ITE Total	71	82	88	96	56
Shared Use Reduction	0	-4	-2	-6	-2
Site Total	**71**	**78**	**86**	**90**	**54**

As shown in the table, the existing site is estimated to generate 78 trip ends during the AM peak hour of the generator and 90 trip ends during the PM peak hour of the generator including the shared use reduction.

Other Modes of Transportation Reduction – Existing Site

Since the site is located in an urban environment, it is expected that a portion of site traffic will use alternative modes of transportation. Consistent with the proposed site trip generation calculations, a trip generation reduction due to other modes of transportation has been applied to existing site trip generation (including the shared use reduction). The other modes reduction has been calculated for residential and non-residential uses.

Residential: The same 35.8% reduction that was applied to residential land uses for the proposed site was used.
Non-Residential: The same 15% reduction that was applied to non-residential land uses for the proposed site was used.

The following table summarizes the other modes of transportation reduction for the site:

Other Modes of Transportation Reduction Summary

Trip Generation	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Site Trip Generation					
Residential	4	4	5	4	4
Non-Residential	67	74	81	86	50
Site Total	**71**	**78**	**86**	**90**	**54**
Other Modes Reduction					
Residential Reduction	1	1	2	1	1
Non-residential Reduction	10	11	12	13	7
Total Reduction	**11**	**12**	**14**	**14**	**8**
Reduced Trip Generation	**60**	**66**	**72**	**76**	**46**

As shown in the table, the existing site is estimated to generate 66 trip ends and 76 trip ends during the AM and PM peak hours of the generator respectively. This trip generation represents the trip generation credit for the site.

Net Site Trip Generation

The net site trip generation is calculated by subtracting the credit for the existing site from the trip generation for the proposed site. The following table summarizes the net trip generation for the site:

Net Site Trip Generation Summary

Trip Generation	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Proposed	226	233	247	255	158
Existing	-60	-66	-72	-76	-46
Net Trip Generation	**166**	**167**	**175**	**179**	**112**

As shown in the table, the site is forecast to generate 167 trip ends during the AM peak hour and 179 trip ends during the PM peak hour. A trip end is defined as a trip into or out of the site, thus a round trip is equal to two trip ends. The site is forecast to generate over 99 trip ends during a peak hour, so a MaineDOT Traffic Movement Permit is required. Since the site is forecast to generate fewer than 200 trip ends during a peak hour, Section 7 (Traffic Impact Study) will not be required by MaineDOT. The City of Portland does, however, require a Traffic Impact Study for sites that generate over 99 trip ends, so a Traffic Impact Study will still need to be completed and submitted after the Scoping Meeting is held.

Trip Distribution and Assignment

Based on ITE's *Trip Generation*, the NCHRP 684 Internal Capture, and the other modes of transportation reduction, the following trip distribution is anticipated for the site:

- AM Peak Hour Adjacent Street: 132 in / 34 out
- AM Peak Hour Generator: 128 in / 39 out
- PM Peak Hour Adjacent Street: 55 in / 120 out
- PM Peak Hour Generator: 68 in / 111 out
- Saturday Peak Hour Generator: 60 in / 52 out

GP has assumed that all trips are primary in nature and made for the sole purpose of going to and from the site. This is likely a conservative assumption since specialty retail and drinking places typically generate pass-by trips, where someone visits the site on their way to or from another destination.

The trip assignment has been based on the location of the site driveways, existing traffic patterns identified from a combination of AADT values provided in MaineDOT's MapViewer tool, and turning movement counts completed for other projects at the intersections of Fore Street with Hancock Street and Fore Street with Mountfort Street. To refine the trip assignment for the TMP application and the Traffic Impact Study, it is recommended that turning movement counts are collected at the intersections of Hancock Street with Middle Street, Hancock Street with Newbury Street, and Mountfort Street with Newbury Street.

The preliminary AM and PM Trip Assignment is shown on the attached Figure 2.

Other Development

Approved projects that have been constructed but are not yet opened as well as projects for which applications have been filed are required to be included in the predevelopment traffic volumes for this project. Based on conversations with Portland City Staff, there are several projects in the vicinity of the site that should be considered. The trip generation for the following projects will need to be included in background traffic for this project:

- 167 Fore Street: Ocean Gateway Addition
- 158 Fore Street: AC Hotel
- 62 India Street: India Newbury Residential
- 20 Thames Street: Residential
- 50 India Street: cPort Credit Union
- 221 Congress Street: Residential
- 58 Fore Street: Mixed-use
- 0 Hancock Street: WEX
- 203 Fore Street: Portland II Hotel
- 56 Hampshire Street: Verdante at Lincoln Park

The trip generation for these projects will be included in the Traffic Impact Study to be completed after the scoping meeting.

Crash History

Gorrill Palmer obtained the crash data from MaineDOT for the period of 2014-2016, the most recent period available (attached).

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three-year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average **and**:

2. A minimum of eight crashes over the same three-year period.

Based on the crash data provided by MaineDOT, there are no HCLs in the immediate vicinity of the site. It should be noted that there were two collisions involving bicyclists that occurred within the study area. These collisions will be reviewed in more detail in the Traffic Impact Study.

Sight Line Evaluation

The site is proposed to have the following accesses:

- Hancock Street garage access – new
- Hancock Street residential parking access – existing surface lot access
- Mountfort Street garage access – new
- Fore Street garage access – existing surface lot access

GP completed a site visit to evaluate the sight distances at the existing and proposed site accesses. The City of Portland requires that MaineDOT criteria be met. Basic sight line standards are as follows:

Standards for Sight Distance

Speed Limit (mph)	MaineDOT / City Requirement (ft)
25	200
30	250
35	305
40	360
45	425

The available sight distances have been evaluated in accordance with MaineDOT standards. The evaluation method is as follows:

Driveway observation point:	10 feet from edge of traveled way
Height of eye at driveway:	3 ½ feet above pavement
Height of approaching vehicle:	4 ¼ feet above pavement

The posted speed limit is 25 mph on all frontage roads, which requires a MaineDOT and City of Portland sight distance of 200 feet. The following table summarizes the measured sight distances available at the existing and proposed site accesses:

Sight Distance Summary

Site Access	Available Sight Distance (ft)		
	Required	Looking Left	Looking Right
Hancock Street Garage	200	200*	200*
Hancock Street Residential	200	200*	To Intersection
Mountfort Street	200	200*	200*
Fore Street	200	200*	200*

As shown in the table, the sight distance requirement could be met at all site accesses. The sight distances with a '*' indicate sight distances that can be met if on-street parking is removed or relocated on either side of the site access. The visibility of exiting vehicles is blocked by on-street parking for all site accesses. It should be noted that limited available sight distance due to on-street parking spaces is common throughout the City. The following describes each access in more detail:

Proposed Hancock Street garage entrance: to meet the sight distance requirements, looking left approximately eight spaces on the east side of Hancock Street to the south of the proposed access would need to be removed or relocated. Looking right, approximately three parking spaces on the east side of Hancock Street north of the proposed access would need to be removed to meet the requirements.

Existing Hancock Street surface lot entrance to be the residential parking entrance: to meet the sight distance requirements, looking left approximately two spaces on the east side of Hancock Street between the existing site access and the proposed garage access would need to be removed or relocated. Looking right, the sight distance is to the intersection, so no modification to on-street parking is required.

Proposed Mountfort Street garage entrance: to meet the sight distance looking left and looking right, approximately six on-street parking spaces on the west side of Mountfort Street between Fore Street and Newbury Street would need to be removed or relocated.

Existing Fore Street surface lot entrance proposed to be a garage entrance: to meet the sight distance looking left approximately three spaces on the north side of Fore Street to the east of the site access would need to be removed or relocated. Looking right, the hotel loading zone would need be relocated approximately 40 feet to the west, which would displace approximately two parking spaces.

For all four site entrances to meet the sight distance requirements, a total of approximately 25 on-street parking spaces would need to be removed or relocated. The internal site accesses have not been evaluated as part of this preliminary traffic assessment. We recommend checking the sight distances of the internal accesses during construction to ensure the sight distance requirements are met.

Available Pedestrian, Bicycle, and Transit Facilities

Being located in downtown, the site is surrounded by pedestrian, bicycle, and transit accommodations. As stated in the trip generation portion of this report, according to data from the 2010 CTPP, approximately 15% percent of people in this area of Portland commute by modes of transportation other than driving a vehicle. The streets in the immediate vicinity of the site have sidewalks on both sides, with marked crosswalks at most intersections. This site is also close to one end of the Eastern Promenade Trail, which is used by both pedestrians and bicyclists. This trail helps connect the site to the multimodal transportation network in the city.

Additionally, there are several bus stops within a half mile of the site. Many of these are METRO bus stops which helps connect the site to other areas of Portland as well as South Portland, Westbrook, Gorham, Yarmouth, Freeport, and Brunswick. METRO is currently upgrading their bus routes which could make transit a more desirable mode of travel. Taking METRO, riders can also connect to other bus services, such as the Lakes Region Explorer, which connects Portland to Bridgton.

Conclusion

The following is a summary of the conclusions and recommendations:

1. The proposed site is forecast to generate 233 trip ends during the AM peak hour of the generator and 255 trip ends during the PM peak hour of the generator.

2. The net trip generation increase for the site (after consideration of shared trips and other modes of transportation) is forecast to be 167 trip ends during the AM peak hour of the generator and 179 trip ends during the PM peak hour of the generator. Since the site is forecast to generate over 99 trip ends during a peak hour (net), a MaineDOT Traffic Movement Permit is required. The site is forecast to generate fewer than 200 trip ends during a peak hour, so Section 7 (Traffic Impact Study) will not be required by MaineDOT as part of the TMP application process, however, the City of Portland will require a Traffic Impact Study.

3. Based on the crash data provided by MaineDOT, there are no HCLs in the immediate vicinity of the site.

4. All site accesses require sight distances of 200 feet in both directions to meet the MaineDOT and City of Portland requirements. The existing sight distance at most site accesses is restricted by on street parking.

5. Being in downtown the site is located in an area with sidewalks on both sides of the street in the vicinity of the site, as well as crosswalks at most intersections and close access to the Eastern Promenade Trail. Additionally, there are several METRO bus stops within a half mile of the site that connect the site to other METRO routes, as well as other bus services, such as the Lakes Region Explorer.

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	4/13/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Proposed) Hotel
Land Use Code (LUC) 310

Rooms: 105

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution	
				IN	OUT	IN	OUT
Weekday	T = 8.17 (X)	858	10	50%	50%	429	429
AM Peak Hour of Adj. Street Traffic	T = 0.56 (X)	59	20	60%	40%	35	24
PM Peak Hour of Adj. Street Traffic	T = 0.59 (X)	62	25	55%	45%	34	28
AM Peak Hour of Generator	T = 0.52 (X)	55	32	55%	45%	30	25
PM Peak Hour of Generator	T = 0.61 (X)	64	35	60%	40%	38	26
Saturday	T = 8.19 (X)	860	8	50%	50%	430	430
Saturday Peak Hour of Gen.	T = 0.72 (X)	76	9	55%	45%	42	34

* Percentages rounded to nearest 5%

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Proposed) General Office Building
Land Use Code (LUC) 710

Square Feet 60,000

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	Ln (T) = 0.77 Ln (X) + 3.65	900	78	50%	50%	450	450	0.80
AM Peak Hour	**Ln (T) = 0.80 Ln (X) + 1.55**	**125**	**217**	**90%**	**10%**	**113**	**12**	**0.83**
PM Peak Hour	T = 1.12 (X) + 78.81	146	235	15%	85%	22	124	0.82
Saturday	T = 2.14 (X) + 18.47	147	17	50%	50%	74	73	0.66
Peak Hour of Generator	Ln (T) = 0.81 Ln (X) - 0.12	24	10	55%	45%	13	11	0.59

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 11.01 (X)	661	78	50%	50%	331	330	---
AM Peak Hour	T = 1.55 (X)	93	217	90%	10%	84	9	---
PM Peak Hour	T = 1.49 (X)	89	235	15%	85%	13	76	---
Saturday	T = 2.37 (X)	142	17	50%	50%	71	71	---
Saturday Peak Hour of Gen.	T = 0.41 (X)	25	10	50%	50%	13	12	---

* Percentages rounded to nearest 5%

PM Peak Hour:	**T = 1.49/1.55 (AM Peak)**	**120**	**15%**	**85%**	**18**	**102**	**---**
SAT Peak Hour:	**T = 0.41/1.55 (AM Peak)**	**33**	**50%**	**50%**	**17**	**16**	**---**

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Proposed) Manufacturing
Land Use Code (LUC) 140

Gross Floor Area 111,525

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split *		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	T = 3.82 (X)	426	62		50%	50%	213	213
AM Peak Adjacent Street	T = 0.73 (X)	81	50		75%	25%	61	20
PM Peak Adjacent Street	T = 0.74 (X)	83	54		35%	65%	29	54
AM Peak Hour of Generator	T = 0.78 (X)	87	50		70%	30%	61	26
PM Peak Hour of Generator	T = 0.75 (X)	84	50		50%	50%	42	42
Saturday	T = 1.49 (X)	166	2		50%	50%	83	83
Saturday Peak Hour of Gen.	T = 0.28 (X)	31	2	**	50%	50%	16	15

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Proposed) Specialty Retail Center
Land Use Code (LUC) 814

Gross Floor Area (ft²): 2,000

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT
Weekday	T = 44.32 (X)	89	4	50%	50%	45	44
Peak Hour of Adjacent Street Traffic 7-9 AM**	T = 0.74 (X)	1	N/A	60%	40%	1	0
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	5	5	45%	55%	2	3
AM Peak Hour of Generator	T = 6.84 (X)	14	4	50%	50%	7	7
PM Peak Hour of Generator	T = 5.02 (X)	10	3	55%	45%	6	4
Saturday	T = 42.04 (X)	84	3	50%	50%	42	42
Saturday Peak Hour of Gen.***	T = 6.63 (X)	13	3	50%	50%	7	6

**Based on ratio of AM/PM traffic for LUC 820, Shopping Center and applied to 814 PM rate.

* Percentages rounded to nearest 5%

***Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Proposed) Drinking Place
Land Use Code (LUC) 936

Square Feet 2,000

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split *		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	---	---	---		---	---	---	---
PM Peak Hour of Adj. St.	T = 11.34 (X)	23	12		65%	35%	15	8
PM Peak Hour of Gen.	T = 15.49 (X)	31	8		70%	30%	22	9
Saturday	---	---	---		---	---	---	---
Sat. Peak Hour of Generator	T = 16.48 (X)*	33	---	***	65%	35%	21	12

*Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 932 - High-Turnover (Sit-Down) Restaurant

** Percentages rounded to nearest 5%

***Directional split for this peak hour assumed based on other peak hours for this land use and the directional split for LUC 932 - High-Turnover

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	4/13/2018	South Portland, Maine 04106

(Existing) Apartment
Land Use Code (LUC) 220

Dwelling Units: 9

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Sample Size		Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT
Weekday	T = 6.72 (X)	60	86		50%	50%	30	30
AM Peak Hour of Adj. Street Traffic	T = 0.51 (X)	5	78		20%	80%	1	4
PM Peak Hour of Adj. Street Traffic	T = 0.62 (X)	6	90		65%	35%	4	2
AM Peak Hour of Generator	T = 0.55 (X)	5	81		30%	70%	2	3
PM Peak Hour of Generator	T = 0.67 (X)	6	83		60%	40%	4	2
Saturday	T = 6.39 (X)	58	15		50%	50%	29	29
Saturday Peak Hour of Gen.	T = 0.52 (X)	5	14	**	50%	50%	3	2

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN: 3184

Project Description: Shipyard Redevelopment

Project Location: Portland, ME

Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Existing Site Trip Generation

Time Period	Hotel	General Office Building	Manufacturing	Specialty Retail	Drinking Place	Apartment	**Total Site Trip Ends**	Hotel IN	Hotel OUT	General Office Building IN	General Office Building OUT	Manufacturing IN	Manufacturing OUT	Specialty Retail IN	Specialty Retail OUT	Drinking Place IN	Drinking Place OUT	Apartment		**Total Site IN**	**Total Site OUT**
AM Peak Adjacent Street	59	125	81	1	---	5	**271**	35	24	113	12	61	20	1	0	---	---	1	4	211	60
PM Peak Adjacent Street	62	120	83	5	23	6	**299**	34	28	18	102	29	54	2	3	15	8	4	2	102	197
AM Peak Hour of Generator	55	125	87	14	---	5	**286**	30	25	113	12	61	26	7	7	---	---	2	3	213	73
PM Peak Hour of Generator	64	120	84	10	31	6	**315**	38	26	18	102	42	42	6	4	22	9	4	2	130	185
Saturday Peak Hour of Gen.	76	33	31	13	33	5	**191**	42	34	17	16	16	15	7	6	21	12	3	2	106	85

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	ET
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/13/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	60,000	sf	125	113	12
Retail	814	2,000	sf	1	1	0
Restaurant	936	2,000	sf	0	0	0
Cinema/Entertainment				0		
Residential	220	9	Dwelling Units	5	1	4
Hotel	310	105	rooms	74	35	24
All Other Land Uses[2]	140	111,525	sf	81	61	20
Total				286	211	60

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	3	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	271	211	60
Internal Capture Percentage	2%	1%	5%
External Vehicle-Trips[3]	265	208	57
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	0%
Retail	0%	N/A
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	0%	13%

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	113	113	1.00	12	12
Retail	1.00	1	1	1.00	0	0
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	1	1	1.00	4	4
Hotel	1.00	35	35	1.00	24	24

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	8	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	18	3	2	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	5		0	0	0	0
Restaurant	16	0		0	0	1
Cinema/Entertainment	0	0	0		0	0
Residential	3	0	0	0		0
Hotel	3	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	110	113	110	0	0
Retail	0	1	1	1	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	1	0	0
Hotel	0	35	35	35	0	0
All Other Land Uses[3]	0	61	61	61	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	12	12	12	0	0
Retail	0	0	0	0	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	4	4	4	0	0
Hotel	3	21	24	21	0	0
All Other Land Uses[3]	0	20	20	20	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/13/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	60,000	sf	120	18	102
Retail	814	2,000	sf	5	2	3
Restaurant	936	2,000	sf	23	15	8
Cinema/Entertainment				0		
Residential	220	9	Dwelling Units	6	4	2
Hotel	310	105	rooms	62	34	28
All Other Land Uses[2]	140	111,525	sf	83	29	54
Total				299	102	197

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	1		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	1	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	299	102	197
Internal Capture Percentage	4%	6%	3%
External Vehicle-Trips[3]	287	96	191
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	50%	67%
Restaurant	13%	38%
Cinema/Entertainment	N/A	N/A
Residential	50%	0%
Hotel	3%	4%

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	18	18	1.00	102	102
Retail	1.00	2	2	1.00	3	3
Restaurant	1.00	15	15	1.00	8	8
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	4	4	1.00	2	2
Hotel	1.00	34	34	1.00	28	28

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		20	4	0	2	0
Retail	0		1	0	1	0
Restaurant	0	3		1	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	4	19	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	6		4	0	2	6
Restaurant	5	1		0	1	24
Cinema/Entertainment	1	0	0		0	0
Residential	10	0	2	0		4
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	18	18	18	0	0
Retail	1	1	2	1	0	0
Restaurant	2	13	15	13	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	2	4	2	0	0
Hotel	1	33	34	33	0	0
All Other Land Uses[3]	0	29	29	29	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	102	102	102	0	0
Retail	2	1	3	1	0	0
Restaurant	3	5	8	5	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	1	27	28	27	0	0
All Other Land Uses[3]	0	54	54	54	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	ET
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/13/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed AM Generator Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	60,000	sf	125	113	12
Retail	814	2,000	sf	14	7	7
Restaurant	936	2,000	sf	0	0	0
Cinema/Entertainment				0		
Residential	220	9	Dwelling Units	5	2	3
Hotel	310	105	rooms	55	30	25
All Other Land Uses[2]	140	111,525	sf	87	61	26
Total				286	213	73

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	2		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	3	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	286	213	73
Internal Capture Percentage	5%	3%	10%
External Vehicle-Trips[3]	272	206	66
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	4%	17%
Retail	29%	29%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	0%	12%

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	113	113	1.00	12	12
Retail	1.00	7	7	1.00	7	7
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	2	2	1.00	3	3
Hotel	1.00	30	30	1.00	25	25

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	8	0	0	0
Retail	2		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	19	4	2	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	5		0	0	0	0
Restaurant	16	1		0	0	1
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	0	0		0
Hotel	3	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	5	108	113	108	0	0
Retail	2	5	7	5	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	30	30	30	0	0
All Other Land Uses[3]	0	61	61	61	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	2	10	12	10	0	0
Retail	2	5	7	5	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	3	3	3	0	0
Hotel	3	22	25	22	0	0
All Other Land Uses[3]	0	26	26	26	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	ET
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/13/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed PM Generator Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	60,000	sf	120	18	102
Retail	814	2,000	sf	10	6	4
Restaurant	936	2,000	sf	31	22	9
Cinema/Entertainment				0		
Residential	220	9	Dwelling Units	6	4	2
Hotel	310	105	rooms	64	38	26
All Other Land Uses[2]	140	111,525	sf	84	42	42
Total				315	130	185

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	1	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	315	130	185
Internal Capture Percentage	6%	7%	5%
External Vehicle-Trips[3]	297	121	176
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	67%	50%
Restaurant	9%	56%
Cinema/Entertainment	N/A	N/A
Residential	50%	50%
Hotel	3%	4%

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	18	18	1.00	102	102
Retail	1.00	6	6	1.00	4	4
Restaurant	1.00	22	22	1.00	9	9
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	4	4	1.00	2	2
Hotel	1.00	38	38	1.00	26	26

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		20	4	0	2	0
Retail	0		1	0	1	0
Restaurant	0	4		1	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	4	18	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	6		6	0	2	6
Restaurant	5	3		0	1	27
Cinema/Entertainment	1	0	1		0	0
Residential	10	1	3	0		5
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	18	18	18	0	0
Retail	4	2	6	2	0	0
Restaurant	2	20	22	20	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	2	4	2	0	0
Hotel	1	37	38	37	0	0
All Other Land Uses[3]	0	42	42	42	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	102	102	102	0	0
Retail	2	2	4	2	0	0
Restaurant	5	4	9	4	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	1	2	1	0	0
Hotel	1	25	26	25	0	0
All Other Land Uses[3]	0	42	42	42	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

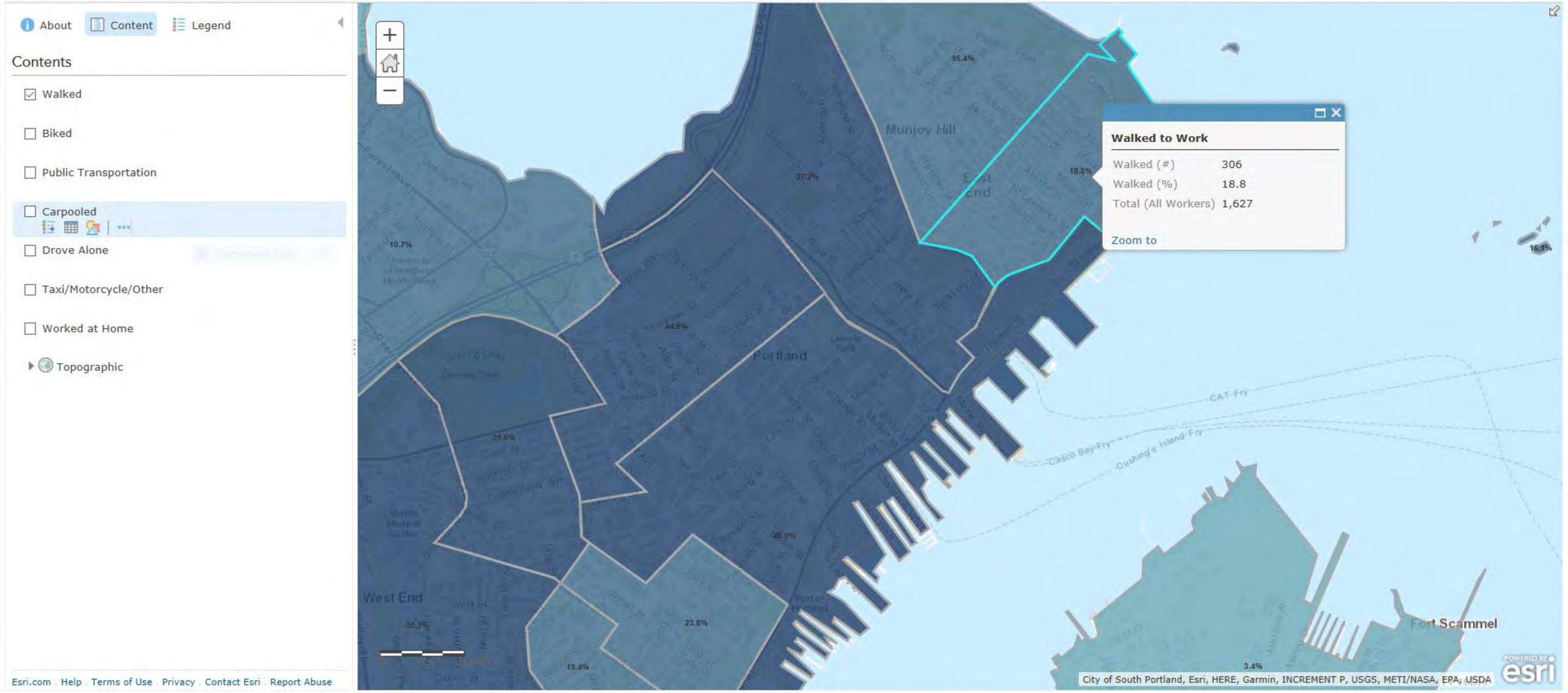
JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 4/13/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Proposed Site Trip Generation After Shared Use Reduction

Time Period	Hotel	General Office Building	Manufacturing	Specialty Retail	Drinking Place	Apartment	**Total Site Trip Ends**	Hotel IN	Hotel OUT	General Office Building IN	General Office Building OUT	Manufacturing IN	Manufacturing OUT	Specialty Retail IN	Specialty Retail OUT	Drinking Place IN	Drinking Place OUT	Apartment IN	Apartment OUT	**Total Site IN**	**Total Site OUT**
AM Peak Adjacent Street	56	122	81	1	---	5	**265**	35	21	110	12	61	20	1	0	---	---	1	4	**208**	**57**
PM Peak Adjacent Street	60	120	83	2	18	4	**287**	33	27	18	102	29	54	1	1	13	5	2	2	**96**	**191**
AM Peak Hour of Generator	52	118	87	10	---	5	**272**	30	22	108	10	61	26	5	5	---	---	2	3	**206**	**66**
PM Peak Hour of Generator	62	120	84	4	24	3	**297**	37	25	18	102	42	42	2	2	20	4	2	1	**121**	**176**
*Saturday Peak Hour of Gen.	72	31	31	12	31	5	**183**	40	32	16	15	16	15	7	5	20	11	3	2	**102**	**81**

* - NCHRP does not provide shared use reduction information for the Saturday Peak Hour of the Gen. so the the average reduction of the other peak hours (4%) was used.



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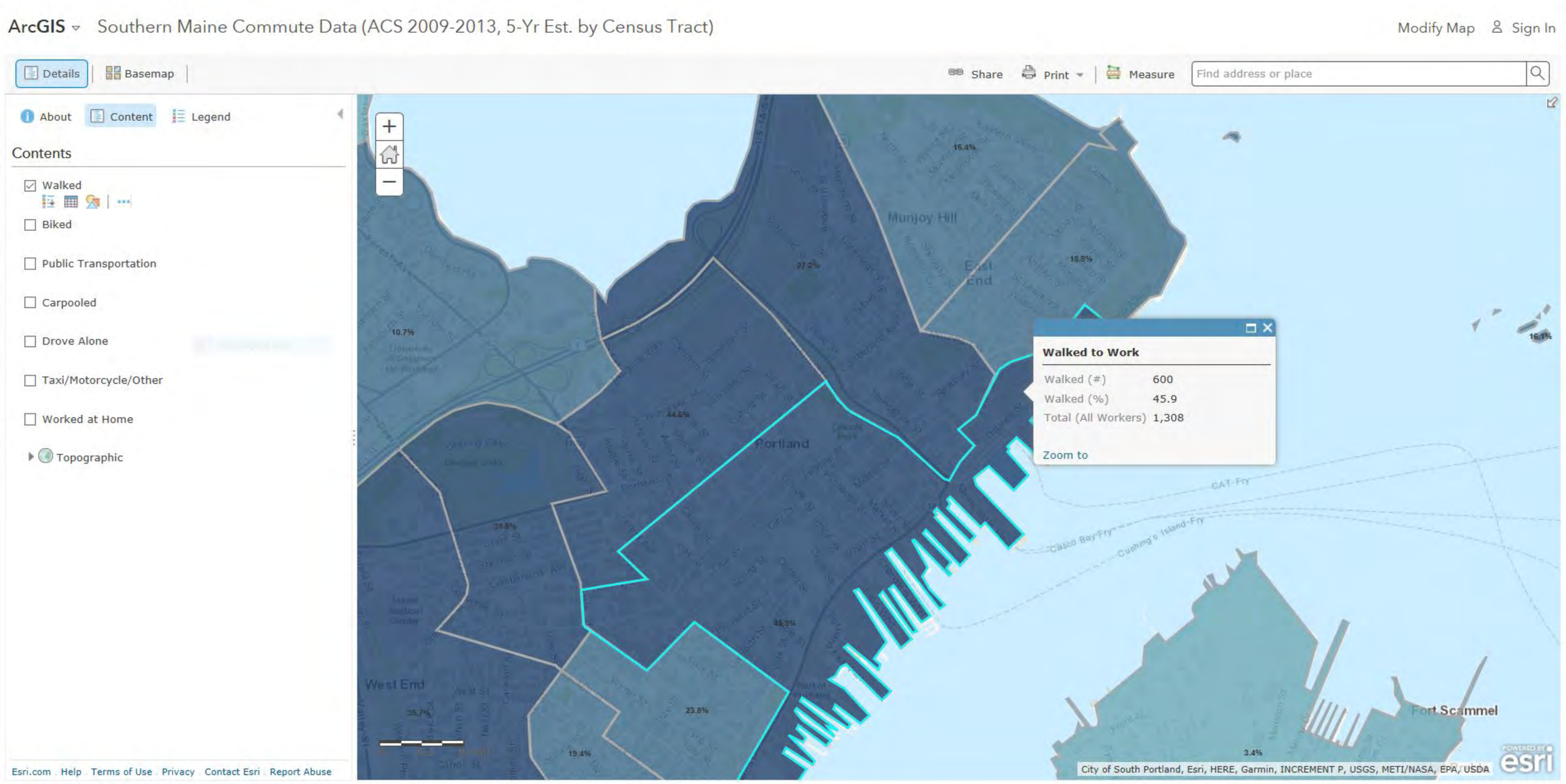
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Munjoy Hill
East End
Portland
West End
Fort Scammel
16.4%
18.8%
27.2%
10.7%
44.5%
31.8%
46.9%
23.8%
19.4%
35.7%
16.1%
3.4%
Walked to Work
Walked (#) 600
Walked (%) 45.9
Total (All Workers) 1,308
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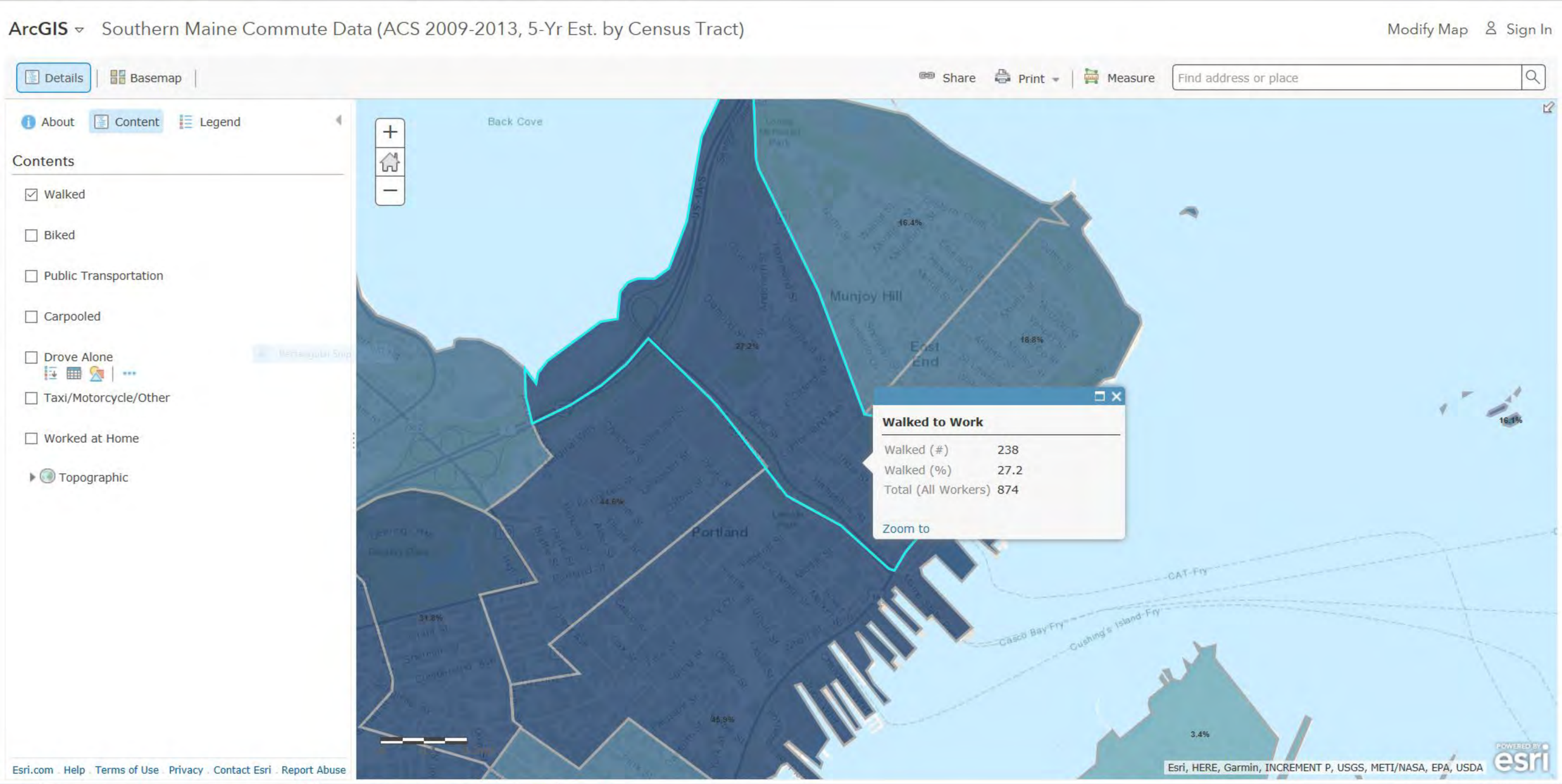
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Walked
Biked
Public Transportation
Carpooled
Drove Alone
Taxi/Motorcycle/Other
Worked at Home
Topographic
Back Cove
Munjoy Hill
East End
Portland
16.4%
18.8%
27.2%
44.6%
31.8%
46.9%
16.1%
3.4%
Walked to Work
Walked (#) 238
Walked (%) 27.2
Total (All Workers) 874
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Casco Bay Fry
Cushing's Island Fry
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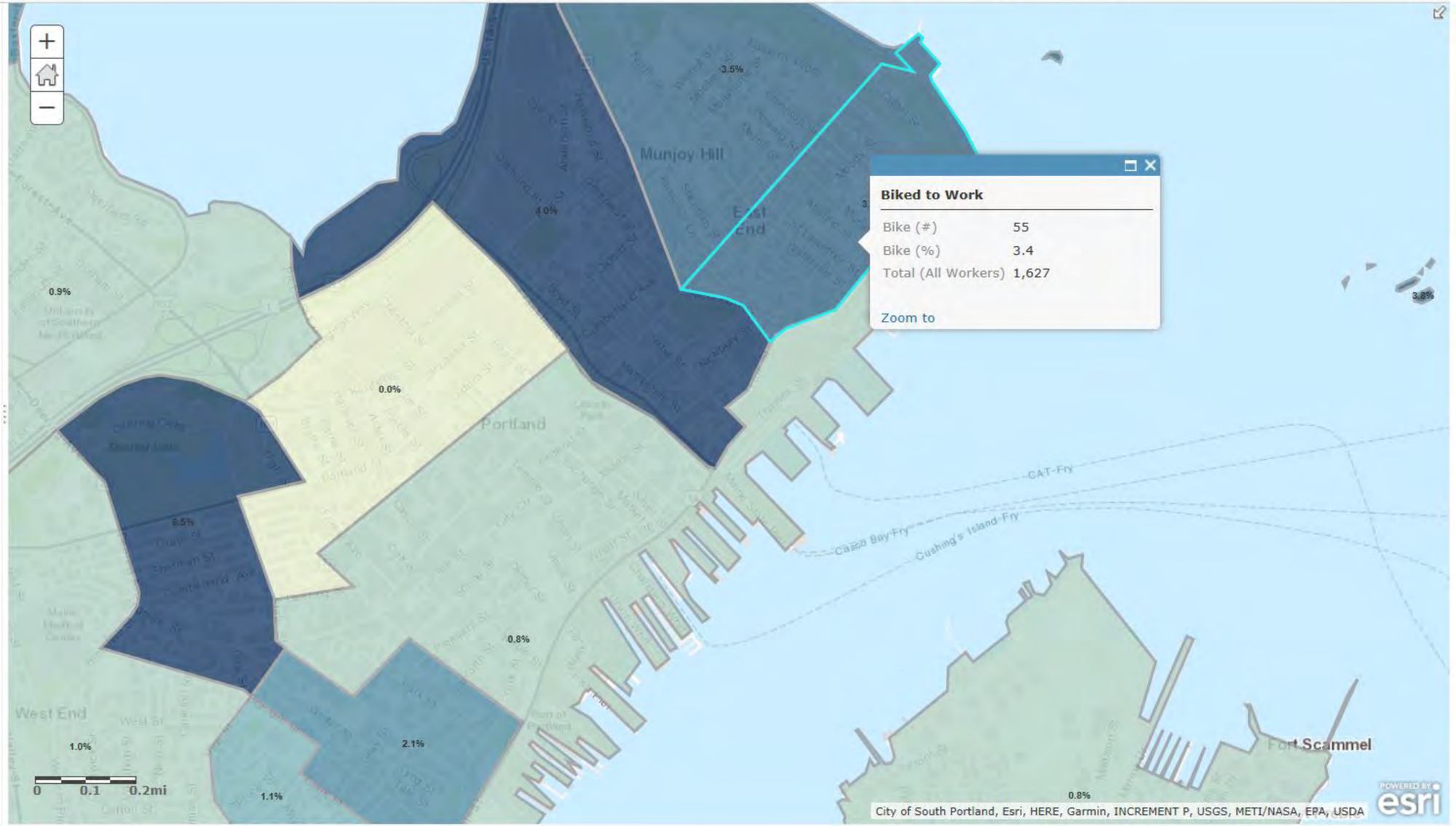
- Topographic



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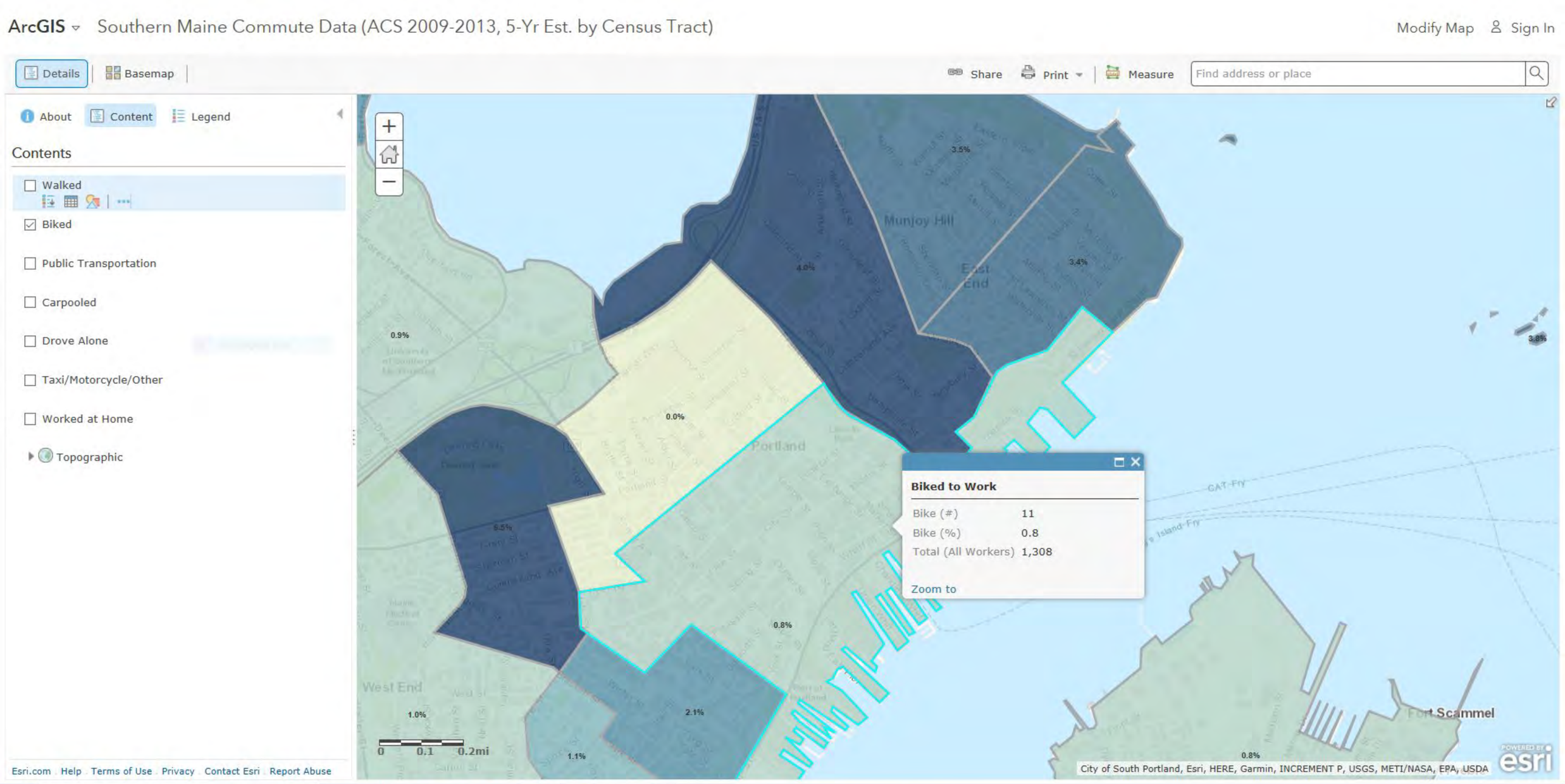
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Worked at Home
Topographic
Munjoy Hill
East End
Portland
West End
Fort Scammel
3.5%
4.0%
3.4%
0.9%
0.0%
6.5%
0.8%
1.0%
2.1%
1.1%
3.8%
0.8%
Biked to Work
Bike (#) 11
Bike (%) 0.8
Total (All Workers) 1,308
Zoom to
0 0.1 0.2mi
City of South Portland, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA
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- [ ] Taxi/Motorcycle/Other
- [ ] Worked at Home
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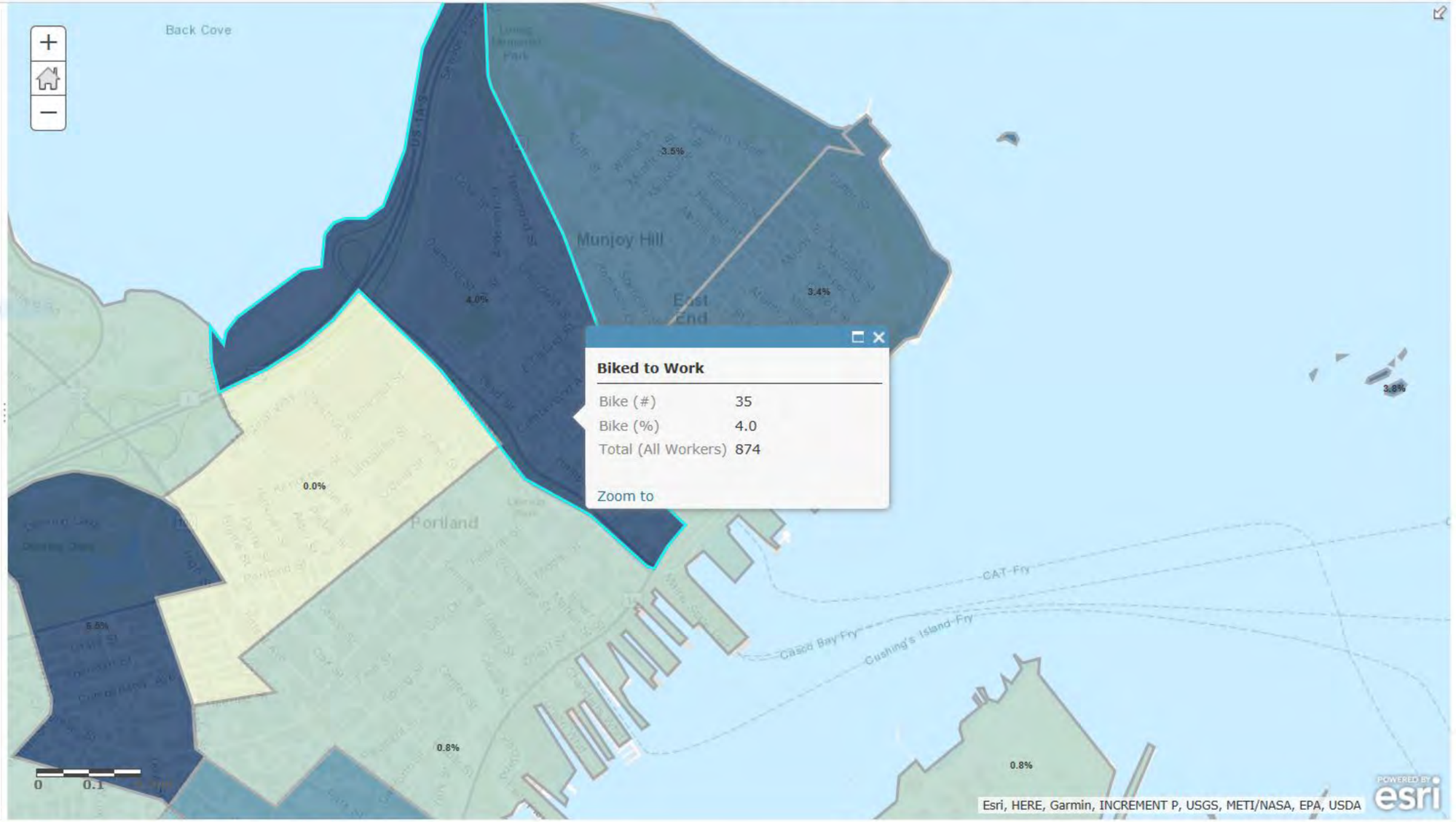

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- [ ] Taxi/Motorcycle/Other
- [ ] Worked at Home
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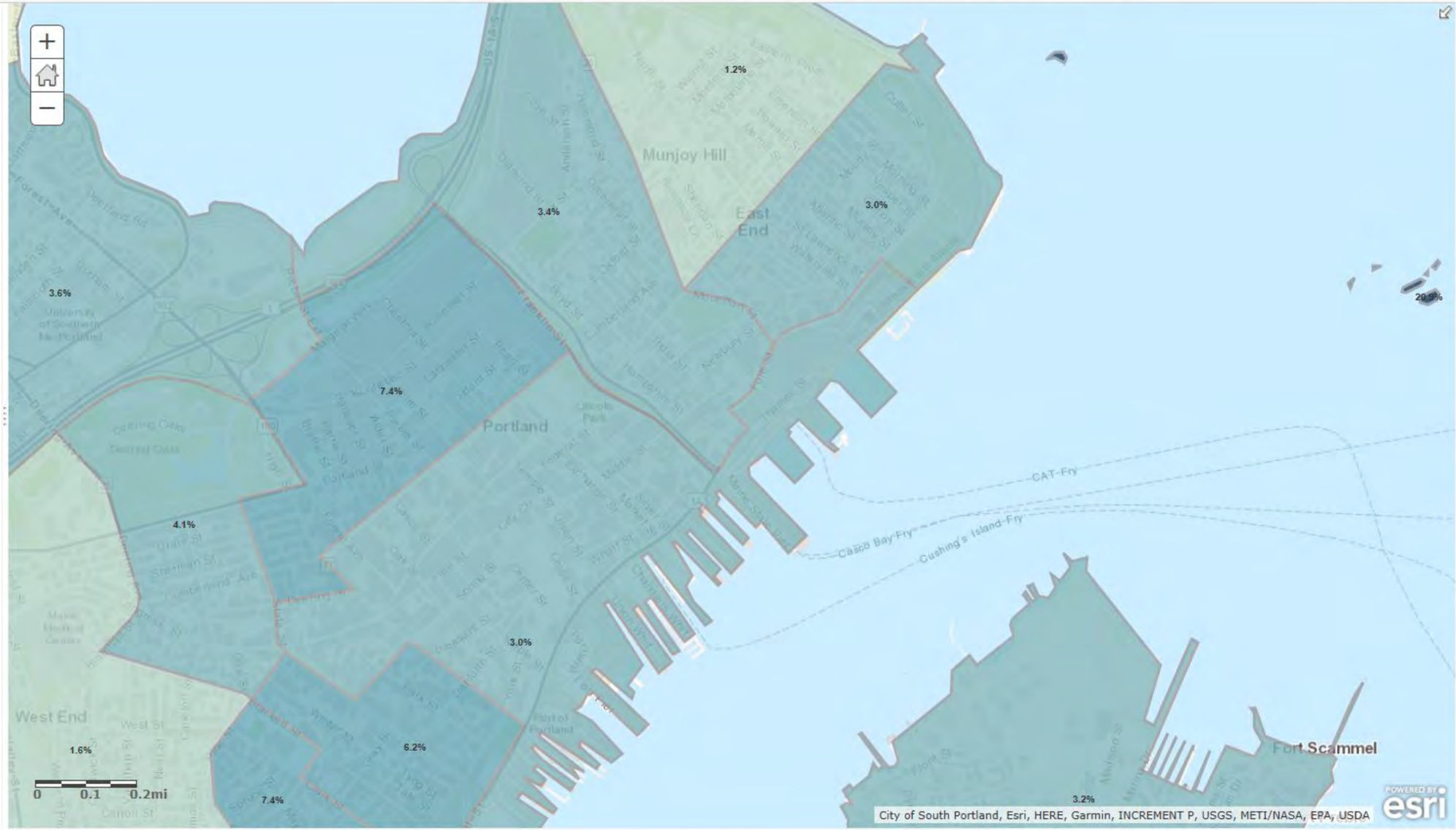

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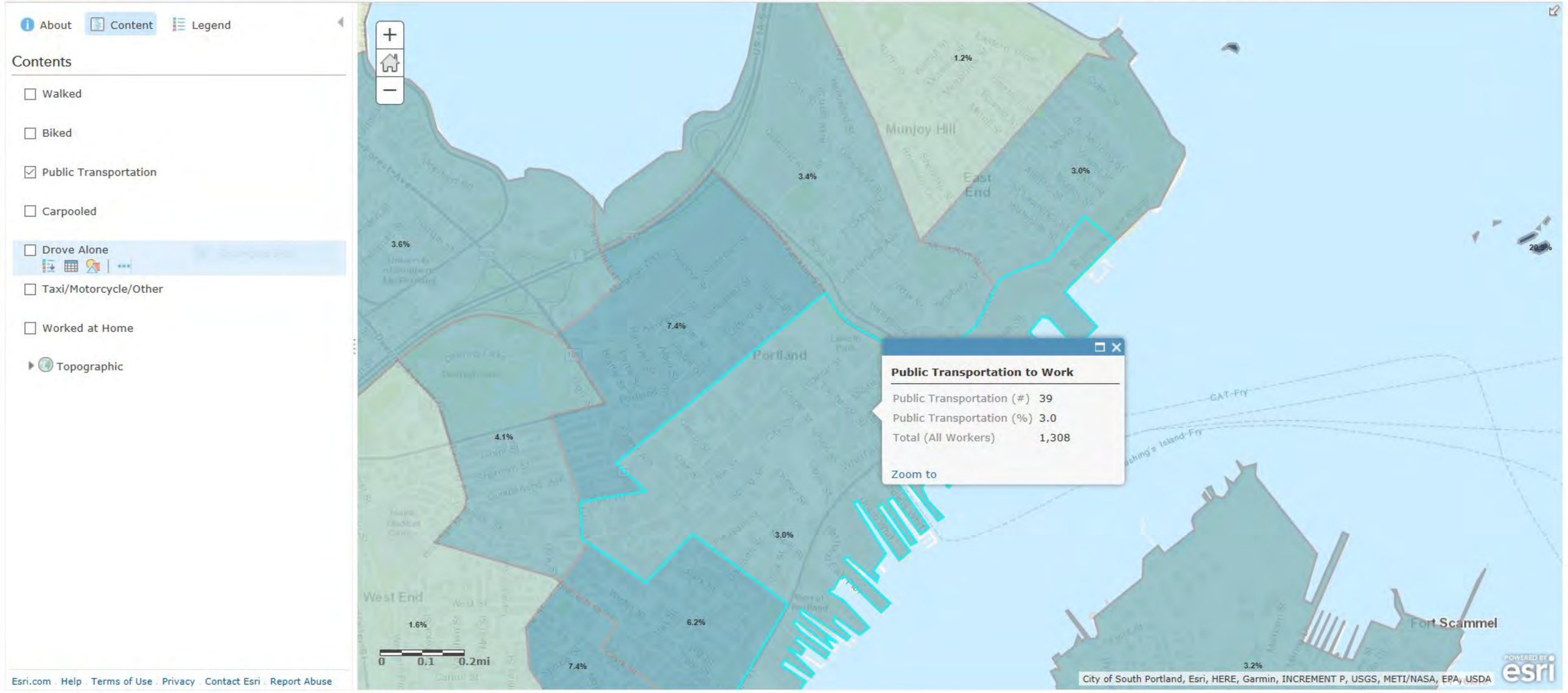

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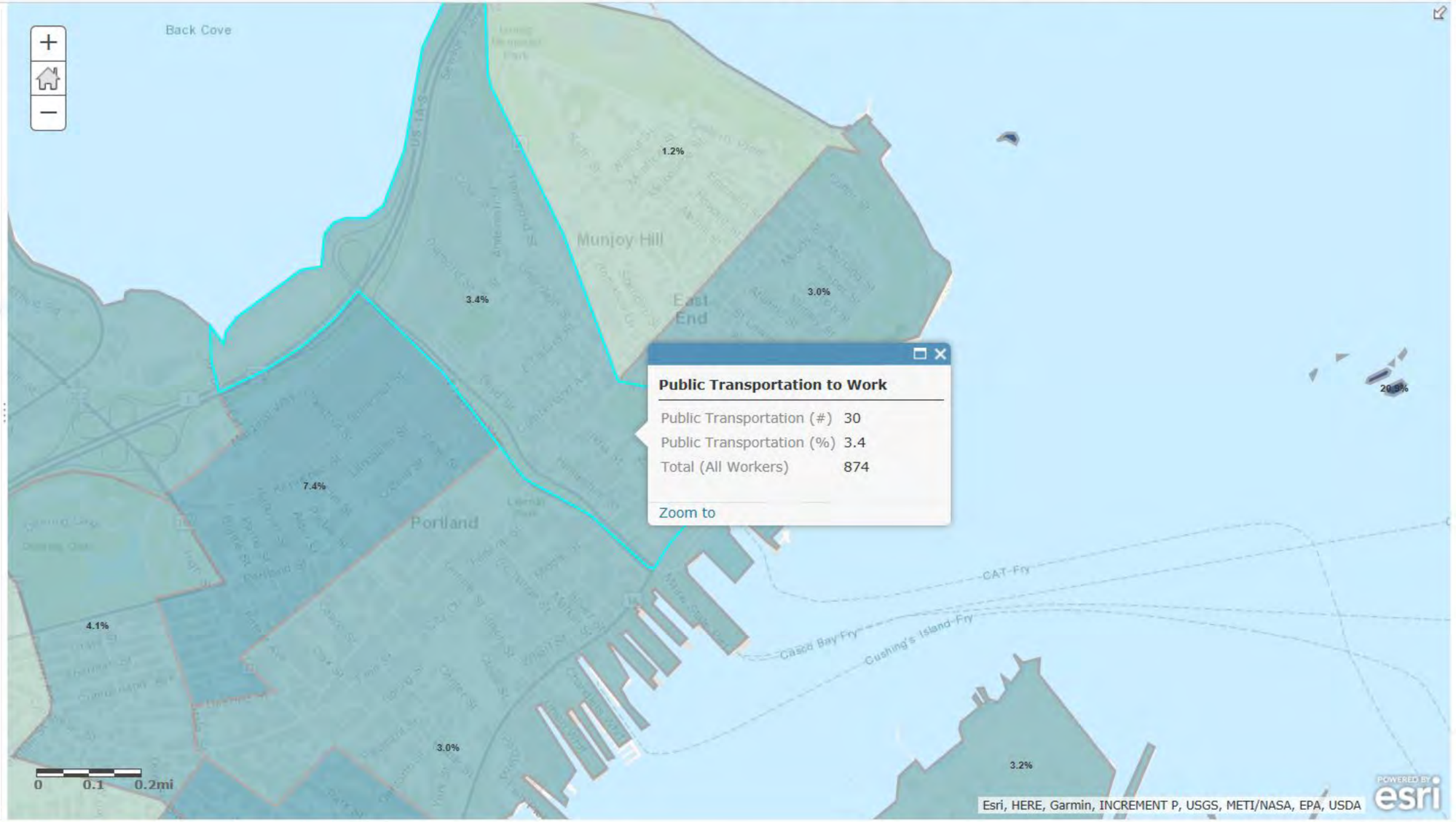

Public Transportation to Work

Public Transportation (#)	30
Public Transportation (%)	3.4
Total (All Workers)	874

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Emily Tynes

From: Christine Grimando <cdg@portlandmaine.gov> on behalf of Christine Grimando
Sent: Thursday, December 1, 2016 2:44 PM
To: Randy Dunton
Cc: Tom Errico; Jeremiah Bartlett; David Senus; Mary McCrann; Emily Tynes; Bruce Hyman; Kevin Costello; Jeff Levine; Stuart O'Brien
Subject: Re: Trip Distribution - 58 Fore Street Project

Randy,

In the course of reviewing the TMP application materials for the other modes reductions, we've concluded that the 35.8% reduction discussed at the scoping meetings is appropriate to account for residential uses, and 10% for hotel use, but that trips for other, non-residential uses warrant a separate approach. For those work and non-work trips to the site, we propose an assumption of an 18% reduction based on 2010 CTPP data (http://ctpp.transportation.org/Pages/5-Year-Data.aspx) for Tract 3, which includes the eastern waterfront and downtown, and shows a drive to work alone rate of 78% and a total ratio of cars to workers of 82% when carpooling is accounted for.

If you have another way to calculate these reductions, we are open to discussing alternatives, as well. However, we would like to make sure the work and non-work trips reflect the fact that those workers and other visitors will be coming from a broad commuter/market area and therefore these trips are likely to have a lower reduction than home-based trips.

As Tom Errico's prior comments reflect, we expect to see these reductions linked to and supported by the robustness of the TDM plan.

Christine

Christine Grimando, AICP
Senior Planner
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

A202105 - Means of Transportation (18) (Workers 16 years and over)

Current date: 4/4/2018 10:13:02 AM (Eastern Daylight Time)

Measures: Workers 16 and Over

WORKPLACE		Census Tract 3, Cumberland County, Maine
Means of Transportation 18	Output	
Total, means of transportation	Estimate	17,470
	Margin of Error	783
Car, truck, or van -- Drove alone	Estimate	13,640
	Margin of Error	788
Car, truck, or van -- In a 2-person carpool	Estimate	1,245
	Margin of Error	233
Car, truck, or van -- In a 3-person carpool	Estimate	80
	Margin of Error	59
Car, truck, or van -- In a 4-person carpool	Estimate	60
	Margin of Error	51
Car, truck, or van -- In a 5-or-6-person carpool	Estimate	15
	Margin of Error	19
Car, truck, or van -- In a 7-or-more-person carpool	Estimate	30
	Margin of Error	37
Bus or trolley bus	Estimate	280
	Margin of Error	99
Streetcar or trolley car	Estimate	0
	Margin of Error	119
Subway or elevated	Estimate	0
	Margin of Error	119
Railroad	Estimate	4
	Margin of Error	2
Ferryboat	Estimate	60
	Margin of Error	36
Bicycle	Estimate	280
	Margin of Error	119
Walked	Estimate	1,570
	Margin of Error	260
Taxicab	Estimate	15
	Margin of Error	20
Motorcycle	Estimate	15
	Margin of Error	22

A202105 - Means of Transportation (18) (Workers 16 years and over)

Current date: 4/4/2018 10:13:02 AM (Eastern Daylight Time)

Measures: Workers 16 and Over

WORKPLACE		Census Tract 5, Cumberland County, Maine
Means of Transportation 18	Output	
Total, means of transportation	Estimate	2,195
	Margin of Error	331
Car, truck, or van -- Drove alone	Estimate	1,800
	Margin of Error	284
Car, truck, or van -- In a 2-person carpool	Estimate	125
	Margin of Error	55
Car, truck, or van -- In a 3-person carpool	Estimate	0
	Margin of Error	119
Car, truck, or van -- In a 4-person carpool	Estimate	10
	Margin of Error	14
Car, truck, or van -- In a 5-or-6-person carpool	Estimate	10
	Margin of Error	18
Car, truck, or van -- In a 7-or-more-person carpool	Estimate	0
	Margin of Error	119
Bus or trolley bus	Estimate	25
	Margin of Error	44
Streetcar or trolley car	Estimate	0
	Margin of Error	119
Subway or elevated	Estimate	0
	Margin of Error	119
Railroad	Estimate	0
	Margin of Error	119
Ferryboat	Estimate	15
	Margin of Error	21
Bicycle	Estimate	4
	Margin of Error	18
Walked	Estimate	135
	Margin of Error	91
Taxicab	Estimate	0
	Margin of Error	119
Motorcycle	Estimate	0
	Margin of Error	119

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	4/13/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Residential	35.8%
Non-Residential	15.0%
Hotel Reduction	10.0%

Total Proposed Site Trip Generation After Shared Use Reduction and Multimodal Reduction

Time Period	Hotel	General Office Building	Manufacturing	Specialty Retail	Drinking Place	Apartment	Total Site Trip Ends	Hotel		General Office Building		Manufacturing		Specialty Retail		Drinking Place		Apartment		Total Site	
								IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	**IN**	**OUT**
AM Peak Adjacent Street	50	103	69	1	---	3	**226**	32	18	94	9	52	17	1	0	---	---	1	2	**179**	**47**
PM Peak Adjacent Street	54	102	71	2	15	3	**247**	30	24	15	87	25	46	1	1	11	4	1	2	**82**	**165**
AM Peak Hour of Generator	47	100	74	9	---	3	**233**	27	20	92	8	52	22	4	5	---	---	1	2	**175**	**58**
PM Peak Hour of Generator	56	102	71	3	20	2	**255**	33	23	15	87	36	35	2	1	17	3	1	1	**103**	**152**
Saturday Peak Hour of Gen.	65	27	26	10	27	3	**158**	36	29	14	13	14	12	6	4	17	10	2	1	**87**	**71**

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Existing) Manufacturing
Land Use Code (LUC) 140

Gross Floor Area 63,045

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT
Weekday	T = 3.82 (X)	241	62		50%	50%	121	120
AM Peak Adjacent Street	T = 0.73 (X)	46	50		75%	25%	35	11
PM Peak Adjacent Street	T = 0.74 (X)	47	54		35%	65%	16	31
AM Peak Hour of Generator	T = 0.78 (X)	49	50		70%	30%	34	15
PM Peak Hour of Generator	T = 0.75 (X)	47	50		50%	50%	24	23
Saturday	T = 1.49 (X)	94	2		50%	50%	47	47
Saturday Peak Hour of Gen.	T = 0.28 (X)	18	2	**	50%	50%	9	9

* Percentages rounded to nearest 5%
** Not Available (Assumption)

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Existing) General Office Building
Land Use Code (LUC) 710

Square Feet 6,082

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	Ln (T) = 0.77 Ln (X) + 3.65	154	78	50%	50%	77	77	0.80
AM Peak Hour	**Ln (T) = 0.80 Ln (X) + 1.55**	**20**	**217**	**90%**	**10%**	**18**	**2**	**0.83**
PM Peak Hour	T = 1.12 (X) + 78.81	86	235	15%	85%	13	73	0.82
Saturday	T = 2.14 (X) + 18.47	31	17	50%	50%	16	15	0.66
Peak Hour of Generator	Ln (T) = 0.81 Ln (X) - 0.12	4	10	55%	45%	2	2	0.59

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 11.01 (X)	67	78	50%	50%	34	33	---
AM Peak Hour	T = 1.55 (X)	9	217	90%	10%	8	1	---
PM Peak Hour	T = 1.49 (X)	9	235	15%	85%	1	8	---
Saturday	T = 2.37 (X)	14	17	50%	50%	7	7	---
Saturday Peak Hour of Gen.	T = 0.41 (X)	2	10	50%	50%	1	1	---

* Percentages rounded to nearest 5%

PM Peak Hour:	**T = 1.49/1.55 (AM Peak)**	**19**		**15%**	**85%**	**3**	**16**	**---**
SAT Peak Hour:	**T = 0.41/1.55 (AM Peak)**	**5**		**50%**	**50%**	**3**	**2**	**---**

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Existing) Apartment
Land Use Code (LUC) 220

Dwelling Units: 8

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Sample Size		Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT
Weekday	T = 6.72 (X)	54	86		50%	50%	27	27
AM Peak Hour of Adj. Street Traffic	T = 0.51 (X)	4	78		20%	80%	1	3
PM Peak Hour of Adj. Street Traffic	T = 0.62 (X)	5	90		65%	35%	3	2
AM Peak Hour of Generator	T = 0.55 (X)	4	81		30%	70%	1	3
PM Peak Hour of Generator	T = 0.67 (X)	5	83		60%	40%	3	2
Saturday	T = 6.39 (X)	51	15		50%	50%	26	25
Saturday Peak Hour of Gen.	T = 0.52 (X)	4	14	**	50%	50%	2	2

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Existing) Specialty Retail Center
Land Use Code (LUC) 814

Gross Floor Area (ft²): 1,250

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution	
				IN	OUT	IN	OUT
Weekday	T = 44.32 (X)	55	4	50%	50%	28	27
Peak Hour of Adjacent Street Traffic 7-9 AM	T = 0.74 (X)	1	N/A	60%	40%	1	0
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	3	5	45%	55%	1	2
AM Peak Hour of Generator	T = 6.84 (X)	9	4	50%	50%	5	4
PM Peak Hour of Generator	T = 5.02 (X)	6	3	55%	45%	3	3
Saturday	T = 42.04 (X)	53	3	50%	50%	27	26
Saturday Peak Hour of Gen.***	T = 6.63 (X)	8	3	50%	50%	4	4

**Based on ratio of AM/PM traffic for LUC 820, Shopping Center and applied to 814 PM rate.

***Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center

* Percentages rounded to nearest 5%

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Existing) Drinking Place
Land Use Code (LUC) 936

Square Feet 1,250

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split **		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	---	---	---		---	---	---	---
PM Peak Hour of Adj. St.	T = 11.34 (X)	14	12		65%	35%	9	5
PM Peak Hour of Gen.	T = 15.49 (X)	19	8		70%	30%	13	6
Saturday	---	---	---		---	---	---	---
Sat. Peak Hour of Generator	T = 16.48 (X)*	21	---	***	65%	35%	14	7

*Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 932 - High-Turnover (Sit-Down) Restaurant

** Percentages rounded to nearest 5%

***Directional split for this peak hour assumed based on other peak hours for this land use and the directional split for LUC 932 - High-Turnover (Sit-Down) Restaurant during Saturday Peak Hour of the Generator

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Existing Site Trip Generation

Time Period	Manufacturing	General Office Building	Apartment	Specialty Retail	Drinking Place	**Total Site Trip Ends**	Manufacturing		General Office Building		Apartment		Specialty Retail		Drinking Place		**Total Site**	
							IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	**IN**	**OUT**
AM Peak Adjacent Street	46	20	4	1	---	**71**	35	11	18	2	1	3	1	0	---	---	55	16
PM Peak Adjacent Street	47	19	5	3	14	**88**	16	31	3	16	3	2	1	2	9	5	32	56
AM Peak Hour of Generator	49	20	4	9	---	**82**	34	15	18	2	1	3	5	4	---	---	58	24
PM Peak Hour of Generator	47	19	5	6	19	**96**	24	23	3	16	3	2	3	3	13	6	46	50
Saturday Peak Hour of Gen.	18	5	4	8	21	**56**	9	9	3	2	2	2	4	4	14	7	32	24

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	20	18	2
Retail	814	1,250	sf	1	1	0
Restaurant	936	1,250	sf	0	0	0
Cinema/Entertainment						
Residential	220	8	dwelling units	4	1	3
Hotel						
All Other Land Uses[2]	140	63,045	sf	46	35	11
Total				71	55	16

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	71	55	16
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	71	55	16
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	0%	N/A
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	18	18	1.00	2	2
Retail	1.00	1	1	1.00	0	0
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	1	1	1.00	3	3
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		0	0	0	0
Restaurant	3	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	0	0		0
Hotel	1	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	18	18	18	0	0
Retail	0	1	1	1	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	1	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	35	35	35	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	2	2	2	0	0
Retail	0	0	0	0	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	3	3	3	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	11	11	11	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	19	3	16
Retail	814	1,250	sf	3	1	2
Restaurant	936	1,250	sf	14	9	5
Cinema/Entertainment						
Residential	220	8	dwelling units	5	3	2
Hotel						
All Other Land Uses[2]	140	63,045	sf	47	16	31
Total				88	32	56

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	88	32	56
Internal Capture Percentage	2%	3%	2%
External Vehicle-Trips[3]	86	31	55
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	0%	50%
Restaurant	11%	0%
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	3	3	1.00	16	16
Retail	1.00	1	1	1.00	2	2
Restaurant	1.00	9	9	1.00	5	5
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	3	3	1.00	2	2
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	0		1	0	1	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		3	0	1	0
Restaurant	1	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	0	1	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	3	3	3	0	0
Retail	0	1	1	1	0	0
Restaurant	1	8	9	8	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	3	3	3	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	16	16	16	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	16	16	16	0	0
Retail	1	1	2	1	0	0
Restaurant	0	5	5	5	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	31	31	31	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing AM Generator Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	20	18	2
Retail	814	1,250	sf	9	5	4
Restaurant	936	1,250	sf			
Cinema/Entertainment						
Residential	220	8	dwelling units	4	2	2
Hotel						
All Other Land Uses[2]	140	63,045	sf	49	34	15
Total				82	59	23

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	82	59	23
Internal Capture Percentage	5%	3%	9%
External Vehicle-Trips[3]	78	57	21
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	6%	50%
Retail	20%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	18	18	1.00	2	2
Retail	1.00	5	5	1.00	4	4
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	2	2	1.00	2	2
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	1		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	1		0	0	0	0
Restaurant	3	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	17	18	17	0	0
Retail	1	4	5	4	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	34	34	34	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	1	3	4	3	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	15	15	15	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing PM Generator Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	19	3	16
Retail	814	1,250	sf	6	3	3
Restaurant	936	1,250	sf	19	13	6
Cinema/Entertainment						
Residential	220	8	dwelling units	5	3	2
Hotel						
All Other Land Uses[2]	140	63,045	sf	47	24	23
Total				96	46	50

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	1		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	96	46	50
Internal Capture Percentage	6%	7%	6%
External Vehicle-Trips[3]	90	43	47
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	33%	67%
Restaurant	8%	17%
Cinema/Entertainment	N/A	N/A
Residential	33%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	3	3	1.00	16	16
Retail	1.00	3	3	1.00	3	3
Restaurant	1.00	13	13	1.00	6	6
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	3	3	1.00	2	2
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	0		1	0	1	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		4	0	1	0
Restaurant	1	2		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	0	2	0		0
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	3	3	3	0	0
Retail	1	2	3	2	0	0
Restaurant	1	12	13	12	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	2	3	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	24	24	24	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	16	16	16	0	0
Retail	2	1	3	1	0	0
Restaurant	1	5	6	5	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	23	23	23	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Existing Site Trip Generation After Shared Use Reduction

Time Period	Manufacturing	General Office Building	Apartment	Specialty Retail	Drinking Place	**Total Site Trip Ends**	Manufacturing		General Office Building		Apartment		Specialty Retail		Drinking Place		**Total Site**	
							IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	**IN**	**OUT**
AM Peak Adjacent Street	46	20	4	1	---	**71**	35	11	18	2	1	3	1	0	---	---	**55**	**16**
PM Peak Adjacent Street	47	19	5	2	13	**86**	16	31	3	16	3	2	1	1	8	5	**31**	**55**
AM Peak Hour of Generator	49	18	4	7	---	**78**	34	15	17	1	1	3	4	3	---	---	**56**	**22**
PM Peak Hour of Generator	47	19	4	3	17	**90**	24	23	3	16	2	2	2	1	12	5	**43**	**47**
*Saturday Peak Hour of Gen.	18	5	4	7	20	**54**	9	9	3	2	2	2	3	4	14	6	**31**	**23**

* - NCHRP does not provide shared use reduction information for the Saturday Peak Hour of the Gen. so the the average reduction of the other peak hours (3%) was used.

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Non-Residential	15.0%
Residential	35.8%

Total Existing Site Trip Generation After Shared Use Reduction and Multimodal Reductior

Time Period	Manufacturing	General Office Building	Apartment	Specialty Retail	Drinking Place	**Total Site Trip Ends**	Manufacturing IN	Manufacturing OUT	General Office Building IN	General Office Building OUT	Apartment IN	Apartment OUT	Specialty Retail IN	Specialty Retail OUT	Drinking Place IN	Drinking Place OUT	**Total Site IN**	**Total Site OUT**
AM Peak Adjacent Street	39	17	3	1	---	**60**	30	9	15	2	1	2	1	0	---	---	**47**	**13**
PM Peak Adjacent Street	40	16	3	2	11	**72**	14	26	3	13	2	1	1	1	7	4	**27**	**45**
AM Peak Hour of Generator	42	15	3	6	---	**66**	29	13	14	1	1	2	3	3	---	---	**47**	**19**
PM Peak Hour of Generator	40	16	3	3	13	**76**	20	20	3	13	1	2	1	2	10	3	**35**	**41**
Saturday Peak Hour of Gen.	15	4	3	6	17	**46**	8	7	3	1	1	2	3	3	12	5	**27**	**19**

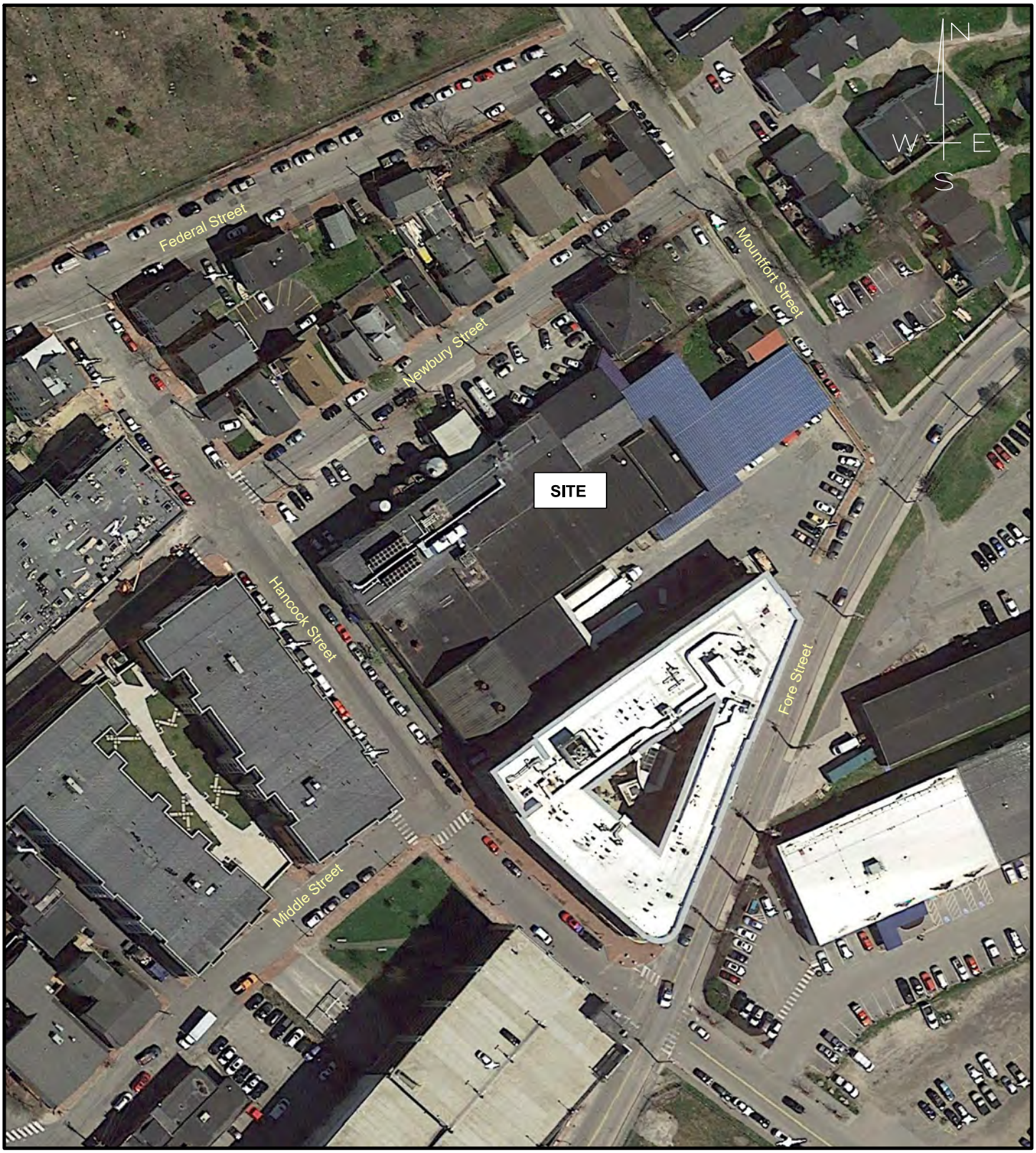
JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

Net Site Trip Generation After Shared Use Reduction and Other Modes Reduction

Time Period	Total Site Trip Ends	Total Site IN	OUT
AM Peak Adjacent Street	**166**	132	34
PM Peak Adjacent Street	**175**	55	120
AM Peak Hour of Generator	**167**	128	39
PM Peak Hour of Generator	**179**	68	111
Saturday Peak Hour of Gen.	**112**	60	52

Location Map

F□□r□N□□ 1



SHIPYARD REDEVELOPMENT
PORTLAND, MAINE

D□□□□□□ JP
Dr□□□
□□□□□□d□ ET

S□□□□□ NONE
D□□□□ APRIL □□□8
F□□ N□□ □□□184□TR□FF□d□□

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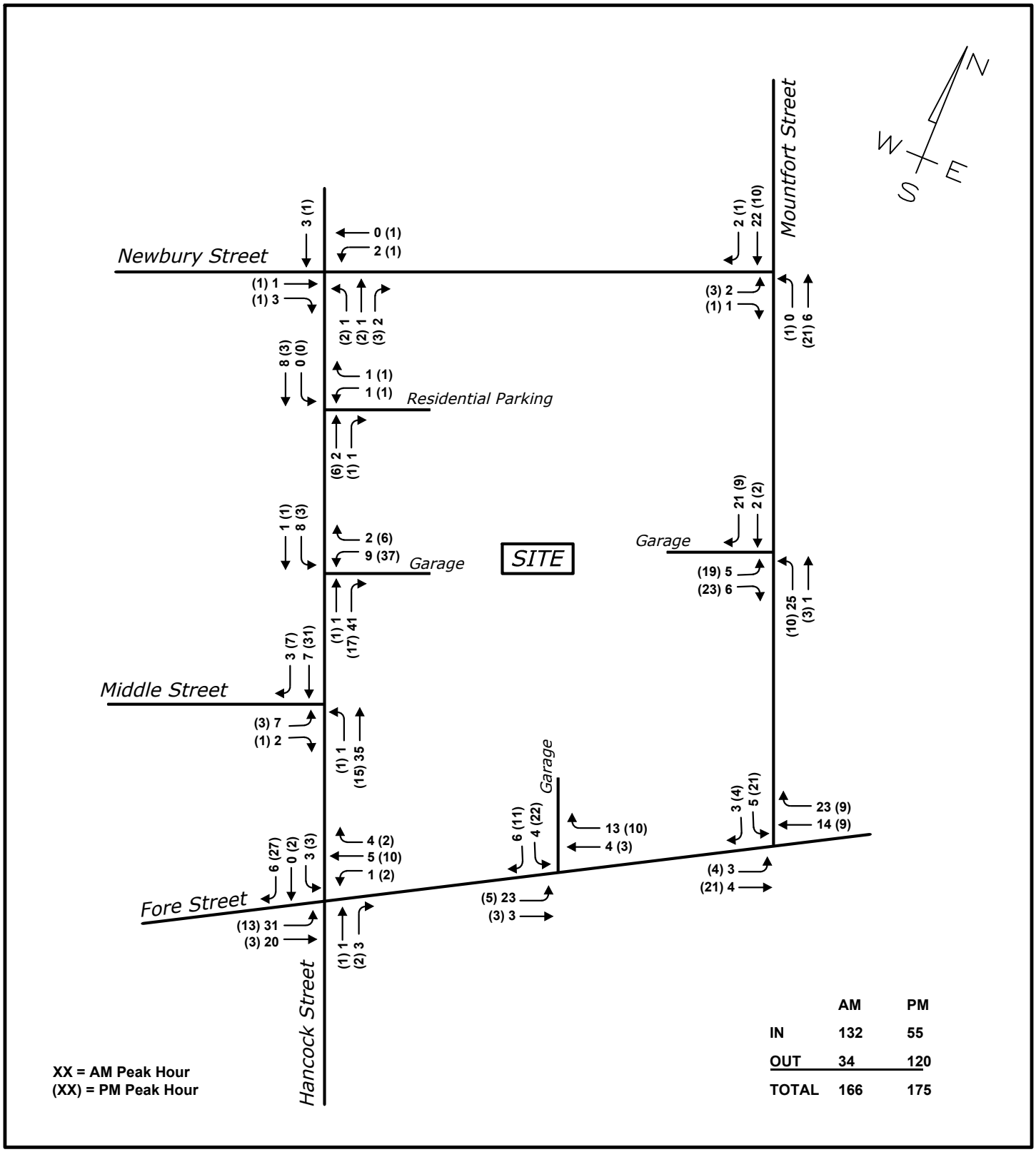
Trip Assignment

F□□r□N□□ 2



	AM	PM
IN	132	55
OUT	34	120
TOTAL	166	175

XX = AM Peak Hour
(XX) = PM Peak Hour

SHIPYARD REDEVELOPMENT
PORTLAND, MAINE

D□□□□□□ JP S□□□□□ NONE
Dr□□□ D□□□□ APRIL □□□8
□□□□□□d□ ET F□□ N□□ □□□184□TR□FF□d□□

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PORTLAND NODE MAP

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0.095 Miles

1 inch = 0.07 miles

Date: 3/8/2018
Time: 10:04:34 PM

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ **Crash Summary I** ☐ **Section Detail** ☑ **Crash Summary II** ☐ **1320 Public** ☐ **1320 Private** ☐ **1320 Summary**

REPORT DESCRIPTION

Fore St area in Portland

REPORT PARAMETERS

Year 2014, Start Month 1 through Year 2016 End Month: 12

Route: **0560286**	Start Node: **18836**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18822**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560524**	Start Node: **18798**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18820**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560344**	Start Node: **18797**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **71558**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560344**	Start Node: **71558**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **71560**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0561110**	Start Node: **18797**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18798**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560531**	Start Node: **18804**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18803**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560531**	Start Node: **18803**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18802**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0561000**	Start Node: **18804**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18822**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560505**	Start Node: **18817**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18818**	End Offset: **0**	☑ **Exclude Last Node**

Crash Summary I

Nodes

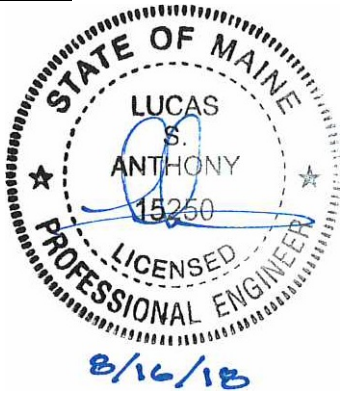
Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
18836	0560286 - 0.08	Int of FORE ST WATERVILLE ST	2	0	0	0	0	0	0	0.0	1.905	0.00	0.46	0.00
												Statewide Crash Rate:	0.14	
18820	0560286 - 0.28	Int of FORE ST MOUNTFORT ST	2	1	0	0	1	0	0	100.0	2.153	0.15	0.44	0.00
												Statewide Crash Rate:	0.14	
71558	0560286 - 0.37	Int of FORE ST HANCOCK ST	2	0	0	0	0	0	0	0.0	1.637	0.00	0.47	0.00
												Statewide Crash Rate:	0.14	
18822	0560286 - 0.45	Int of FORE ST INDIA ST	2	5	0	0	0	2	3	40.0	4.304	0.39	0.39	1.00
												Statewide Crash Rate:	0.15	
18798	0560524 - 0.14	Int of FEDERAL ST E MOUNTFORT ST	2	2	0	0	0	0	2	0.0	0.516	1.29	0.59	2.19
												Statewide Crash Rate:	0.14	
18802	0560524 - 0.17	Int of MOUNTFORT ST NEWBURY ST	2	1	0	0	0	0	1	0.0	0.486	0.69	0.60	1.15
												Statewide Crash Rate:	0.14	
18803	0560344 - 0.04	Int of HANCOCK ST NEWBURY ST	2	1	0	0	0	0	1	0.0	0.234	1.43	0.58	2.47
												Statewide Crash Rate:	0.14	
18818	0560344 - 0.09	Int of HANCOCK ST MIDDLE ST	2	0	0	0	0	0	0	0.0	0.533	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
71560	0560344 - 0.19	Int of HANCOCK ST THAMES ST	2	0	0	0	0	0	0	0.0	1.216	0.00	0.51	0.00
												Statewide Crash Rate:	0.14	
18797	0561110 - 0.20	Int of FEDERAL ST E HANCOCK ST	2	1	0	0	0	0	1	0.0	0.128	2.60	0.39	6.61
												Statewide Crash Rate:	0.14	
18804	0560531 - 0.11	Int of INDIA ST NEWBURY ST	2	2	0	0	0	0	2	0.0	2.061	0.32	0.47	0.00
												Statewide Crash Rate:	0.15	
18817	0561000 - 0.18	Int of INDIA ST MIDDLE ST	2	3	0	0	1	2	0	100.0	2.525	0.40	0.45	0.00
												Statewide Crash Rate:	0.15	
Study Years:	3.00	**NODE TOTALS:**		16	0	0	2	4	10	37.5	17.698	0.30	0.27	1.12

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
18820	18836	3131698	0 - 0.20	0560286 - 0.08	0.20	2	4	0	0	2	0	2	50.0	0.00367	363.70	446.98	0.00
Int of FORE ST	MOUNTFORT ST			RD INV 05 60286											Statewide Crash Rate: 171.12		
18820	71558	4047688	0 - 0.09	0560286 - 0.28	0.09	2	6	0	0	0	0	6	0.0	0.00186	1073.77	532.43	2.02
Int of FORE ST	MOUNTFORT ST			RD INV 05 60286											Statewide Crash Rate: 171.12		
71558	18822	4047689	0 - 0.08	0560286 - 0.37	0.08	2	1	0	0	0	0	1	0.0	0.00166	201.33	548.59	0.00
Int of FORE ST	HANCOCK ST			RD INV 05 60286											Statewide Crash Rate: 171.12		
18798	18802	194393	0 - 0.03	0560524 - 0.14	0.03	2	0	0	0	0	0	0	0.0	0.00015	0.00	1723.24	0.00
Int of FEDERAL ST E	MOUNTFORT ST			RD INV 05 60524											Statewide Crash Rate: 400.85		
18802	18820	194401	0 - 0.05	0560524 - 0.17	0.05	2	2	0	0	0	0	1	0.0	0.00020	3305.85	1671.22	1.98
Int of MOUNTFORT ST	NEWBURY ST			RD INV 05 60524											Statewide Crash Rate: 400.85		
18797	18803	194392	0 - 0.04	0560344 - 0	0.04	2	1	0	0	0	0	1	0.0	0.00005	7247.95	1167.68	6.21
Int of FEDERAL ST E	HANCOCK ST			RD INV 05 60344											Statewide Crash Rate: 400.85		
18803	18818	194403	0 - 0.05	0560344 - 0.04	0.05	2	1	0	0	0	0	1	0.0	0.00008	4151.10	1648.21	2.52
Int of HANCOCK ST	NEWBURY ST			RD INV 05 60344											Statewide Crash Rate: 400.85		
71558	18818	4047715	0 - 0.04	0560344 - 0.09	0.04	2	0	0	0	0	0	0	0.0	0.00018	0.00	1696.99	0.00
Int of FORE ST	HANCOCK ST			RD INV 05 60344											Statewide Crash Rate: 400.85		
71560	71558	4047714	0 - 0.06	0560344 - 0.13	0.06	2	0	0	0	0	0	0	0.0	0.00046	0.00	1429.64	0.00
Int of HANCOCK ST	THAMES ST			RD INV 05 60344											Statewide Crash Rate: 400.85		
18797	18798	194391	0 - 0.10	0561110 - 0.20	0.10	2	1	0	0	0	0	0	0.0	0.00005	7134.70	1189.87	6.00
Int of FEDERAL ST E	HANCOCK ST			RD INV 05 61110											Statewide Crash Rate: 400.85		
18803	18804	194402	0 - 0.08	0560531 - 0.11	0.08	2	1	0	0	0	0	1	0.0	0.00009	3742.80	1684.71	2.22
Int of HANCOCK ST	NEWBURY ST			RD INV 05 60531											Statewide Crash Rate: 400.85		
18802	18803	194400	0 - 0.08	0560531 - 0.19	0.08	2	1	0	0	0	0	1	0.0	0.00006	5165.40	1524.86	3.39
Int of MOUNTFORT ST	NEWBURY ST			RD INV 05 60531											Statewide Crash Rate: 400.85		
18804	18817	3122291	0 - 0.05	0561000 - 0.13	0.05	2	1	0	0	1	0	0	100.0	0.00103	324.59	713.45	0.00
Int of INDIA ST	NEWBURY ST			RD INV 05 61000											Statewide Crash Rate: 207.39		
18817	18822	3106813	0 - 0.05	0561000 - 0.18	0.05	2	0	0	0	0	0	0	0.0	0.00109	0.00	703.09	0.00
Int of INDIA ST	MIDDLE ST			RD INV 05 61000											Statewide Crash Rate: 207.39		
18817	18818	194423	0 - 0.08	0560505 - 0.39	0.08	2	0	0	0	0	0	0	0.0	0.00037	0.00	1498.45	0.00
Int of INDIA ST	MIDDLE ST			RD INV 05 60505											Statewide Crash Rate: 400.85		
Study Years: 3.00				**Section Totals:**	1.08		19	0	0	3	0	14	15.8	0.01098	576.78	405.31	1.42
				Grand Totals:	1.08		35	0	0	5	4	24	25.7	0.01098	1062.50	556.08	1.91

STORMWATER MANAGEMENT REPORT



1. Overview

Under the Stormwater Management Statute (38 M.R.S.A. §420-D) instituted by the Maine Department of Environmental Protection, a person may not construct, or cause to be constructed, a project that includes one acre or more of disturbed area without prior approval from the Department.

Section 5.II of the City of Portland Technical Manual states:

> *"Projects that require a Stormwater Permit pursuant to 38 M.R.S.A Sec. 420-D (Stormwater Management Law) and projects that may substantially affect the environment and require a site location of development (Site Law) permit pursuant to 38 M.R.S.A Sec 481-490 shall be reviewed for conformance with Chapter 500 under the City's Delegated Review Authority or by the Maine Department of Environmental Protection."*

This Exhibit demonstrates the developer has made adequate provision for controlling Stormwater Runoff and is being submitted to be reviewed for conformance with Chapter 500 under the City's Delegated Review Authority.

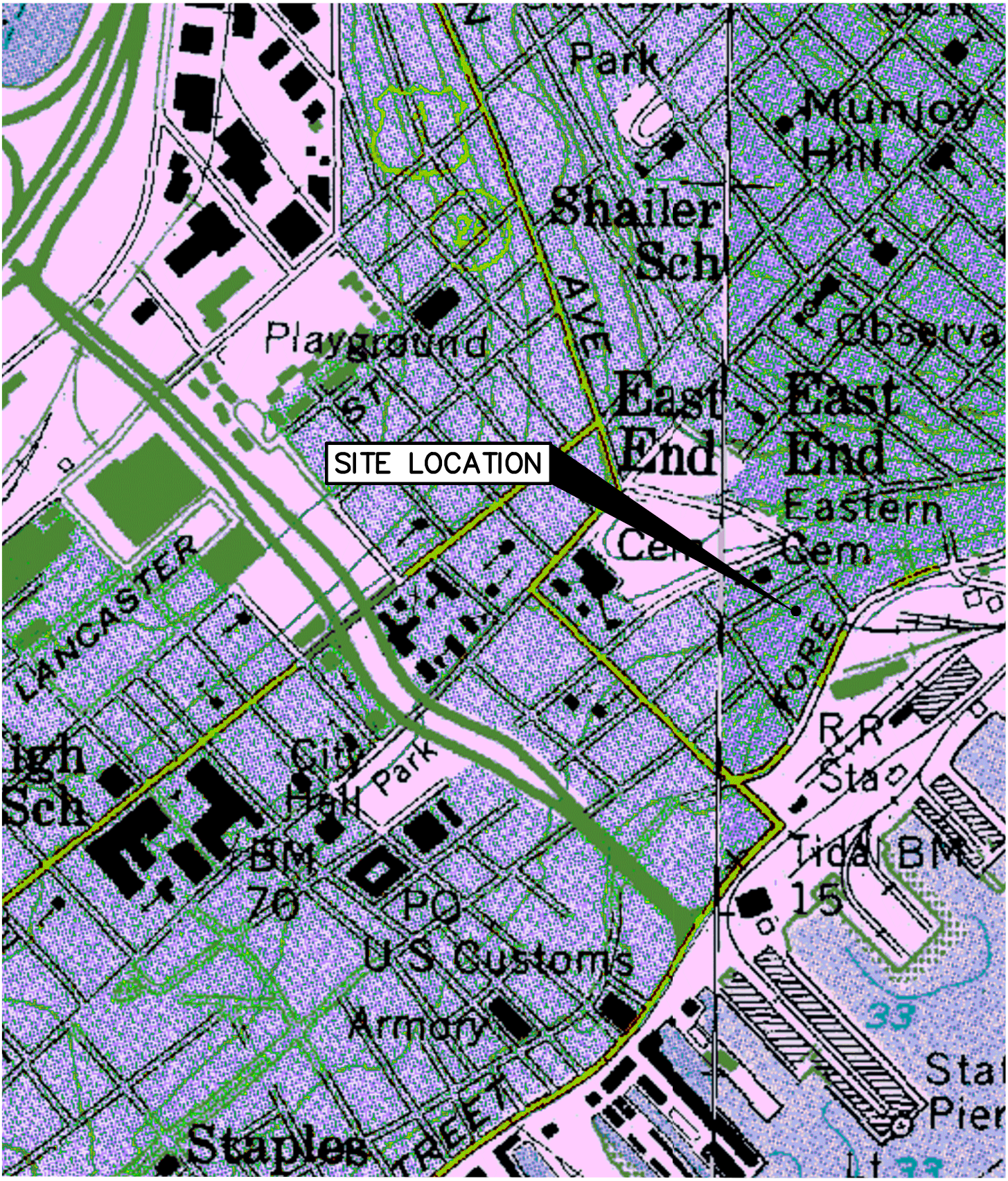
2. Introduction

86 Newbury Street, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed multi-use redevelopment located at 86 Newbury Street. The site is shown on Portland Assessor's Tax Map 20C Lots 1, 2, 5, 9, and 15. The properties are approximately 2.15 acres in size in total and located in the India Street Form-Based Code Zone (IS-FBZ). Figure 1 is a map showing the project location and follows this page. The subject properties are currently developed with the Shipyard Brewery and two residential structures. The Shipyard Brewery consists of three connected buildings and controls a majority of the subject properties with frontages on Mountfort, Newbury, Hancock, and Fore Streets. The two residential structures are located to the northeast of the project site and have frontages on Mountfort and Newbury Streets. The developer will seek a Stormwater Permit by Rule from the Maine Department of Environmental Protection (MDEP) as the project proposes to disturbed greater than 1 acre of area. The plans prepared by Gorrill Palmer include the infrastructure necessary to serve the project. This narrative contains the Stormwater Management measures which are appropriate for this site.

3. Development Description

The project site is currently developed with 52,400 sq. ft. of the Shipyard Brewery, a 1,935 sq. ft. three story residential building, and a 765 sq. ft. residential building. The site also consists of 33,655 sq. ft. of impervious parking area, and 5,110 sq. ft. of pervious area.

The project requires the removal of the existing residential buildings and the Shipyard bottling facility which is approximately 34,360 sq. ft. The three story 31,250 sq. ft., and two story 6,650 sq. ft. buildings which make up the remainder of the Shipyard Brewery are to remain.



U.S.G.S. Location Map

Shipyard Brewing Company - Portland, Maine

U.S.G.S. Portland East/West, Maine -7.5 Minute Series (Topographic)

Design: BMG	Date: MARCH 2017
Draft: CG	Job No.: 3184
Checked: LSA	Scale: None
File Name: 3184-LOCATION.dwg	

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Figure 1

The project is a multi-use redevelopment consisting of industrial (brewery and specialty pharmacy), office, retail, hotel, residential uses, and structured parking. The project includes approximately 46,877 sq. ft. of pervious area, which is nine times the sites current pervious area.

Abutting land uses include:

- North – Residential (single family home)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East – Residential (townhouse)

The development of the site results in approximately 2,315 sq. ft. of new non-roof impervious area and a total disturbed area of approximately 1.78 acres.

4. Surface Water

There are no lakes located on, adjacent to or downstream of the project site. Casco Bay, which outlets to the Atlantic Ocean, is located approximately 750 feet south of the site.

5. General Topography

Topography in the area of the proposed construction has slopes of 3% to 11%. Elevations on the site range from 48 feet on the northern boundary of the site to 22 feet along the southern boundary of the site.

6. Flooding

Based upon the FEMA maps, no areas within the site are located in a 100-year floodplain.

7. Natural Drainage Ways

The project as currently proposed does not include alteration of any natural drainage ways.

8. Alterations to Land Cover

Changes in land cover will include the removal of existing pavement and structures and the construction of new pavement, buildings, and landscaped areas.

9. Stormwater Management Control

The project site is not tributary to an Urban Impaired Stream. Section 5.II of the Technical Manual states,

> *"The City of Portland's applicability requirements for all development within Portland, which are specified below, supersede the applicability thresholds specified within the Chapter 500 Rules."*

The City of Portland Technical Manual, Section 5.II.D states:

> *"Redevelopment Projects: All projects not subject to requirements of an existing Site Law or Stormwater Management Law Permit that include redevelopment of non-roof impervious area greater than 5,000 square-feet and are subject to City of Portland review shall provide stormwater quality treatment in accordance with the General Standards for no less than 50% of the redeveloped impervious area. The runoff from any upgradient area must be either directed away from the stormwater treatment measure or that measure must be sized to treat the runoff from the upgradient area."*

The site is not subject to requirements of an existing Site Law or Stormwater Management Law Permit. As the project proposes to redevelop greater than 5,000 sq. ft. of parking/drive areas to roof, the projects falls within this threshold. Therefore, the project is required to a treat 50% of the non-roof impervious area in accordance with MDEP General Standards through the City of Portland's delegated authority.

The Basic Standard is presented in the Erosion and Sedimentation Control report included with this application. The General Standards are presented as follows.

The development currently proposes a Proprietary Biofiltration System, hereafter referred to as "FocalPoint", to provide water quality treatment.

The Maine Department of Environmental Protection rules and regulations regarding stormwater concentrate on four stormwater management objectives:

- Effective Pollutant Removal
- Cooling
- Channel Protection
- Flood Control

These objectives may be met either directly by providing BMP's that manage and treat the runoff after is has been created, or indirectly by incorporating low impact development site planning concepts to minimize production and contamination of runoff by maximizing infiltration and evapotranspiration.

9.1 Current Treatment Methods

Under the General Standard, the redevelopment is required to treat 0% of the impervious and developed area. Since the project is a redevelopment project which results in the reduction of impervious area, the change in use does not have as high of an impact ranking as compared to existing conditions.

The City of Portland requires any redevelopment project which includes redevelopment of non-roof impervious area greater than 5,000 square-feet provide stormwater quality treatment in accordance with the General Standards for no less than 50% of the non-roof redeveloped impervious area.

The applicant proposes to treat 52.8% of the new, non-roof impervious area. This appears to be the most practicable treatment for the proposed redevelopment.

The four treatment measures listed in Chapter 500 and described in Volume III of the Stormwater BMP Manual are:

- Wetpond with detention above the permanent pool
- Filters
- Infiltration
- Buffers

Below is a brief description of each treatment method.

Wetpond with detention above the permanent pool:

Wet ponds are stormwater detention impoundments that have a permanent pool of water and have the capacity to temporarily store storm water runoff while it is released at a controlled rate. They can be designed to provide flood control as well as water quality treatment. Properly sized and maintained, wet ponds can achieve high rates of removal for a number of urban pollutants, including sediment and the pollutants associated with sediment, such as trace metals, hydrocarbons, BOD, nutrients, and pesticides. The addition of an underdrained gravel trench in the bench area around the permanent pool allows for slow, extended release of stormwater without risk of blockage and effective cooling to avoid thermal impacts. This BMP treatment method is generally used to treat runoff from large drainage areas.

Filters

Filtration BMPs such as grassed underdrained soil filters and biocells have shown to be very effective at removing a wide range of pollutants from stormwater runoff, particularly organic soil filter media. They can be constructed in combination with infiltration practices, or with an underdrain filter, where infiltration is not feasible. Soil filters can be designed and constructed using common materials. Underdrained soil filters control stormwater quality by capturing and retaining runoff and passing it through a filter bed comprised of a specific soil media. Various filter media may be used, the most common including sand filters and organic filters. Once through the soil media, the runoff is collected in a perforated underdrain pipe and discharged to the receiving water. The filter and underdrain provides for slow release of smaller storm events, minimizing stream channel erosion, as well as cooling the discharge. Vegetated underdrain soil filters can also be designed to provide detention above the channel protection volume.

Infiltration

Infiltration measures control stormwater quantity and quality, by retaining all or part of runoff on-site and discharging it into the ground. Infiltration is designed to occur at the surface (as in infiltration basins and to a degree vegetated swales and buffers), or in subsurface systems (e.g., infiltration trenches and infiltrators). The basic function of an infiltration system is to remove a portion of runoff from the total runoff volume of the site and treatment comes about through absorption, straining, microbial decomposition in the soil and trapping of particulate matter within pretreatment areas. Pretreatment to remove sediments, grease and oils is required prior to discharge to the infiltration

measure. Possible pretreatment measures include filter strips, swales with check dams, sand filters, sediment traps, grease and oil traps, and sediment basins.

Buffers

Buffer strips are natural, undisturbed strips of natural vegetation or planted strips of close growing vegetation adjacent to and downslope of developed areas. As stormwater runoff travels over the buffer area, vegetation slows the runoff and traps particulate pollutants. They are also effective for phosphorus removal when designed in accordance with the volume III BMP technical design manual. The buffers are preceded by a level lip spreader which allows for thermal cooling of the runoff and a distribution of the flow to a sheet flow rather than direct discharge. The effectiveness of buffers for pollutant removal depends on the flow path length and slope, the buffer berm length, the soil permeability, the size of drainage area, and the type and density of vegetation. Buffers are used to treat runoff from relatively small amounts of impervious area, as typically found in residential developments and small commercial and industrial sites. This type of BMP requires minimal maintenance and provides an aesthetically pleasing area.

9.2 Approach and Analysis for Quality and Quantity

The proposed development will be required to meet the Basic Standard, BMP Standard under the General Standard, and the Flooding Standard under the City Ordinance. Based upon review of the four recommended and approved methods for mitigating the increased frequency and duration of channel erosive flows, and to allow for cooling of the stormwater runoff, as required by the BMP Standards, the developer is proposing to use a FocalPoint.

9.3 Water Quality Sizing Requirements

The City of Portland requires the project to meet the Maine DEP General Standards. Under the City of Portland Redevelopment Standard, and upon discussion with the City Staff, the project is required to a treat 50% of the non-roof impervious area in accordance with MDEP General Standards through the City of Portland's delegated authority. The following strategy was utilized to provide the required treatment:

FocalPoint

Subcatchment 2AS is tributary to the proposed FocalPoint system. The tributary area consists of paved and landscaped area.

Test pits have not been excavated at the proposed location for the FocalPoint. A geotechnical report for an adjacent property prepared by S.W. Cole, indicated groundwater at depths of about six feet within the surficial fill soils perched atop relatively impervious glaciomarine clays. Due to the findings of the report, it is assumed that the seasonal high groundwater table will be less than one foot below the proposed filter bottom, therefore an impermeable linear is proposed under the FocalPoint to separate groundwater from surficial stormwater.

There are four non-roof impervious areas on site. Two of the areas occur where parking/drives are located today - a parking lot/loading dock area on Fore Street, and a parking area along Newbury Street. These areas are not included in the required treatment calculation since the surface type is not proposed to change, nor are significant grade changes proposed.

Two rooftop courtyards are proposed on the roof of the structured parking. The courtyards are expected to see limited foot traffic. Since the courtyards are not expected to see conditions consistent with roadside walkways, such as calcium chloride, phosphorous, metals, or TSS levels, the courtyards are not included as non-roof impervious area requiring treatment.

Two areas of new non-roof impervious area are proposed where vegetated areas currently exist and are included in the non-roof impervious area requiring treatment. One is a courtyard adjacent to Newbury Street; the other area is a courtyard along Mountfort Street. The required treatment is shown in Table 1 below.

Table 1

Required Treatment Summary

Type	SF	Treatment Threshold	Area required to be treated (SF)
New Non-Roof Impervious Area	2,315	50%	1,158

A FocalPoint Biofiltration System coupled with a Subsurface Chamber Treatment Row is proposed for stormwater quality treatment. The FocalPoint is designed to allow stormwater runoff to flow through a high performance engineered soil blend to capture pollutants. Stormwater runoff flows through the media and into an Open-Cell Underdrain system. Stormwater then flows to a subsurface Chamber Treatment Row sized to treat the 1-year 24-hour storm event. The Chamber Treatment Row is coupled with additional subsurface chambers to provide storage for channel protection volume.

The proposed FocalPoint will treat stormwater runoff from impervious and landscaped area near the location of the employee entrance courtyard off Newbury Street as described above.

FocalPoint's are defined in Volume III Appendix B (Proprietary Systems). Proprietary systems are defined as a system or practice designed for stormwater runoff treatment from a development that has to meet all the stormwater requirements of Maine's Stormwater Law, and the Chapter 500 Stormwater Management Rule to be considered equivalent to any of the suggested structures found in the BMP Manual. A proprietary system must be live-tested for a variety of storm lengths and intensities. The system must remove at least 60% total phosphorous, with at least similar removals of metals (zinc and copper), and hydrocarbons; it must provide temperature reduction and channel protection storage detention either independently or in combination with another measure; and it must also be maintainable.

The FocalPoint system received approval by MDEP in February 2017. The proposed system was designed in accordance with MDEP approval letter dated February 2, 2017. A copy of

the letter is included in Attachment A. The manufacturer's review letter provided by ACF Environmental is included in Attachment B.

The development will be required to provide the treatment volume for the 1-inch times the subcatchments impervious area plus 0.4 inch times the subcatchments landscaped developed area. The FocalPoint system must convey the runoff from the tributary area for a 0.95-inch type III 24-hour storm as required by the MDEP. The FocalPoint system has been designed and has been modelled in HydroCAD to demonstrate the entire volume of a 1.6-inch type III 24-hour storm is treated prior to activation of the bypass/overflow such that the system qualifies for a full stormwater credit through the City of Portland. The filter media has an exfiltration rate of 100 inches/hour. The surface media must be 176 sq. ft./acre of impervious area and 176 sq. ft./acre of vegetated area multiplies by 0.4. The filter media depth shall be 1.5 feet. The ratio of the media volume stored above it is no less than 1 to 5. The runoff from the FocalPoint will enter a subsurface chamber storage system.

Runoff will enter the subsurface chamber storage system through an Isolator Row. The Isolator Row is required to convey the peak runoff from the 1-year type III 24-hour storm, without overflowing, at a rate of 0.227 cfs per chamber. The chamber system will provide storage for the water quality volume and release the flow over a 24 to 48-hour period. The subsurface chambers will be installed within a stone bed assumed to have 40% porosity.

Runoff from storms producing the water quality volume will be conveyed from the pond through the underdrain system. A valve will be placed on the underdrain to regulate the outflow through the underdrain. The valve will be field adjusted to maintain the outflow time between 24 and 48 hours. Yearly maintenance of the FocalPoint system will include monitoring the outflow after a rainfall event to ensure the outflow time is within the required parameters and inspecting the system for accumulation of sediment within the Isolator Row. Prior to construction, the applicant will enter into an inspection and maintenance contract that will cover a five-year time period. Larger storms will be conveyed from the subsurface system though an Outlet Control Structure (OCS1) with a weir set at the water quality elevation.

Subcatchment 2AS is tributary to the proposed FocalPoint. The tributary area consists of the adjacent courtyard/patio area and landscaped area. The following table presents the FocalPoints performance:

Table 2		
FocalPoint 1		
	REQUIRED	**PROVIDED**
Impervious Area		1,222 sq. ft.
Vegetated Developed Area		1,695 sq. ft.
Water Quality Treatment Volume	159 cu. ft.	
Runoff 0.95 inch Type III Storm	0.02 cfs	
Runoff 1.6 inch Type III Storm	0.05 cfs	
FocalPoint mulch bed elevation		43.00
Max. stage over filter for 0.95" storm		43.78
Max. stage over filter for 1.6" storm		46.05
Rim of overflow structure		46.85
Filter surface area	9 sq. ft.	20 sq. ft.
Temporary Volume stored over filter (0.95" storm)		44 cu. ft.
Temporary Volume stored over filter (1.6" storm)		44 cu. ft.
Filter media ratio	> 1 to 5	> 1 to 5
1-Year Storm Peak Flow		0.12 cfs
Cultec Recharger 330XLHD Isolator Row Chambers required	1	2
Cultec Recharger 330XLHD required for Water Quality Volume	3	4
Total Cultec Recharger 330XLHD Chambers		27
Treatment Volume	159 cu. ft.	
Storage Base Elevation		40.00 ft.
Water Quality Volume Elevation		41.10 ft.

Four chambers are provided for the peak flow control as required to provide treatment for the water quality volume. Two of the chambers will make up the Isolator Row as required for the one year storm peak flow. The weir outlet for OCS1 will be set at the water quality volume elevation. Runoff for the water quality volume will be released from the chambers by the underdrain.

The FocalPoint filter storage tables are included in Attachment C.

The proposed stormwater system will be tied into the existing sewer system on Mountfort Street since there does not appear to be an existing drainage system in the area.

9.4 Conclusion – Overall Treatment

Table 3, below, presents a summary of the provided treatment by the FocalPoint system which satisfies the General Standard.

Table 3		
Treatment Summary		
Type	Impervious	Pervious
Non-roof area treated by FocalPoint	1,222 sq. ft.	1,695 sq. ft.
Non-roof area untreated	1,093 sq. ft.	4,912 sq. ft.
Total non-roof developed area	2,315 sq. ft.	6,607 sq. ft.
Percent Treated	52.8%	25.65%
Required Percent Treated per City Section 5.II.D	50%	0%

The proposed project will utilize one FocalPoint to mitigate runoff from the redevelopment as required by the BMP Standards and the City of Portland Standards. The redevelopment is required to control runoff from 50% of the non-roof impervious area. As proposed, the project is controlling 52.8% of the non-roof impervious area.

A Water Quality Map depicting the treated area is included in Attachment D.

9.5 Water Quantity Sizing Requirements

The stormwater management study provides an analysis of predevelopment and post-development stormwater runoff rates.

The Natural Resource Conservation Service Medium Intensity Soil Survey was used to identify onsite and off-site soils. The project site is comprised of hydrologic soil type D and what was identified as 'Cut and Fill Land", which was assumed to be soil type D. The off-site areas were modeled as hydrologic soil type D based on the Medium Intensity Soil Survey. An excerpt from the Medium Intensity Soil Survey follows this page.

The SCS TR-20 methodology, using the HydroCAD program, was employed by Gorrill Palmer to analyze predevelopment and post-development conditions. A 24-hour, SCS Type III storm distribution for the 2-, 10-, and 25-year storm frequency were used. The corresponding rainfall amount for each storm is 3.1", 4.6", and 5.8", respectively. HydroCAD computations are provided in Attachment E.

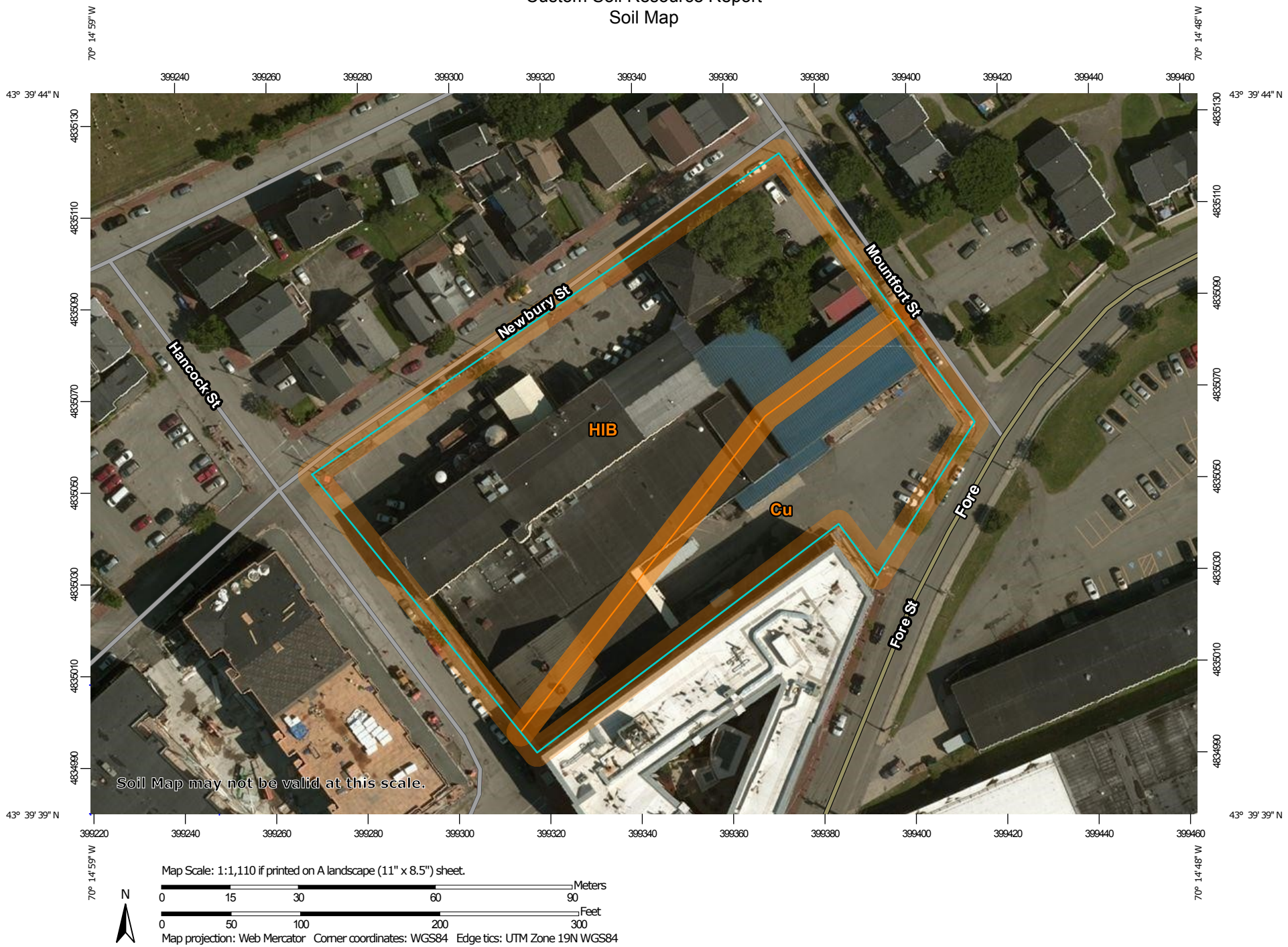
Land use cover, delineations of watershed hydraulic flow paths, and hydrologic soils data were obtained using the following data:

1. Portland 7.5 Minute Quadrangle Maps prepared by the U.S.G.S.
2. On-site topographic survey with 2' contour intervals from an existing conditions plan of the site
3. Aerial Photography of the project site, obtained from the Maine Office of GIS.
4. Natural Resource Conservation Service Medium Intensity Soil Survey
5. Field Reconnaissance.

Predevelopment Conditions

The drainage study analyzes the watershed in the predevelopment condition as depicted on the Predevelopment Watershed Map.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,110 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 12, Sep 15, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 31, 2013—Aug 11, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Cu	Cut and fill land	0.7	28.9%
HIB	Hinckley loamy sand, 3 to 8 percent slopes	1.7	71.1%
Totals for Area of Interest		**2.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

The predevelopment was analyzed as four subcatchments.

Subcatchment 1S consists of approximately 7,405 sq. ft. of onsite roof area, 13,983 sq. ft. of onsite parking area, 13,896 sq. ft. of offsite road area, and 5,358 sq. ft. of offsite sidewalk area.

Subcatchment 2S consists of approximately 3,746 sq. ft. of onsite roof area, 3,267 sq. ft. of onsite parking area, 5,097 sq. ft. of onsite vegetation, 3,006 sq. ft. of offsite road area, and 1,437 sq. ft. of offsite sidewalk area.

Subcatchment 3S consists of approximately 2,134 sq. ft. of onsite stone walkway, 38,507 sq. ft. of onsite roof area, and 9,932 sq. ft. of onsite parking area.

Subcatchment 4S consists of approximately 2,701 sq. ft. of onsite roof area, and 6,447 sq. ft. of onsite parking area.

Three points of interest (POI's) were analyzed corresponding to the subcatchments. The POI's are as follows:

- POI1 – Catch basin on Hancock Street
- POI2 – Catch basin on Mountfort Street
- POI3 – Property line on Fore Street.

POI1 consists of Watershed 1S and is shown at the catch basin on Hancock Street across from Middle Street.

POI2 consists of Watershed 2S and is shown at the catch basin on Mountfort Street as it is the closest point to the property line. The catch basin is tied into the existing sewer manhole on Fore Street. For the purposes of comparing flows to the post-development conditions, it is assumed that if the post-development flow at the sewer manhole is less than the predevelopment flow at the catch basin, the flooding standard will be satisfied.

POI3 consists of two watersheds. Watershed 3S drains to an existing catch basin onsite. The runoff is then piped subsurface to a sewer manhole in Fore Street. Watershed 4S consists of surficial flow where runoff exits the property at Fore Street. The runoff from Watershed 4S follows a curb line on Fore Street approximately 15 feet to a catch basin where the runoff enters the sewer system on Fore Street. Since the runoff from Watershed 3S and 4S merge just south of the site, they are modelled to the same POI3 at the property line on Fore Street for the purposes of comparing flows to the post-development conditions.

Table 4 below presents the peak flow rates at the points of interest in the predevelopment condition for the 2, 10, and 25-year 24-hour storm. HydroCAD calculations for pre-development conditions are included in Attachment E. A watershed map for the predevelopment conditions (Drawing WS1) is included in Attachment F.

Table 4 – Predevelopment Peak Flow Rates (cfs)			
Point of Interest	Peak Flow (cfs)		
	2 Year 3.1 inches	10 Year 4.6 inches	25 Year 5.8
	Pre	Pre	Pre
1	2.82	4.22	5.34
2	1.02	1.61	2.08
3	4.15	6.20	7.84

Post-development Conditions

Analysis for the post-development condition consist of determining post-development peak flows and limiting the post-development flows to predevelopment levels. Detention will be provided through attenuation of peak flows due to water quality storage as well as storage of the 25-year peak runoff volume within the subsurface chambers and storage provided by the green roof.

The post-development was analyzed as six subcatchments.

Subcatchment 1S consists of approximately 13,985 sq. ft. of onsite roof area, 23,487 sq. ft. of roadway and onsite driveway, and 1,859 sq. ft. of onsite vegetated area.

Subcatchment 2S consists of approximately 8,444 sq. ft. of road area and 2,207 sq. ft. of landscaped area.

Subcatchment 2AS consists of approximately 1,222 sq. ft. of impervious courtyard area and 1,677 sq. ft. of landscaped area.

Subcatchment 2BS consists of approximately 1,327 sq. ft. of impervious roof area, 1,899 sq. ft. of impervious pavement area, and 177 sq. ft. of landscaped area.

Subcatchment 3S consists of approximately 2,134 sq. ft. of onsite stone walkway, 687 sq. ft. of landscaped area, 2,241 sq. ft. of impervious driveway area and 22,561 sq. ft. of impervious roof area.

Subcatchment 3AS consists of approximately 33,009 sq. ft. of pervious green roof area.

Three points of interest (POI's) were analyzed corresponding to the subcatchments. The POI's are as follows:

- POI1 – Catch basin on Hancock Street
- POI2 – Catch basin on Mountfort Street
- POI3 – Property line on Fore Street.

POI1 consists of Subcatchment 1S and is shown at the catch basin on Hancock Street across from Middle Street.

POI2 consists of three watersheds. Watershed 2S is surficial runoff starting at the northeastern side of the property near the intersection of Newbury Street and

Mountfort Street. The surficial runoff flows south to a catch basin near the intersection of Mountfort Street and Fore Street. The catch basin is tied into an existing sewer manhole on Fore Street. Watershed 2AS is the area tributary to the FocalPoint. Runoff from this area is treated then stored in subsurface chambers. Runoff is then conveyed to the existing sewer line in Mountfort Street which is connected to the same sewer manhole on Fore Street as Watershed 2S. Watershed 2BS is impervious roof area, impervious pavement area, and vegetated area which is conveyed to the existing sewer line in Mountfort Street, bypassing treatment via stormdrain.

POI3 consists of two watersheds. Due to the addition of building roof area, Watershed 4S has become part of Watershed 3S. Watershed 3S is impervious roof area, impervious pavement area, and pervious walkway area. Watershed 3AS is the area tributary to the green roof. Runoff from this area is stored in the green roof media. Runoff is then conveyed to an onsite manhole which is then conveyed to the existing sewer line in Fore street. POI3 is taken at the property line to show comparison to the predevelopment conditions.

HydroCAD calculations for post-development conditions are included in Attachment E. A watershed map for the post-development conditions (Drawing WS2) is included in Attachment F.

A comparison of predevelopment and post-development peak flow at the POI locations is presented in Table 5.

Table 5 – Comparison of Peak Flows (cfs)

Point of Interest	Peak Flow (cfs)					
	2 – Year 3.1 inches		10 – Year 4.6 inches		25 –Year 5.8 inches	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
1	2.82	2.77	4.22	4.17	5.34	5.29
2	1.02	0.95	1.61	1.48	2.08	1.88
3	4.15	2.90	6.20	5.11	7.84	6.68

As can be seen from Table 5, the peak flows at the Points of Interest are less than predevelopment levels for POI1, POI2, and POI3.

Reduction in peak flows at POI1 is due to the reduction of watershed area. This was achieved by using a catch basin and stormdrain system to convey runoff to POI2 where chamber storage is provided.

Reduction in peak flows at POI2 is due to a reduction of watershed area and subsurface chamber storage. Due to the proposed buildings, a portion of watershed is now conveyed to POI3. Subsurface chambers associated with the FocalPoint, which provides water quality treatment, detain the water quality volume. Storage tables are included in Attachment C. The detention of the water quality volume attributes to the reduction in peak flow at POI2.

Reduction in peak flows at POI3 is due to storage volume provided by the proposed green roof. The green roof is 33,009 sf in area and is shown on the diagram included in Attachment G. The green roof will utilize a Miradrain G4 Drainage Composite, the product sheet is included in Attachment I and indicates the green roof can store 0.38 inches per sq. ft. With a green roof area of 33,009 sq. ft., the green roof will provide 1,045 cu. ft. of storage volume as shown in Attachment H. The HydroCAD calculations in Attachment E for the 2-year 24-hour storm event post development have been modeled to provide storage of approximately 1,033 cu. ft. Storage has been modeled for the 2-year event with discharge provided by sixteen 8-inch drains and for the 25-year event the peak elevation is 0.01' above the green roof storage capacity. However, upon final design of the green roof, the number of drains may be altered to provide additional storage as determined by the structural engineer. At this time we have modeled the minimum amount of storage

9.6 Conclusion – Overall Water Quantity

The peak flow to the Points of Interests have been reduced to below predevelopment peak levels for the 2-year and 10-year storms at POI1, POI2, and POI3 meeting the Flooding Standard.

10. Construction BMPs

Additional water quality treatment will be provided during construction by best management practices (BMP). Standard BMP's to be employed include siltation fencing around the downslope construction perimeter, stabilized construction entrances, and siltation sacks.

11. Post-Construction Stormwater Management Plan

The stormwater facilities will be maintained by the Applicant, 86 Newbury Street, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report.

Long-term operation/maintenance for the stormwater facilities must comply with Chapter 32 of the City of Portland Code of Ordinances. An excerpt for the annual report requirements is provided below:

> *The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.*

Snow Storage:
Plowed snow stored on-site shall not be placed over the FocalPoint filter system. Snow shall be removed from the site by a private commercial waste hauler.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to observe that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Ditches, Swales, and other Open Stormwater Channels:
Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sideslopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Inlet/Outlet Control Structures:
Inspect structures and piping 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure.

Stormdrain Outlets:
Inspect outlets 2 times per year (preferably in Spring and Fall) to ensure that the outlets are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit Repair any erosion damage at the stormdrain outlet.

Subsurface Detention Chambers:
Inspect chambers per manufacturer's recommendation. At a minimum, inspect chambers two times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove sediment from isolator row when depth of sediment reaches three inches.

FocalPoint System:
A five-year maintenance and inspection contract shall be obtained with a professional with knowledge of erosion and stormwater control including experience with the FocalPoint system. The contract shall be renewed before its expiration. At a minimum the system shall be inspected every six months. Remove sediment and provide maintenance as required based upon the inspection.

Green Roof:
A maintenance and inspection contract shall be obtained with a trained and qualified professional using horticulture and safety best practices, as working on elevated structures may require safety training, and specialized protective equipment. At a minimum the system should be inspected per manufacture's recommendation. Basic green roof maintenance involves watering, weeding, and plant care in the spring, summer, and fall seasons.

12. Conclusion

Gorrill Palmer has been retained by 86 Newbury Street, LLC to prepare plans and permit applications for a proposed multi-use development, located at 86 Newbury Street in Portland, Maine. A stormwater management plan pursuant to the regulations of MDEP Chapter 500 Stormwater Management Rules including General, Flooding, and Basic Standards is required by the City of Portland. The basic and flooding standards have been met through detention and implementation of erosion and sedimentation controls. A stormwater management plan to provide treatment of runoff that will provide for cooling of the runoff from impervious areas, sediment removal, and subsurface filtration treatment has been proposed in the Erosion and Sedimentation Control report which will meet the intent of the Chapter 500 Standards.

13. Attachments

Attached to this section are the following items:

Attachment A – Maine Department of Environmental Protection FocalPoint Approval letter
Attachment B – Manufacturer's Review Letter
Attachment C – FocalPoint Storage Tables
Attachment D – Water Quality Map
Attachment E – HydroCAD Calculations
Attachment F – Pre/Post Watershed Map
Attachment G – Green Roof and Pervious Area Diagram
Attachment H – Green Roof Storage Table
Attachment I – MiraDRAIN Product Sheet

ATTACHMENT A

MAINE DEPARTIMENT OF ENVIRONMENTAL PROTECTION FOCALPOINT APPROVAL LETTER

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

February 2, 2017

Stormwater Systems ACF-Convergent Water Technologies Alliance
23 Faith Drive
Gorham, ME 04038
ATTN: Robert Woodman and Scott Gorneau

Dear Mr. Woodman and Mr. Gorneau:

This letter replaces the May 16, 2016 approval from the Department of Environmental Protection (Department) that authorized the use of the FocalPoint system. The FocalPoint system (a high performance modular biofiltration system), when installed in series with a subsurface chamber-based treatment row, meets the requirements of the General Standards (Section 4.C.) of the Stormwater Management Rules (Chapter 500), provided that the system is filled with the FocalPoint engineered filter media; it is sized to meet the requirements of the General Standards (Section 4.B.); and it is installed, operated and maintained in accordance with the following provisions:

1. The FocalPoint system must be sized in accordance with the manufacturer's latest field test results with the goal of treating 90% of the annual runoff volume. To accomplish this, the system must be modelled in HydroCAD (or similar TR-55 modelling software) to demonstrate that the entire volume of a 0.95 inch Type III 24-hr storm is treated prior to activation of the bypass/overflow (typically set at 6" to 12" above the mulch surface). When sizing the FocalPoint system to meet Chapter 500, note that runoff from the entire contributing drainage area, including pervious areas, must be included in the modeled runoff values.

2. The surface area of the media within the FocalPoint must be a minimum of 174 square feet per 1 acre of impervious area treated (26 sq. ft. per 0.15 acres). The thickness of the media is to be no less than 1.5 ft. (18 inches) and the ratio of the surface area of the filter media bed in square feet to the ponding volume in cubic feet must be no less than 1 to 5.

3. The FocalPoint system consists of five components that include: 1) an open cell underdrain; 2) a wide aperture separation mesh wrap around the underdrain; 3) a layer of clean washed, 3/8" diameter bridging stone; 4) advanced high flow rate engineered media with an infiltration rate of 100 inches per hour; and 5) double shredded hardwood mulch. These components are built from the bottom up to create a mostly permeable profile that measures 3 feet from bottom of underdrain to top of mulch. The ponding

depth above the mulch surface is typically 6 to 12 inches and varies based on site conditions. An overflow outlet should be placed above the ponding depth.

4. The FocalPoint system requires the establishment of vegetation that is tolerant of wet and dry conditions. Plants that are not performing as desired should be replaced as needed. A list of appropriate plants for use in the FocalPoint system is provided at: http://www.acfenvironmental.com/products/stormwater-management/filtration/focal-point/.

5. The FocalPoint biofiltration system must be placed in-line with a subsurface chamber-based treatment row that is approved by the Department such that both the treated discharge and the bypass discharge from the FocalPoint system drain to the treatment row. The treatment row must be sized to treat the peak flow from a 1-year, 24-hour storm event. The treatment row structure must be continuous and without obstacle for cleaning, and must have access at both ends for the removal of accumulated sediment and debris. The treatment row must be underlain with a bottom surface consisting of 2 layers of woven geotextile (e.g., ACF S300) that extends 18 to 24 inches beyond all sides of the bottom of the structure.

6. Additional storage downstream of the FocalPoint and treatment row will be required to store at least the sum of 1.0 inch of runoff from the impervious areas and 0.4 inches of runoff from the lawn and landscaped areas that drain to the system unless attenuation of the channel protection volume is not required (i.e. direct discharge to a lake, tidal waters, or a major river). An external outlet control structure must control the flow out of a downstream storage system, sized for the entire channel protection volume, and drain in no less than 24 hours or more than 48 hours.

7. If required for flooding control, the storage system can be sized to provide for the storage and release of the peak flow with a regulated flow rate from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows from the project site do not exceed the peak flow prior to undertaking the project.

8. The applicant must demonstrate that the design meets all the manufacturer's specifications and shall be reviewed by the manufacturer prior to submission to the Department for approval. Review and approval of the design by the manufacturer will be sufficient to demonstrate conformance with the manufacturer's specifications. The FocalPoint system must be installed by a manufacturer's certified installer or under the supervision of a manufacturer's representative.

9. Components of the system that are delivered in bulk (i.e., mulch, high flow media and clean washed bridging stone), should be contained in nylon super sacks to promote ease of storage and protection during on-site construction activities.

10. The FocalPoint and treatment row system should be inspected and maintained if necessary at least once every six months to maintain the established efficiency for pollutant removal. Prior to construction, a five-year binding inspection and maintenance contract must be provided prior to the Department for review and approval, and must be renewed before contract expiration. The contract will be with a professional with knowledge of erosion and stormwater control, including experience with the proposed system.

11. The overall stormwater management design must meet all Department criteria and sizing specifications and will be reviewed and approved by the Department prior to use.

12. This approval is conditional on full-scale, cold climate field testing results, performed in accordance with the Department's protocols, confirming that the pollutant removal efficiency and sizing of the FocalPoint system are appropriate. The "permit shield" provision (Section 14) of the Chapter 500 rules will apply, and the Department will not require the replacement of the system if, with proper maintenance, pollutant removals do not satisfy the General Standard Best Management Practices.

Questions concerning this decision should be directed to David Waddell at (207) 215-6932 or Jeff Dennis at (207) 215-6376.

Sincerely,

Mark Bergeron, P.E.
Director
Bureau of Land Resources

cc: Don Witherill, Maine DEP

ATTACHMENT B

MANUFACTURER'S REVIEW LETTER

ACF Environmental
2831 Cardwell Rd
Richmond, VA 23234

Benjamin Grondin
Design Engineer
Gorrill-Palmer
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106

April 9, 2018

SUBJECT: Plan Review and Construction Oversight Commitment
Shipyard Redevelopment

Dear Benjamin,

Thank you for forwarding the check list, HydroCAD model and preliminary plans dated March 2018 for the Shipyard Redevelopment project in Portland, Maine to ACF environmental for review of the proposed FocalPoint biofiltration system.

Our team has reviewed the plans and take no exceptions to the location and application of the FocalPoint system for this project.

It appears that the system has been designed in accordance with the design criteria set forth by Maine DEP in the May 16, 2016 FocalPoint system approval letter and meets the system's specifications etc.

With regard to the installation, ACF Environmental will host a preconstruction meeting with the site contractor and will be on-site during the entire installation to ensure that the installation is being conducted in accordance with our standard installation procedures.

ACF Environmental will also provide the first year's maintenance on the FocalPoint bed area.

We look forward to a successful completion of this project.

Sincerely,

W. Scott Gorneau, P.E.
National Manager – Stormwater Systems
ACF Environmental

ATTACHMENT C

FOCALPOINT STORAGE TABLES

Stage-Area-Storage for Pond P1: Cultec Chamber

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
39.50	0	42.15	268
39.55	3	42.20	272
39.60	6	42.25	276
39.65	8	42.30	279
39.70	11	42.35	283
39.75	14	42.40	286
39.80	17	42.45	289
39.85	19	42.50	292
39.90	22	42.55	295
39.95	25	42.60	298
40.00	28	42.65	300
40.05	34	42.70	303
40.10	40	42.75	306
40.15	46	42.80	309
40.20	52	42.85	312
40.25	58	42.90	314
40.30	64	42.95	317
40.35	70	43.00	**320**
40.40	76		
40.45	82		
40.50	88		
40.55	94		
40.60	100		
40.65	106		
40.70	112		
40.75	118		
40.80	124		
40.85	130		
40.90	136		
40.95	141		
41.00	147		
41.05	153		
41.10	159	← Water Quality Volume	
41.15	165		
41.20	170		
41.25	176		
41.30	182		
41.35	187		
41.40	193		
41.45	198		
41.50	204		
41.55	209		
41.60	214		
41.65	220		
41.70	225		
41.75	230		
41.80	235		
41.85	240		
41.90	245		
41.95	250		
42.00	254		
42.05	259		
42.10	263		

ATTACHMENT D

WATER QUALITY MAP

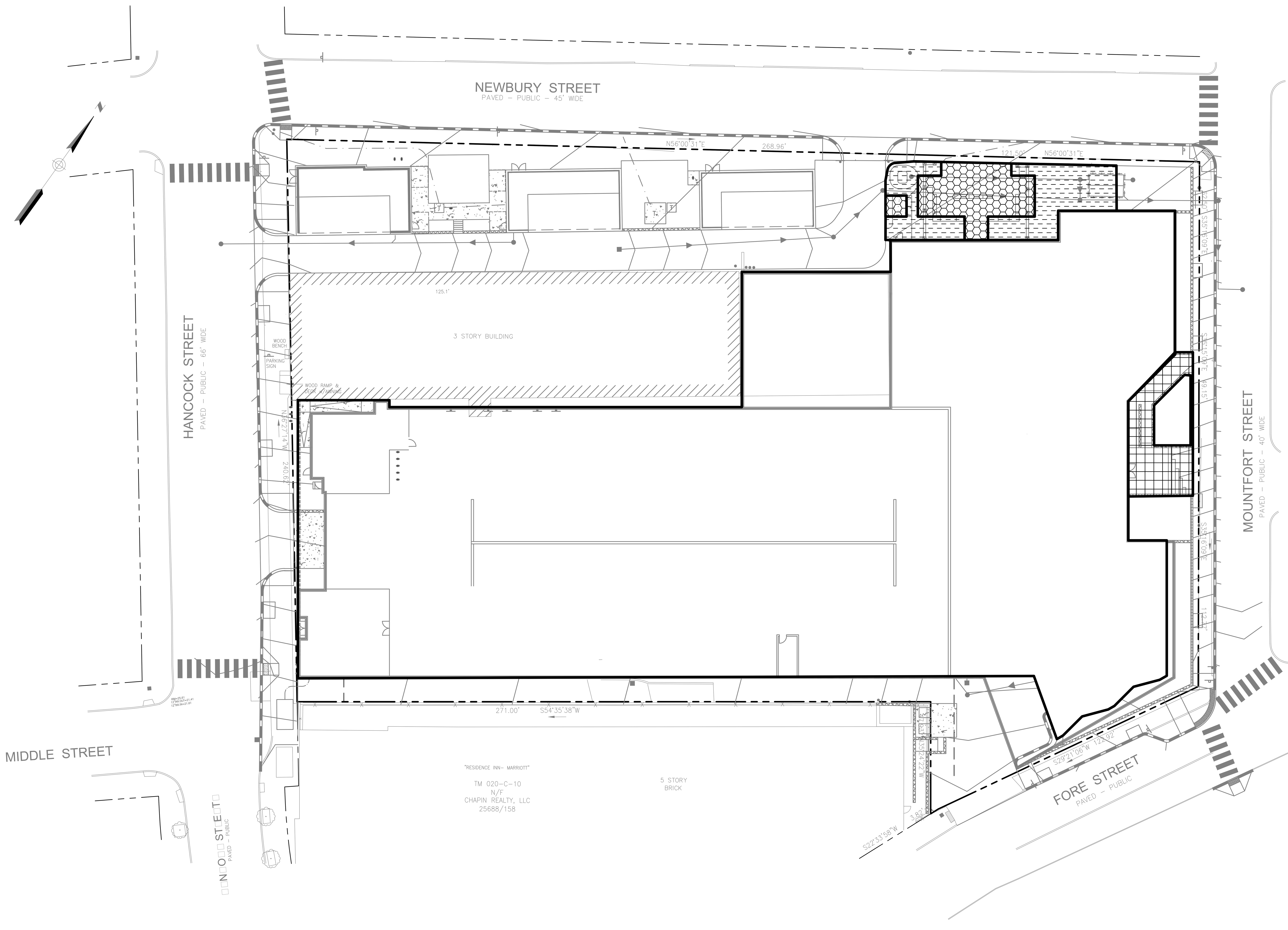


Table 3 - Treatment Summary		
	Impervious (Non-Roof)	Landscaped
Area Treated by Focal Point 1 (SF)	1,222	1,695
Total Area Treated (SF)	1,222	1,695
Area Untreated (SF)	1,093	4,912
Total Area (SF)	2,315	6,607
Percent Treated	52.8%	25.65%
Percent Required	50%	0%

LEGEND:

- NEW NON–ROOF IMPERVIOUS TREATED BY FOCALPOINT #1 (1,222 SF)
- NON–ROOF REDEVELOPED AREA UNTREATED (1,093 SF)
- VEGETATED AREA TREATED BY FOCALPOINT #1 (1,695 SF)

1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE – LUCAS S. ANTHONY – LICENSED – PROFESSIONAL ENGINEER

7/24/18

U:\3184_Shipyard Brewing\Z – CAD\DWG\3184-WQ.dwg 8/15/2018 4:20 PM

Rev.	Date	Revision
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft:	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–WQ.dwg		

This plan shall not be modified without written permission from Gorrill Palmer (GP). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GP.

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207.772.2515

Drawing Name: **Water Quality Map**

Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME

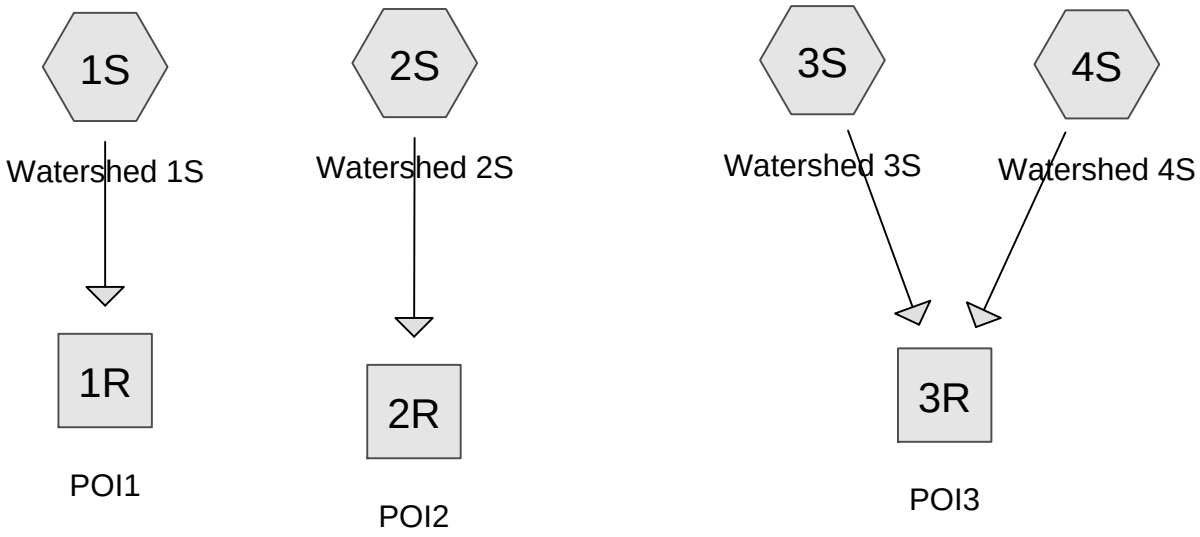
Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

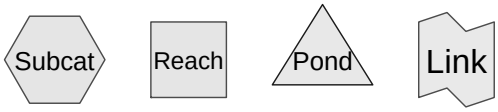
Drawing No. **WQ**

ATTACHMENT E

HYDROCAD CALCULATIONS

PRE-DEVELOPMENT





Routing Diagram for Pre_2018FEB22
Prepared by Gorrill Palmer, Printed 8/16/2018
HydroCAD® 10.00-16 s/n 01265 © 2015 HydroCAD Software Solutions LLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1S Runoff Area=40,642 sf 100.00% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=5.34 cfs 17,433 cf

Subcatchment 2S: Watershed 2S Runoff Area=16,553 sf 66.51% Impervious Runoff Depth>4.70"
Tc=5.0 min CN=93 Runoff=2.08 cfs 6,489 cf

Subcatchment 3S: Watershed 3S Runoff Area=50,573 sf 95.78% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=6.64 cfs 21,693 cf

Subcatchment 4S: Watershed 4S Runoff Area=9,148 sf 100.00% Impervious Runoff Depth>5.15"
Tc=5.0 min CN=98 Runoff=1.20 cfs 3,924 cf

Reach 1R: POI1 Inflow=5.34 cfs 17,433 cf
Outflow=5.34 cfs 17,433 cf

Reach 2R: POI2 Inflow=2.08 cfs 6,489 cf
Outflow=2.08 cfs 6,489 cf

Reach 3R: POI3 Inflow=7.84 cfs 25,617 cf
Outflow=7.84 cfs 25,617 cf

Total Runoff Area = 116,916 sf Runoff Volume = 49,539 cf Average Runoff Depth = 5.08"
6.57% Pervious = 7,677 sf 93.43% Impervious = 109,239 sf

Summary for Subcatchment 1S: Watershed 1S

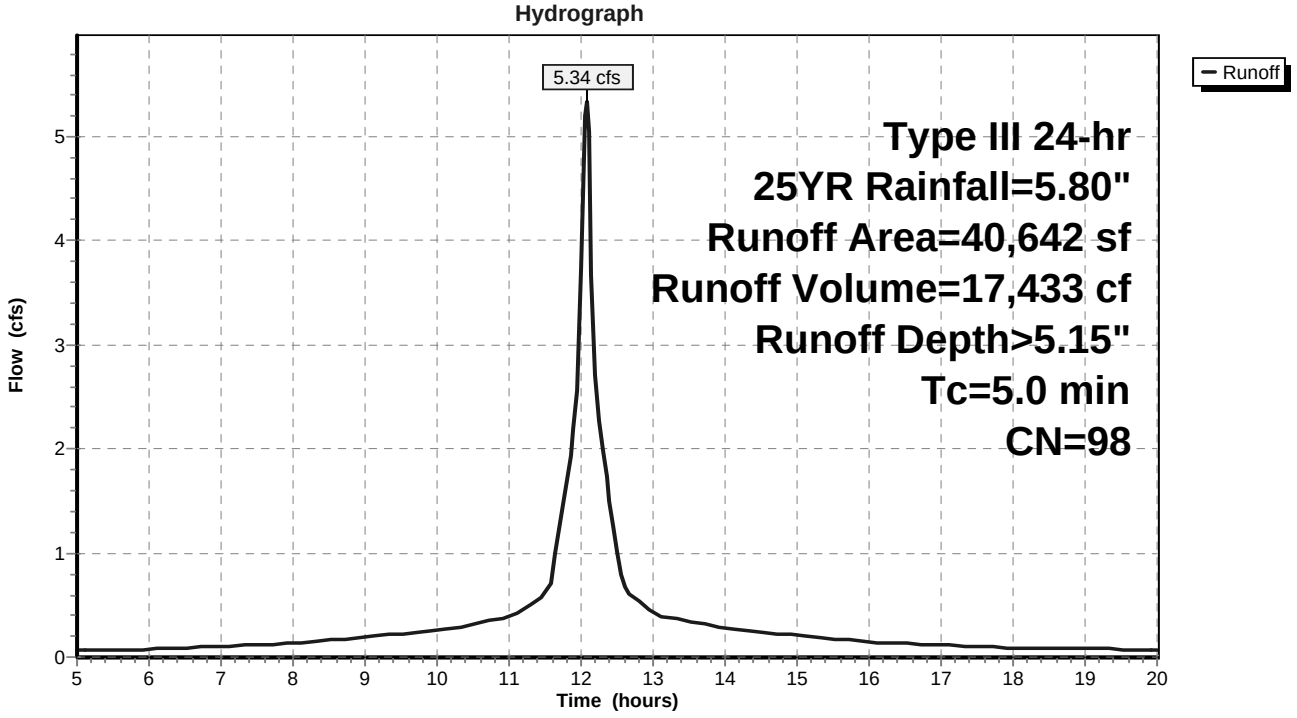
Runoff = 5.34 cfs @ 12.07 hrs, Volume= 17,433 cf, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
7,405	98	Roofs, HSG D
13,983	98	Paved parking, HSG D
13,896	98	Paved roads w/curbs & sewers, HSG D
5,358	98	Paved roads w/curbs & sewers, HSG D
40,642	98	Weighted Average
40,642		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Path**

Subcatchment 1S: Watershed 1S



Summary for Subcatchment 2S: Watershed 2S

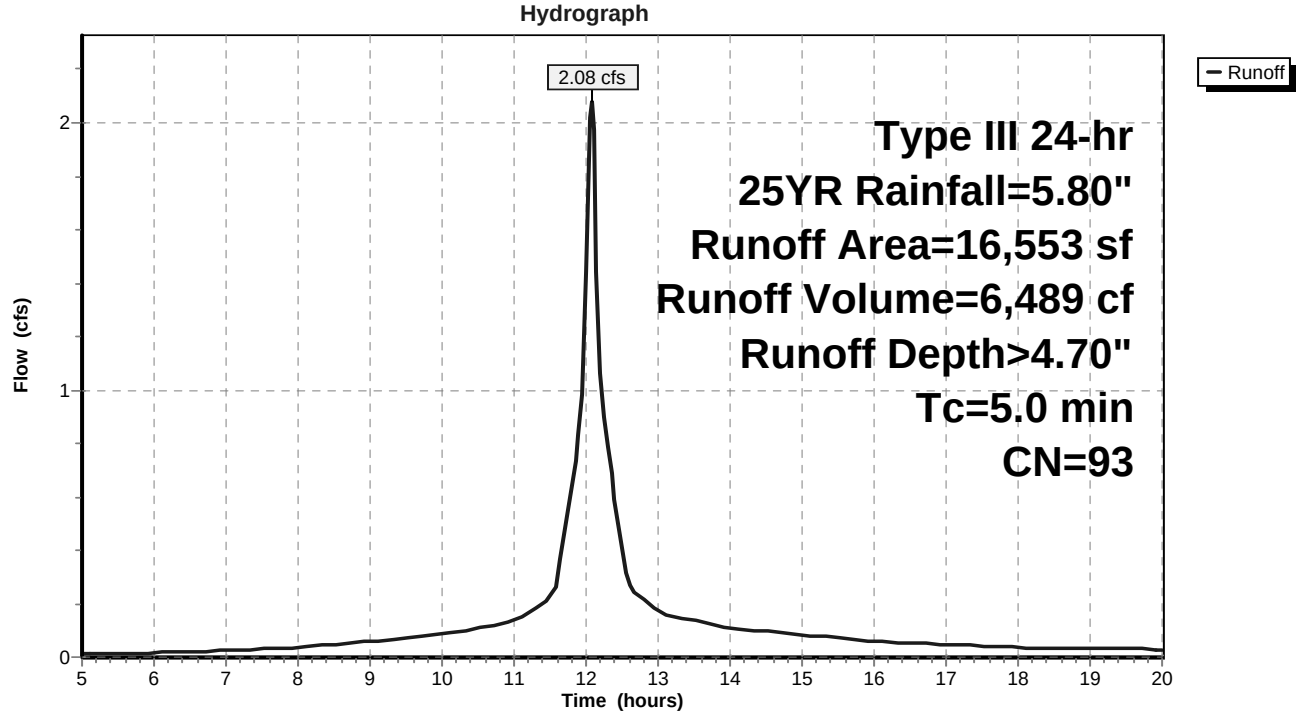
Runoff = 2.08 cfs @ 12.07 hrs, Volume= 6,489 cf, Depth> 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
3,746	98	Roofs, HSG D
3,267	98	Paved parking, HSG D
2,783	98	Paved roads w/curbs & sewers, HSG D
1,214	98	Paved roads w/curbs & sewers, HSG D
5,543	84	50-75% Grass cover, Fair, HSG D
16,553	93	Weighted Average
5,543		33.49% Pervious Area
11,010		66.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Segment AB**

Subcatchment 2S: Watershed 2S



Summary for Subcatchment 3S: Watershed 3S

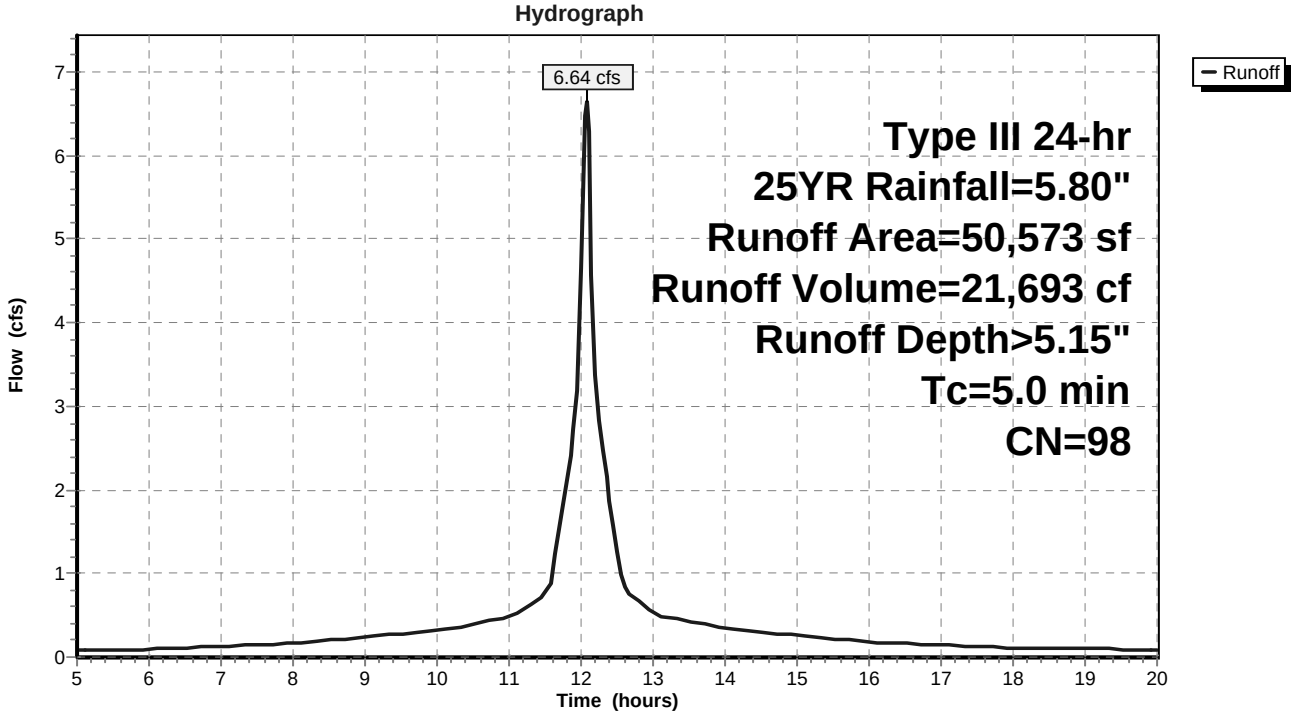
Runoff = 6.64 cfs @ 12.07 hrs, Volume= 21,693 cf, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
2,134	96	Gravel surface, HSG D
38,507	98	Roofs, HSG D
9,932	98	Paved parking, HSG D
50,573	98	Weighted Average
2,134		4.22% Pervious Area
48,439		95.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Path**

Subcatchment 3S: Watershed 3S



Summary for Subcatchment 4S: Watershed 4S

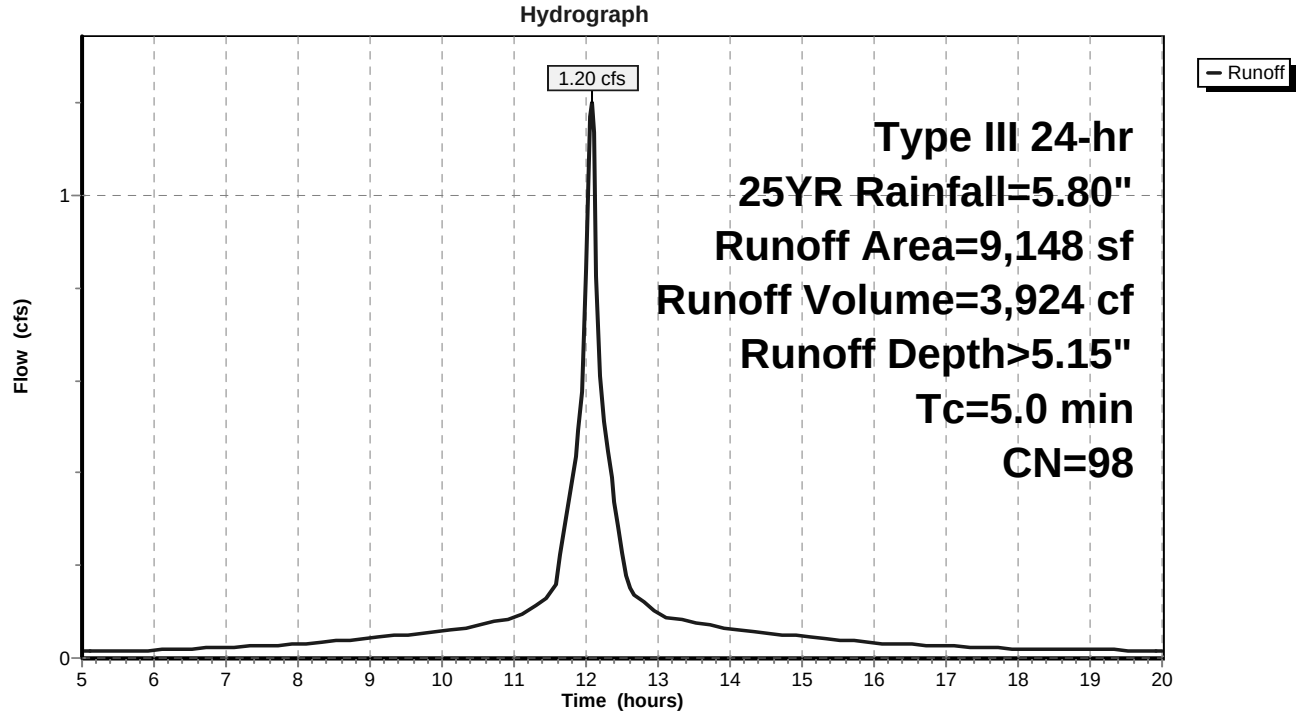
Runoff = 1.20 cfs @ 12.07 hrs, Volume= 3,924 cf, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
2,701	98	Roofs, HSG D
6,447	98	Paved parking, HSG D
9,148	98	Weighted Average
9,148		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Path**

Subcatchment 4S: Watershed 4S

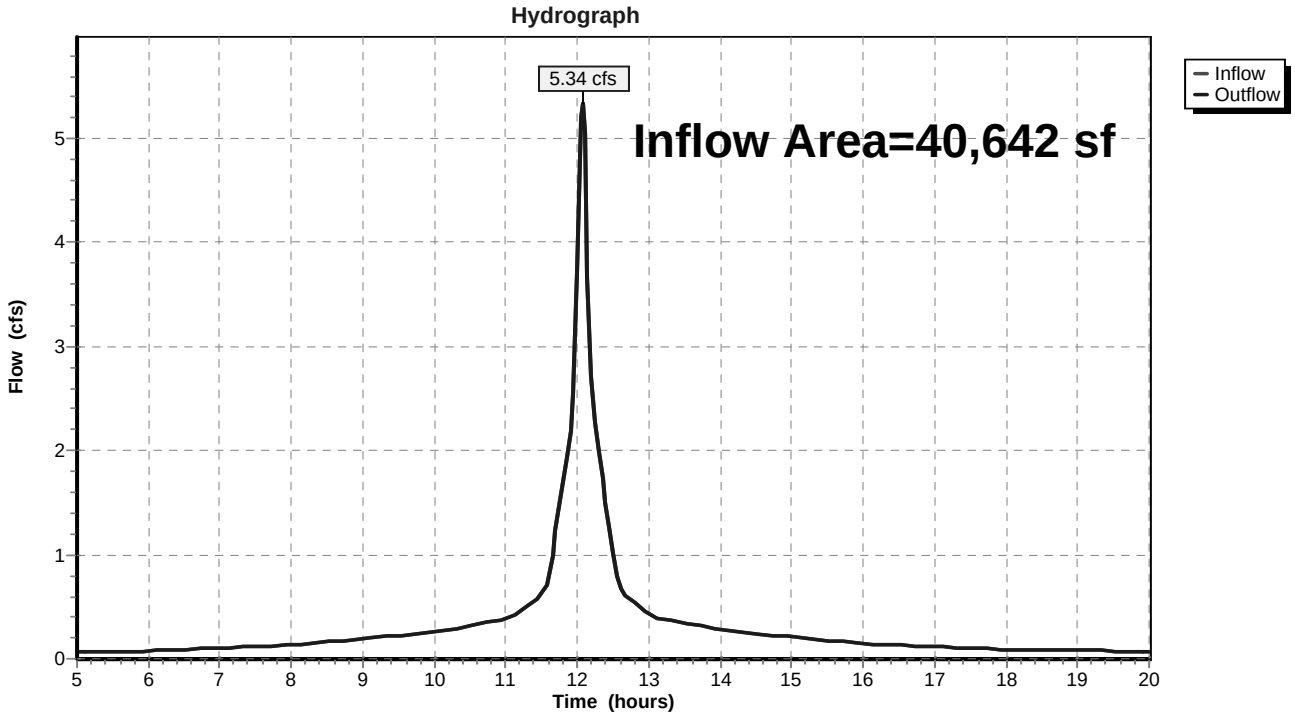


Summary for Reach 1R: POI1

Inflow Area = 40,642 sf,100.00% Impervious, Inflow Depth > 5.15" for 25YR event
Inflow = 5.34 cfs @ 12.07 hrs, Volume= 17,433 cf
Outflow = 5.34 cfs @ 12.07 hrs, Volume= 17,433 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: POI1

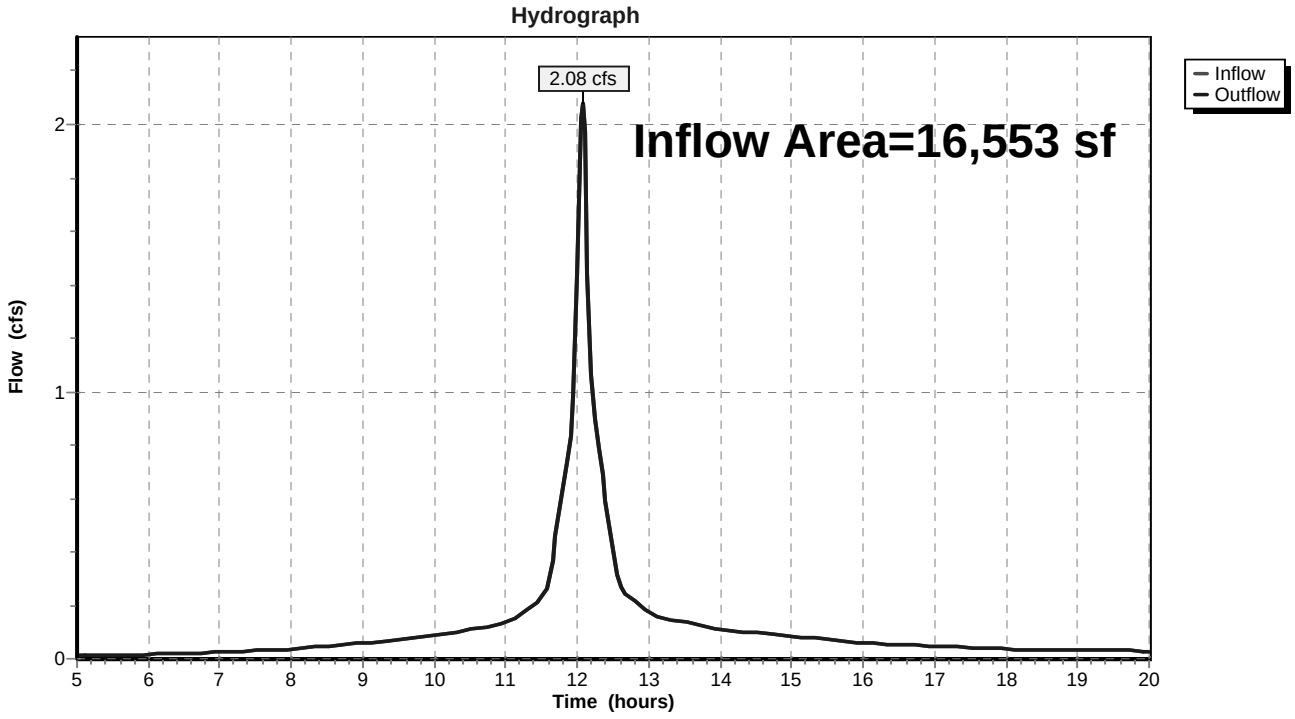


Summary for Reach 2R: POI2

Inflow Area = 16,553 sf, 66.51% Impervious, Inflow Depth > 4.70" for 25YR event
Inflow = 2.08 cfs @ 12.07 hrs, Volume= 6,489 cf
Outflow = 2.08 cfs @ 12.07 hrs, Volume= 6,489 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: POI2

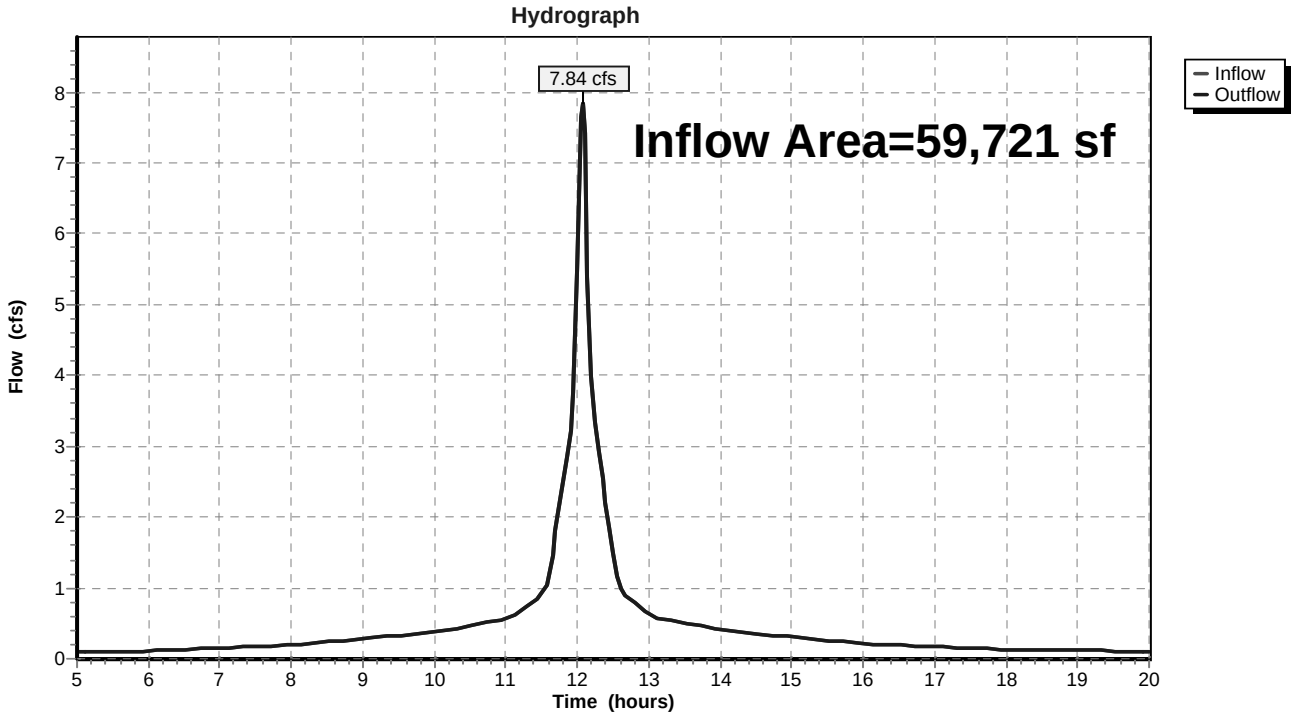


Summary for Reach 3R: POI3

Inflow Area = 59,721 sf, 96.43% Impervious, Inflow Depth > 5.15" for 25YR event
Inflow = 7.84 cfs @ 12.07 hrs, Volume= 25,617 cf
Outflow = 7.84 cfs @ 12.07 hrs, Volume= 25,617 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: POI3



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1S Runoff Area=40,642 sf 100.00% Impervious Runoff Depth>2.68"
Tc=5.0 min CN=98 Runoff=2.82 cfs 9,084 cf

Subcatchment 2S: Watershed 2S Runoff Area=16,553 sf 66.51% Impervious Runoff Depth>2.22"
Tc=5.0 min CN=93 Runoff=1.02 cfs 3,062 cf

Subcatchment 3S: Watershed 3S Runoff Area=50,573 sf 95.78% Impervious Runoff Depth>2.68"
Tc=5.0 min CN=98 Runoff=3.51 cfs 11,303 cf

Subcatchment 4S: Watershed 4S Runoff Area=9,148 sf 100.00% Impervious Runoff Depth>2.68"
Tc=5.0 min CN=98 Runoff=0.64 cfs 2,045 cf

Reach 1R: POI1 Inflow=2.82 cfs 9,084 cf
Outflow=2.82 cfs 9,084 cf

Reach 2R: POI2 Inflow=1.02 cfs 3,062 cf
Outflow=1.02 cfs 3,062 cf

Reach 3R: POI3 Inflow=4.15 cfs 13,348 cf
Outflow=4.15 cfs 13,348 cf

Total Runoff Area = 116,916 sf Runoff Volume = 25,494 cf Average Runoff Depth = 2.62"
6.57% Pervious = 7,677 sf 93.43% Impervious = 109,239 sf

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Watershed 1S Runoff Area=40,642 sf 100.00% Impervious Runoff Depth>4.05"
Tc=5.0 min CN=98 Runoff=4.22 cfs 13,731 cf

Subcatchment 2S: Watershed 2S Runoff Area=16,553 sf 66.51% Impervious Runoff Depth>3.60"
Tc=5.0 min CN=93 Runoff=1.61 cfs 4,961 cf

Subcatchment 3S: Watershed 3S Runoff Area=50,573 sf 95.78% Impervious Runoff Depth>4.05"
Tc=5.0 min CN=98 Runoff=5.25 cfs 17,086 cf

Subcatchment 4S: Watershed 4S Runoff Area=9,148 sf 100.00% Impervious Runoff Depth>4.05"
Tc=5.0 min CN=98 Runoff=0.95 cfs 3,091 cf

Reach 1R: POI1 Inflow=4.22 cfs 13,731 cf
Outflow=4.22 cfs 13,731 cf

Reach 2R: POI2 Inflow=1.61 cfs 4,961 cf
Outflow=1.61 cfs 4,961 cf

Reach 3R: POI3 Inflow=6.20 cfs 20,177 cf
Outflow=6.20 cfs 20,177 cf

Total Runoff Area = 116,916 sf Runoff Volume = 38,868 cf Average Runoff Depth = 3.99"
6.57% Pervious = 7,677 sf 93.43% Impervious = 109,239 sf

POST DEVELOPMENT

0.95 INCH STORM

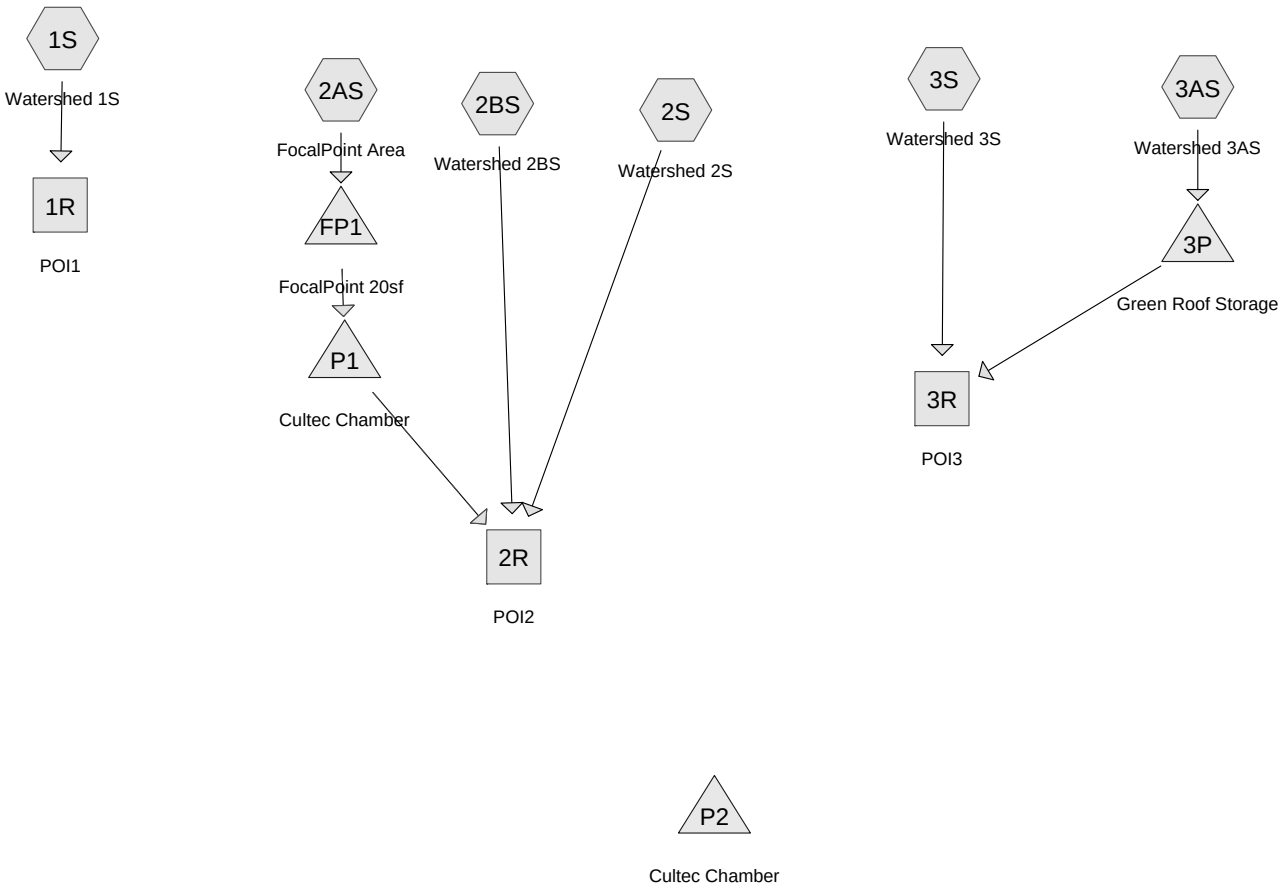
Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond FP1: FocalPoint 20sf Peak Elev=43.78' Storage=0 cf Inflow=0.02 cfs 55 cf
Primary=0.02 cfs 55 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 55 cf

1.6 INCH STORM

Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Pond FP1: FocalPoint 20sf Peak Elev=46.05' Storage=1 cf Inflow=0.05 cfs 159 cf
Primary=0.05 cfs 159 cf Secondary=0.00 cfs 0 cf Outflow=0.05 cfs 159 cf



Subcat Reach Pond Link

Routing Diagram for Post_FocalPoint1 18AUG14
Prepared by Gorrill Palmer, Printed 8/17/2018
HydroCAD® 10.00-16 s/n 01265 © 2015 HydroCAD Software Solutions LLC

Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Watershed 1S Runoff Area=39,331 sf 95.27% Impervious Runoff Depth=5.44"
Tc=5.0 min CN=97 Runoff=5.29 cfs 17,845 cf

Subcatchment 2AS: FocalPoint Area Runoff Area=2,917 sf 41.89% Impervious Runoff Depth=4.43"
Tc=5.0 min CN=88 Runoff=0.35 cfs 1,078 cf

Subcatchment 2BS: Watershed 2BS Runoff Area=3,403 sf 94.80% Impervious Runoff Depth=5.44"
Tc=5.0 min CN=97 Runoff=0.46 cfs 1,544 cf

Subcatchment 2S: Watershed 2S Runoff Area=10,651 sf 79.28% Impervious Runoff Depth=5.10"
Tc=5.0 min CN=94 Runoff=1.39 cfs 4,525 cf

Subcatchment 3AS: Watershed 3AS Runoff Area=33,009 sf 0.00% Impervious Runoff Depth=3.60"
Tc=0.0 min CN=80 Runoff=3.90 cfs 9,906 cf

Subcatchment 3S: Watershed 3S Runoff Area=27,623 sf 89.79% Impervious Runoff Depth=5.44"
Tc=5.0 min CN=97 Runoff=3.71 cfs 12,533 cf

Reach 1R: POI1 Inflow=5.29 cfs 17,845 cf
Outflow=5.29 cfs 17,845 cf

Reach 2R: POI2 Inflow=1.93 cfs 7,147 cf
Outflow=1.93 cfs 7,147 cf

Reach 3R: POI3 Inflow=6.68 cfs 21,449 cf
Outflow=6.68 cfs 21,449 cf

Pond 3P: Green Roof Storage Peak Elev=0.04' Storage=1,414 cf Inflow=3.90 cfs 9,906 cf
Outflow=3.05 cfs 8,916 cf

Pond FP1: FocalPoint 20sf Peak Elev=46.85' Storage=52 cf Inflow=0.35 cfs 1,078 cf
Primary=0.05 cfs 792 cf Secondary=0.30 cfs 286 cf Outflow=0.35 cfs 1,078 cf

Pond P1: Cultec Chamber Peak Elev=41.17' Storage=167 cf Inflow=0.35 cfs 1,078 cf
Primary=0.03 cfs 843 cf Secondary=0.28 cfs 235 cf Outflow=0.31 cfs 1,078 cf

Pond P2: Cultec Chamber Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf

Total Runoff Area = 116,934 sf Runoff Volume = 47,432 cf Average Runoff Depth = 4.87"
35.72% Pervious = 41,768 sf 64.28% Impervious = 75,166 sf

Summary for Subcatchment 1S: Watershed 1S

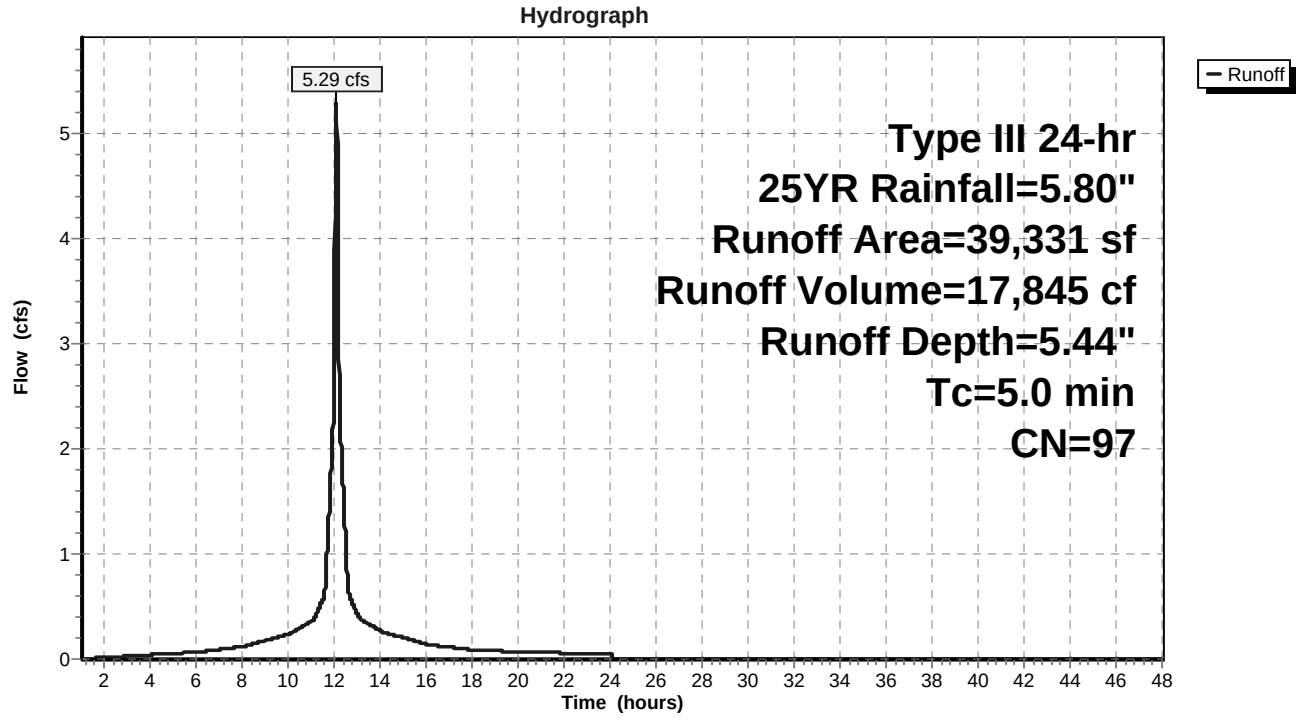
Runoff = 5.29 cfs @ 12.07 hrs, Volume= 17,845 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
13,985	98	Roofs, HSG D
23,487	98	Paved roads w/curbs & sewers, HSG D
1,859	80	>75% Grass cover, Good, HSG D
39,331	97	Weighted Average
1,859		4.73% Pervious Area
37,472		95.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Path**

Subcatchment 1S: Watershed 1S



Summary for Subcatchment 2AS: FocalPoint Area

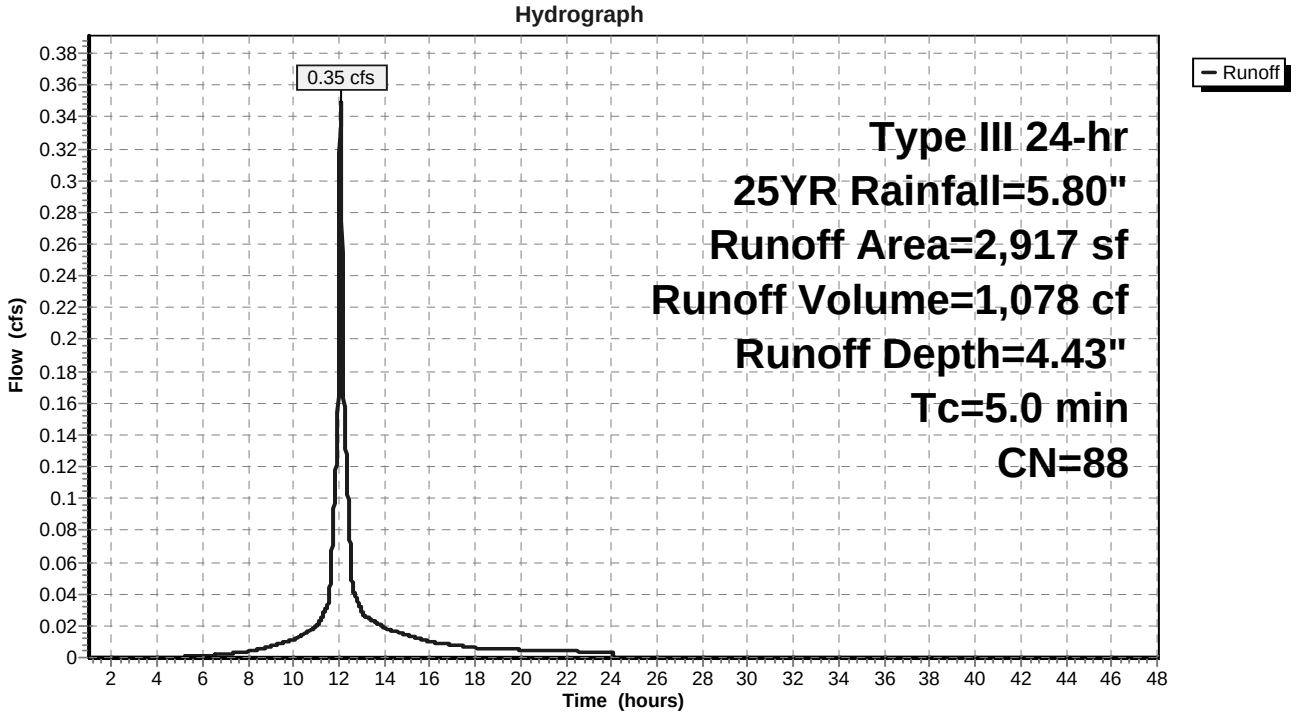
Runoff = 0.35 cfs @ 12.07 hrs, Volume= 1,078 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
1,222	98	Paved parking, HSG D
1,695	80	>75% Grass cover, Good, HSG D
2,917	88	Weighted Average
1,695		58.11% Pervious Area
1,222		41.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, ab**

Subcatchment 2AS: FocalPoint Area



Summary for Subcatchment 2BS: Watershed 2BS

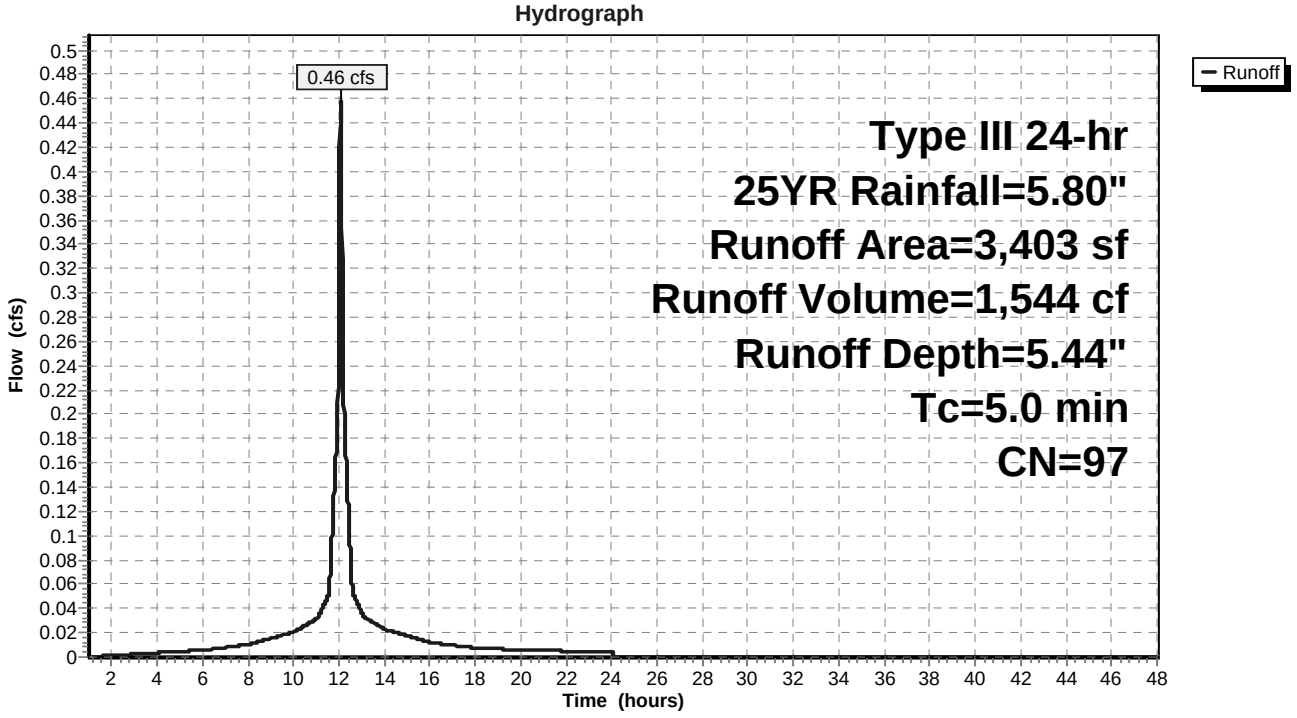
Runoff = 0.46 cfs @ 12.07 hrs, Volume= 1,544 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
1,327	98	Roofs, HSG D
1,899	98	Paved roads w/curbs & sewers, HSG D
177	80	>75% Grass cover, Good, HSG D
3,403	97	Weighted Average
177		5.20% Pervious Area
3,226		94.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, a-b**

Subcatchment 2BS: Watershed 2BS



Summary for Subcatchment 2S: Watershed 2S

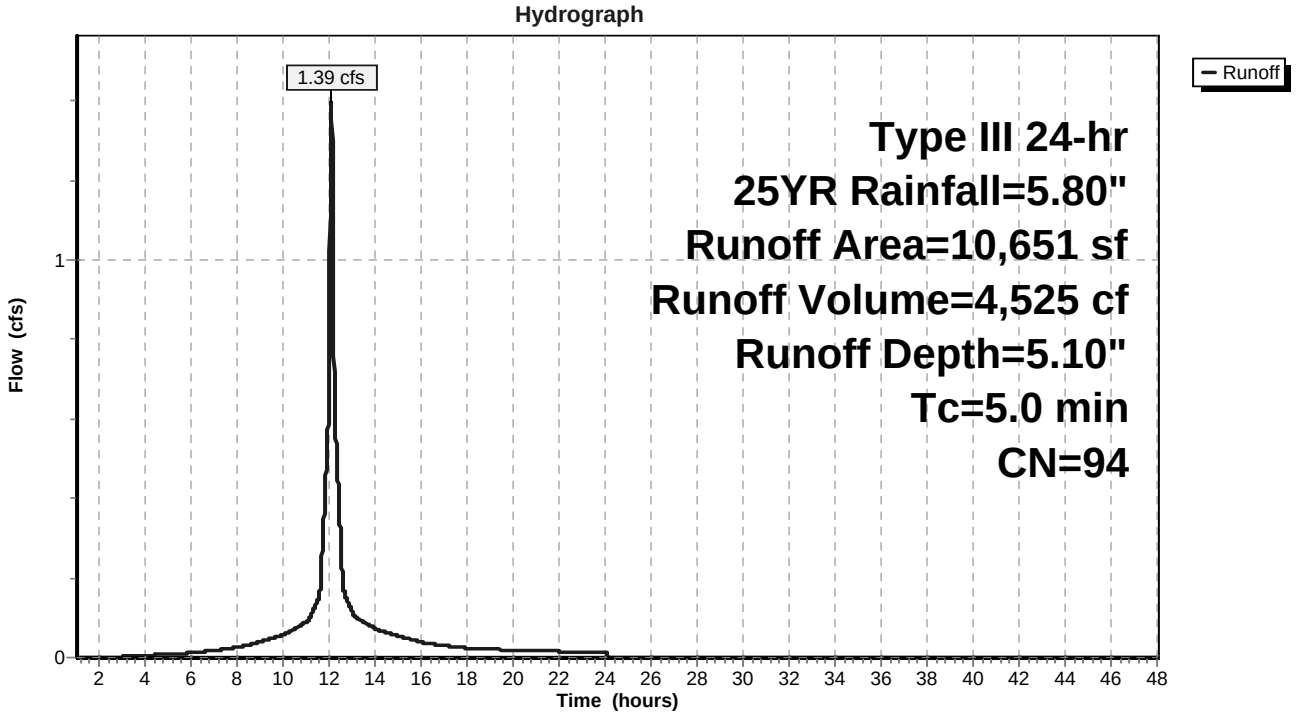
Runoff = 1.39 cfs @ 12.07 hrs, Volume= 4,525 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
8,444	98	Paved roads w/curbs & sewers, HSG D
2,207	80	>75% Grass cover, Good, HSG D
10,651	94	Weighted Average
2,207		20.72% Pervious Area
8,444		79.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, a-b**

Subcatchment 2S: Watershed 2S



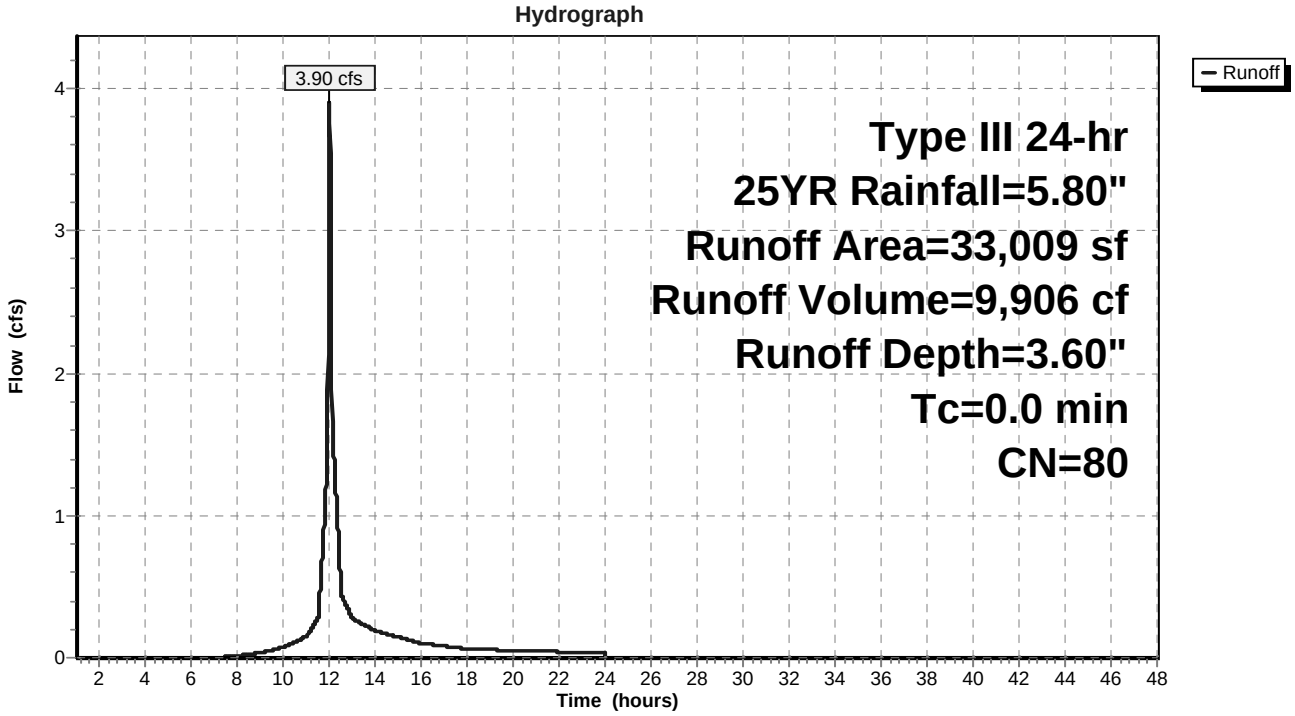
Summary for Subcatchment 3AS: Watershed 3AS

Runoff = 3.90 cfs @ 12.00 hrs, Volume= 9,906 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
33,009	80	>75% Grass cover, Good, HSG D
33,009		100.00% Pervious Area

Subcatchment 3AS: Watershed 3AS



Summary for Subcatchment 3S: Watershed 3S

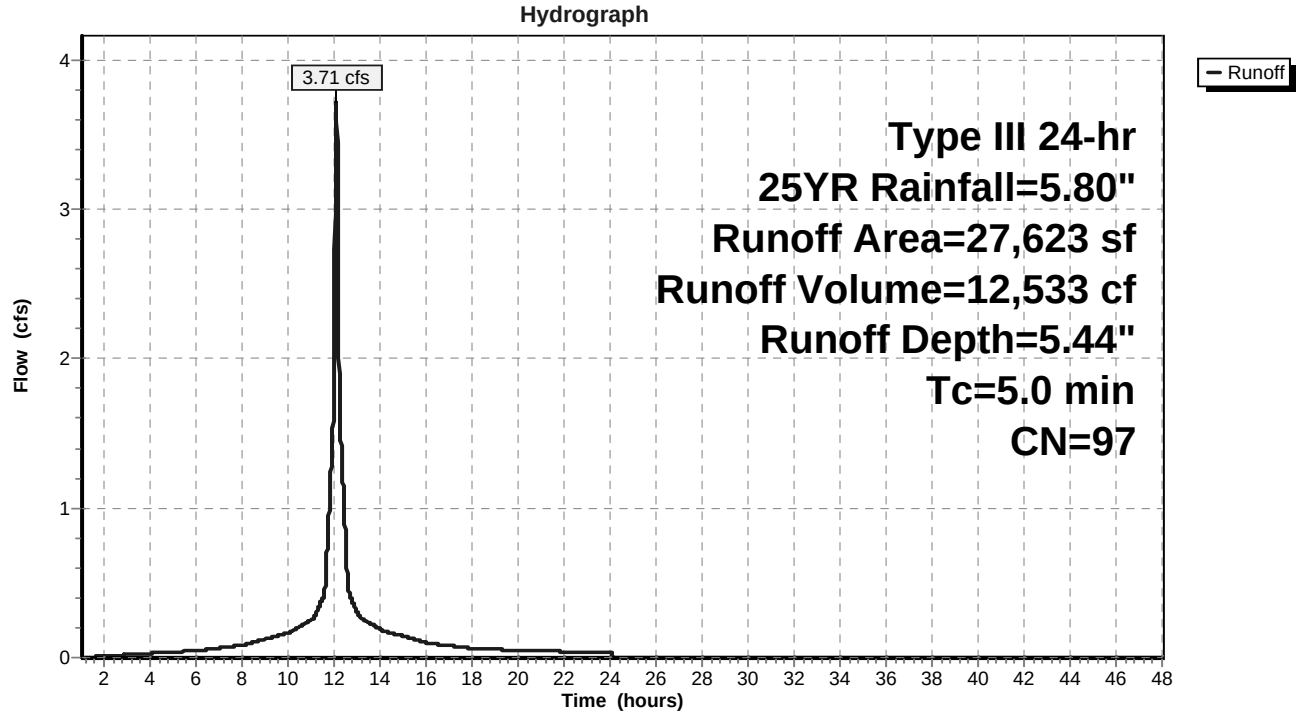
Runoff = 3.71 cfs @ 12.07 hrs, Volume= 12,533 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.80"

Area (sf)	CN	Description
2,241	98	Paved parking, HSG D
22,561	98	Roofs, HSG D
687	80	>75% Grass cover, Good, HSG D
2,134	96	Gravel surface, HSG D
27,623	97	Weighted Average
2,821		10.21% Pervious Area
24,802		89.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Path**

Subcatchment 3S: Watershed 3S

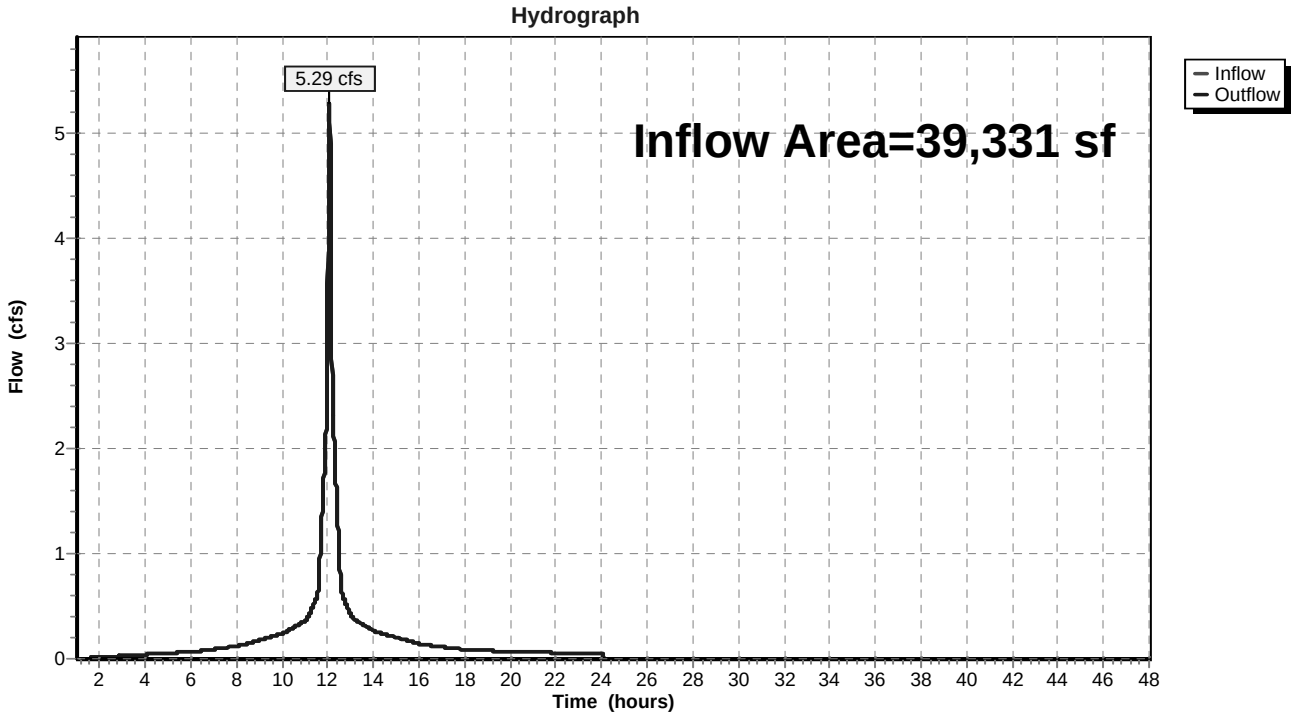


Summary for Reach 1R: POI1

Inflow Area = 39,331 sf, 95.27% Impervious, Inflow Depth = 5.44" for 25YR event
Inflow = 5.29 cfs @ 12.07 hrs, Volume= 17,845 cf
Outflow = 5.29 cfs @ 12.07 hrs, Volume= 17,845 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Reach 1R: POI1

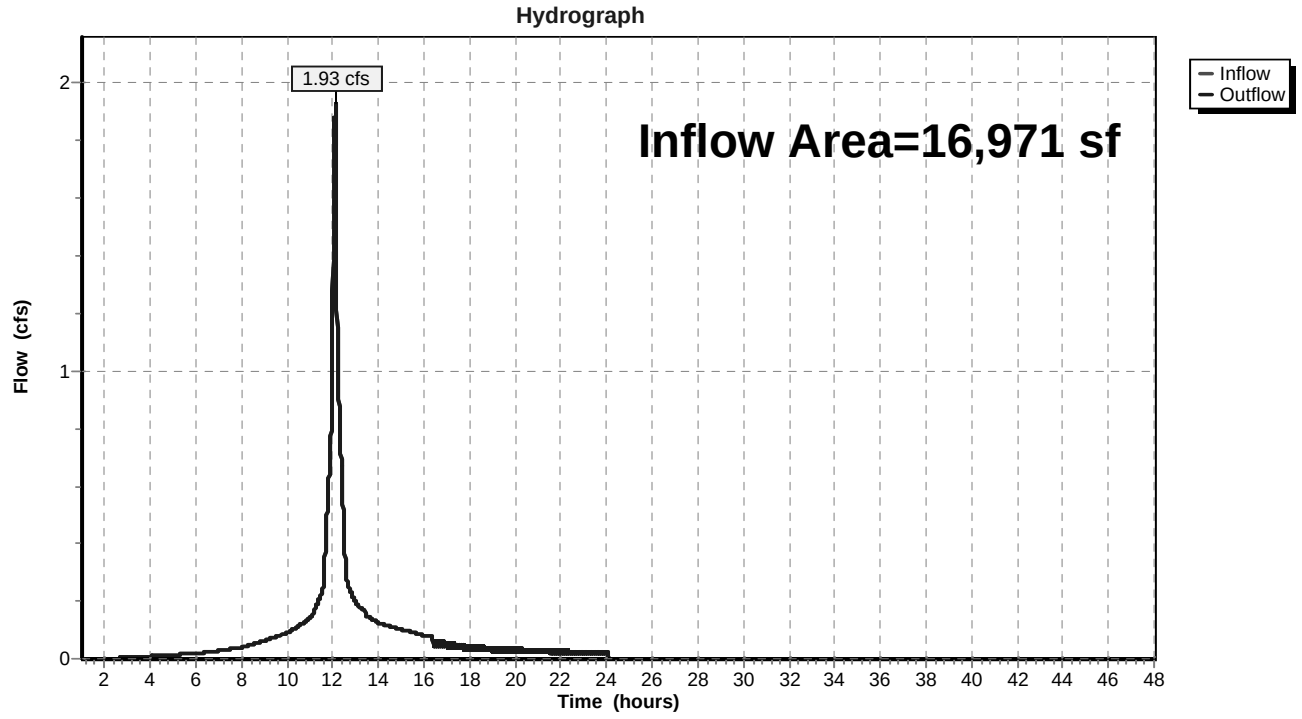


Summary for Reach 2R: POI2

Inflow Area = 16,971 sf, 75.96% Impervious, Inflow Depth = 5.05" for 25YR event
Inflow = 1.93 cfs @ 12.11 hrs, Volume= 7,147 cf
Outflow = 1.93 cfs @ 12.11 hrs, Volume= 7,147 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Reach 2R: POI2

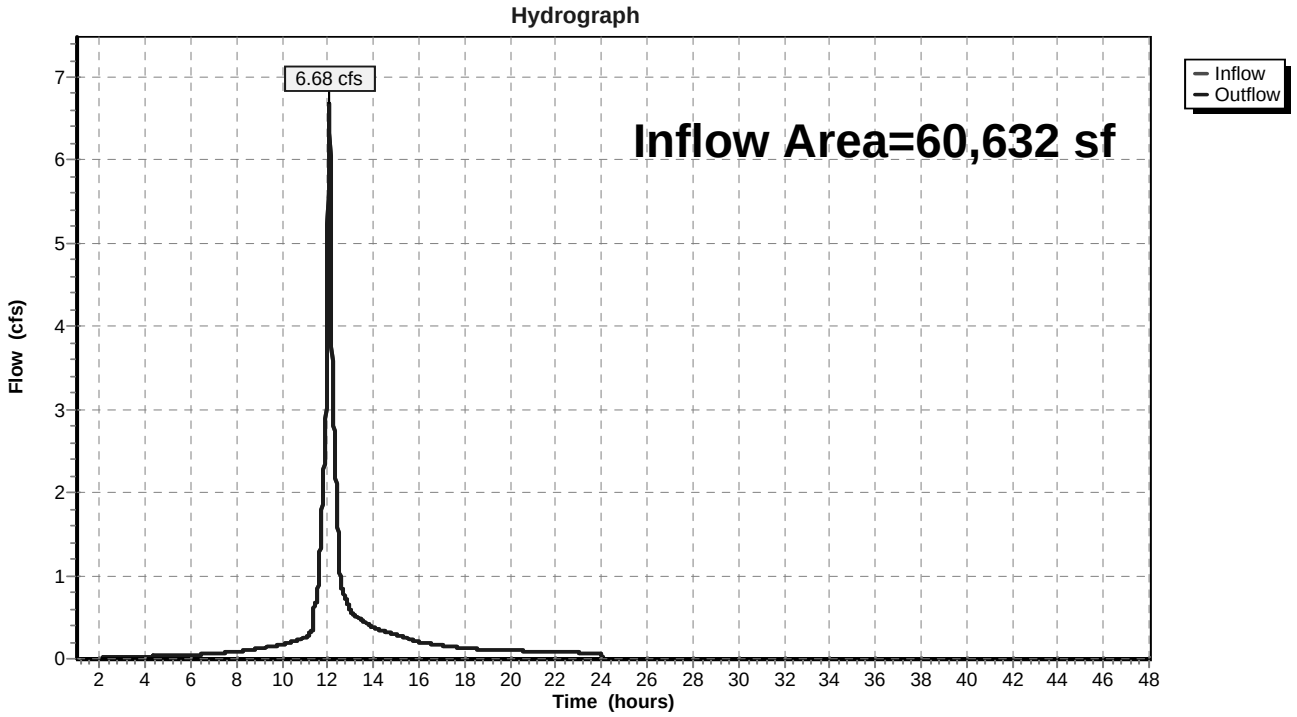


Summary for Reach 3R: POI3

Inflow Area = 60,632 sf, 40.91% Impervious, Inflow Depth = 4.25" for 25YR event
Inflow = 6.68 cfs @ 12.06 hrs, Volume= 21,449 cf
Outflow = 6.68 cfs @ 12.06 hrs, Volume= 21,449 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Reach 3R: POI3



Summary for Pond 3P: Green Roof Storage

Inflow Area = 33,009 sf, 0.00% Impervious, Inflow Depth = 3.60" for 25YR event
Inflow = 3.90 cfs @ 12.00 hrs, Volume= 9,906 cf
Outflow = 3.05 cfs @ 12.04 hrs, Volume= 8,916 cf, Atten= 22%, Lag= 2.5 min
Primary = 3.05 cfs @ 12.04 hrs, Volume= 8,916 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 0.04' @ 12.04 hrs Surf.Area= 33,009 sf Storage= 1,414 cf

Plug-Flow detention time= 70.7 min calculated for 8,914 cf (90% of inflow)
Center-of-Mass det. time= 22.2 min (832.2 - 810.0)

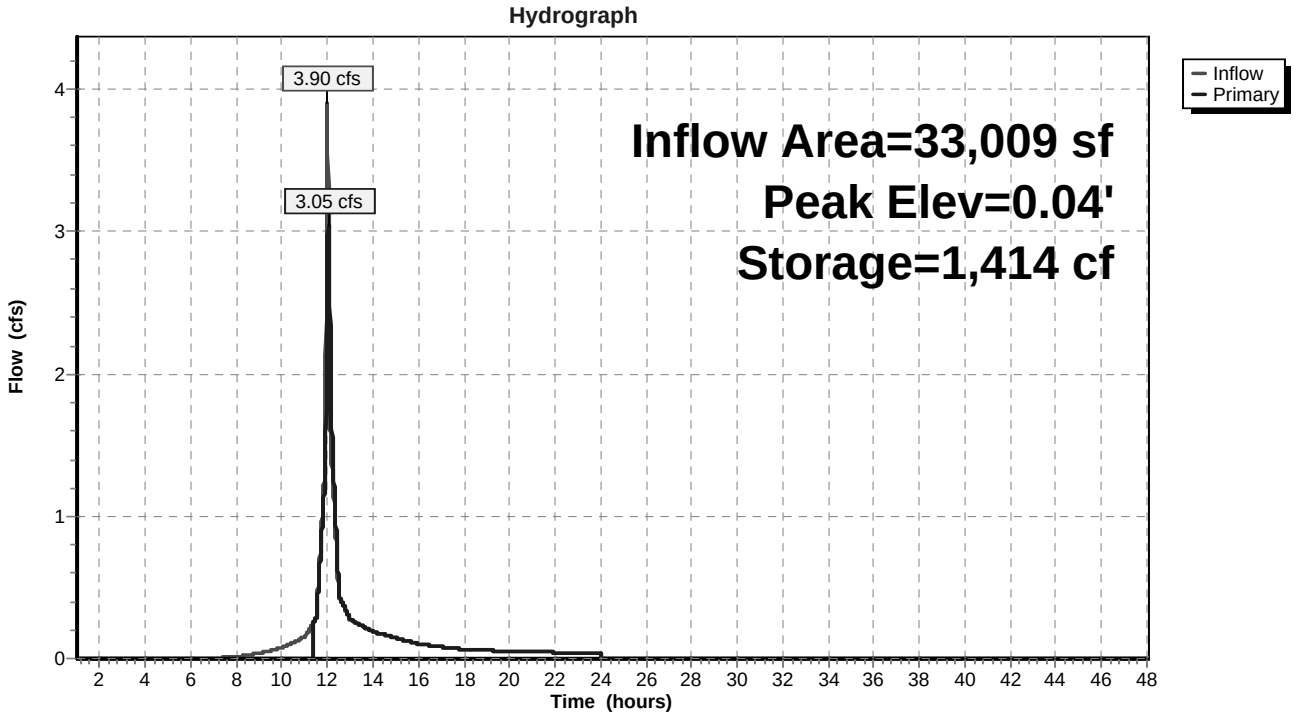
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	33,009 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	33,009	0	0
0.01	33,009	330	330
0.02	33,009	330	660
0.03	33,009	330	990
1.00	33,009	32,019	33,009

Device	Routing	Invert	Outlet Devices
#1	Primary	0.03'	**8.0" Horiz. Orifice/Grate X 16.00** C= 0.600

Primary OutFlow Max=3.05 cfs @ 12.04 hrs HW=0.04' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 3.05 cfs @ 0.55 fps)

Pond 3P: Green Roof Storage



Summary for Pond FP1: FocalPoint 20sf

Inflow Area = 2,917 sf, 41.89% Impervious, Inflow Depth = 4.43" for 25YR event
Inflow = 0.35 cfs @ 12.07 hrs, Volume= 1,078 cf
Outflow = 0.35 cfs @ 12.08 hrs, Volume= 1,078 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.05 cfs @ 11.62 hrs, Volume= 792 cf
Secondary = 0.30 cfs @ 12.08 hrs, Volume= 286 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 46.85' @ 12.08 hrs Surf.Area= 20 sf Storage= 52 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.4 min (795.1 - 791.7)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	0 cf	**4.00'W x 5.00'L x 2.25'H FocalPoint** 45 cf Overall x 0.0% Voids
#2	46.00'	67 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		67 cf	Total Available Storage

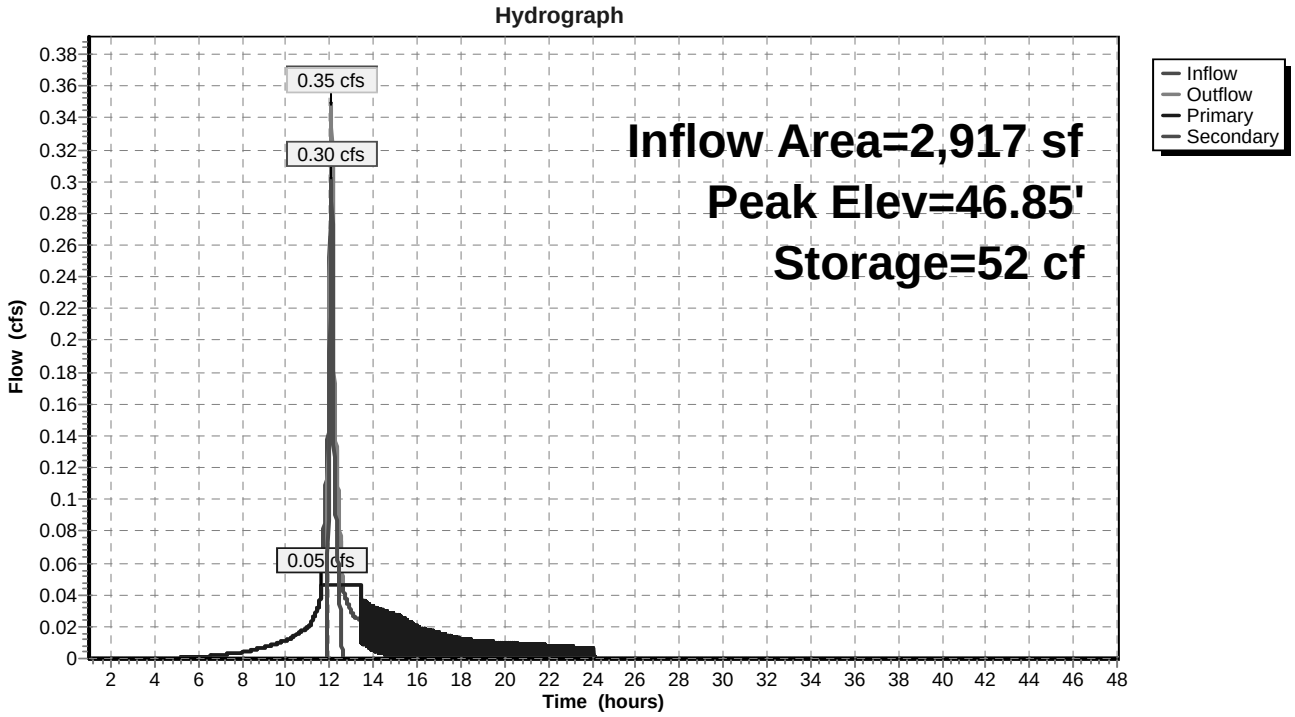
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	20	0	0
46.50	75	24	24
47.00	96	43	67

Device	Routing	Invert	Outlet Devices
#1	Primary	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	46.75'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 11.62 hrs HW=46.00' TW=39.57' (Dynamic Tailwater)
↑—**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.30 cfs @ 12.08 hrs HW=46.85' TW=40.90' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Weir Controls 0.30 cfs @ 1.01 fps)

Pond FP1: FocalPoint 20sf



Summary for Pond P1: Cultec Chamber

Inflow Area = 2,917 sf, 41.89% Impervious, Inflow Depth = 4.43" for 25YR event
Inflow = 0.35 cfs @ 12.08 hrs, Volume= 1,078 cf
Outflow = 0.31 cfs @ 12.12 hrs, Volume= 1,078 cf, Atten= 11%, Lag= 2.6 min
Primary = 0.03 cfs @ 11.58 hrs, Volume= 843 cf
Secondary = 0.28 cfs @ 12.12 hrs, Volume= 235 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 41.17' @ 12.12 hrs Surf.Area= 139 sf Storage= 167 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 28.0 min (823.1 - 795.1)

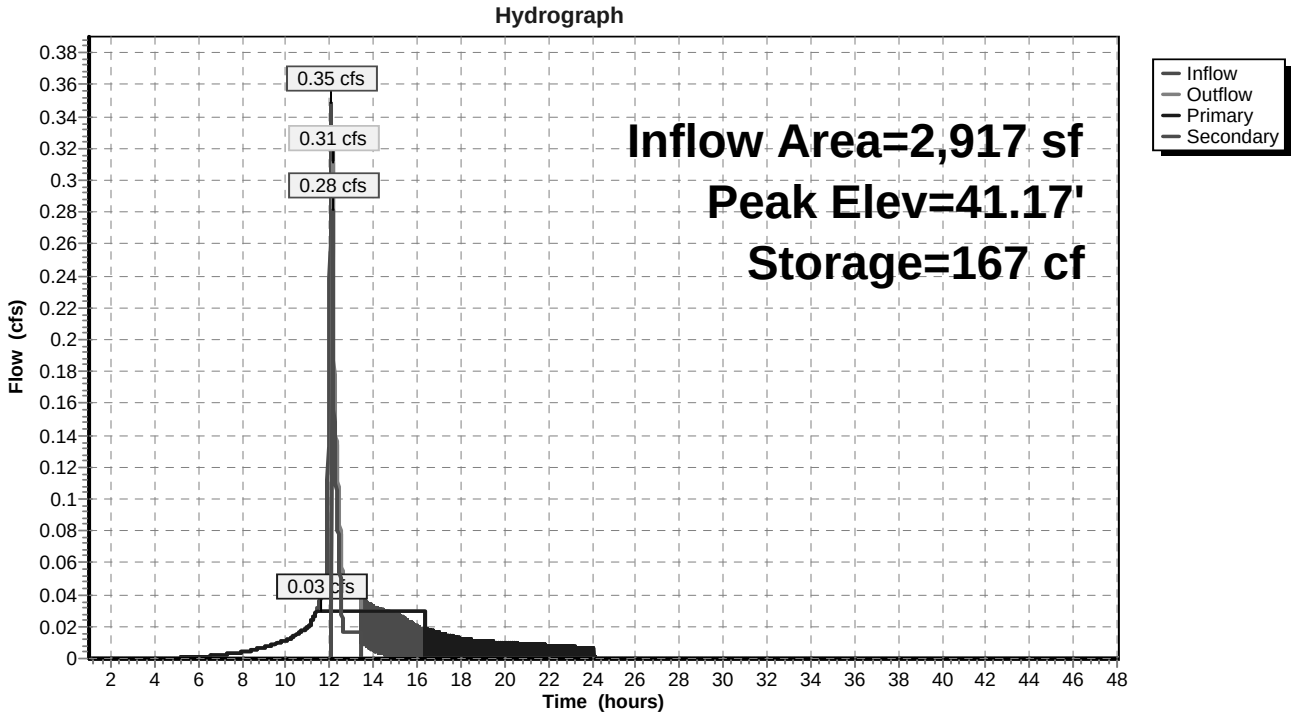
Volume	Invert	Avail.Storage	Storage Description
#1	39.50'	114 cf	**4.83'W x 7.20'L x 3.54'H Prismatoid** x 4 492 cf Overall - 209 cf Embedded = 284 cf x 40.0% Voids
#2	40.00'	209 cf	**Cultec R-330XLHD** x 4 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		322 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	39.50'	**0.03 cfs Exfiltration at all elevations**
#2	Secondary	41.10'	**6.0' long x 0.7' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=0.03 cfs @ 11.58 hrs HW=39.54' TW=0.00' (Dynamic Tailwater)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=0.28 cfs @ 12.12 hrs HW=41.17' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 0.71 fps)

Pond P1: Cultec Chamber



Summary for Pond P2: Cultec Chamber

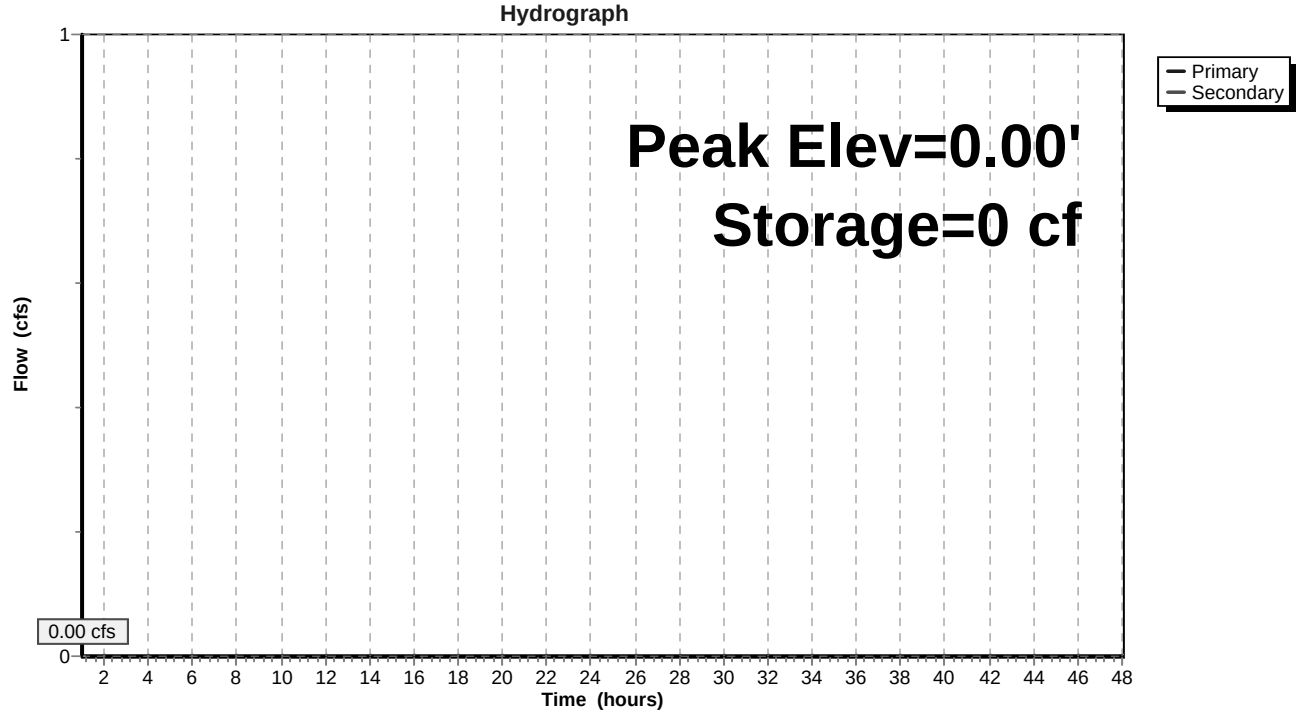
Volume	Invert	Avail.Storage	Storage Description
#1	37.50'	28 cf	**4.83'W x 7.20'L x 3.54'H Prismatoid** 123 cf Overall - 52 cf Embedded = 71 cf x 40.0% Voids
#2	38.00'	52 cf	**Cultec R-330XLHD** Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		81 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	37.50'	**0.03 cfs Exfiltration at all elevations**
#2	Secondary	40.80'	**6.0' long x 0.7' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.03 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=0.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2: Cultec Chamber



Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Watershed 1S Runoff Area=39,331 sf 95.27% Impervious Runoff Depth=2.76"
Tc=5.0 min CN=97 Runoff=2.77 cfs 9,038 cf

Subcatchment 2AS: FocalPoint Area Runoff Area=2,917 sf 41.89% Impervious Runoff Depth=1.91"
Tc=5.0 min CN=88 Runoff=0.15 cfs 464 cf

Subcatchment 2BS: Watershed 2BS Runoff Area=3,403 sf 94.80% Impervious Runoff Depth=2.76"
Tc=5.0 min CN=97 Runoff=0.24 cfs 782 cf

Subcatchment 2S: Watershed 2S Runoff Area=10,651 sf 79.28% Impervious Runoff Depth=2.45"
Tc=5.0 min CN=94 Runoff=0.70 cfs 2,172 cf

Subcatchment 3AS: Watershed 3AS Runoff Area=33,009 sf 0.00% Impervious Runoff Depth=1.33"
Tc=0.0 min CN=80 Runoff=1.42 cfs 3,646 cf

Subcatchment 3S: Watershed 3S Runoff Area=27,623 sf 89.79% Impervious Runoff Depth=2.76"
Tc=5.0 min CN=97 Runoff=1.94 cfs 6,347 cf

Reach 1R: POI1 Inflow=2.77 cfs 9,038 cf
Outflow=2.77 cfs 9,038 cf

Reach 2R: POI2 Inflow=0.97 cfs 3,418 cf
Outflow=0.97 cfs 3,418 cf

Reach 3R: POI3 Inflow=2.90 cfs 9,003 cf
Outflow=2.90 cfs 9,003 cf

Pond 3P: Green Roof Storage Peak Elev=0.03' Storage=1,033 cf Inflow=1.42 cfs 3,646 cf
Outflow=0.96 cfs 2,656 cf

Pond FP1: FocalPoint 20sf Peak Elev=46.79' Storage=47 cf Inflow=0.15 cfs 464 cf
Primary=0.05 cfs 432 cf Secondary=0.08 cfs 32 cf Outflow=0.12 cfs 464 cf

Pond P1: Cultec Chamber Peak Elev=40.59' Storage=99 cf Inflow=0.12 cfs 464 cf
Primary=0.03 cfs 464 cf Secondary=0.00 cfs 0 cf Outflow=0.03 cfs 464 cf

Pond P2: Cultec Chamber Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf

Total Runoff Area = 116,934 sf Runoff Volume = 22,449 cf Average Runoff Depth = 2.30"
35.72% Pervious = 41,768 sf 64.28% Impervious = 75,166 sf

Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Watershed 1S Runoff Area=39,331 sf 95.27% Impervious Runoff Depth=4.25"
Tc=5.0 min CN=97 Runoff=4.17 cfs 13,925 cf

Subcatchment 2AS: FocalPoint Area Runoff Area=2,917 sf 41.89% Impervious Runoff Depth=3.29"
Tc=5.0 min CN=88 Runoff=0.26 cfs 800 cf

Subcatchment 2BS: Watershed 2BS Runoff Area=3,403 sf 94.80% Impervious Runoff Depth=4.25"
Tc=5.0 min CN=97 Runoff=0.36 cfs 1,205 cf

Subcatchment 2S: Watershed 2S Runoff Area=10,651 sf 79.28% Impervious Runoff Depth=3.91"
Tc=5.0 min CN=94 Runoff=1.09 cfs 3,474 cf

Subcatchment 3AS: Watershed 3AS Runoff Area=33,009 sf 0.00% Impervious Runoff Depth=2.55"
Tc=0.0 min CN=80 Runoff=2.77 cfs 7,006 cf

Subcatchment 3S: Watershed 3S Runoff Area=27,623 sf 89.79% Impervious Runoff Depth=4.25"
Tc=5.0 min CN=97 Runoff=2.93 cfs 9,780 cf

Reach 1R: POI1 Inflow=4.17 cfs 13,925 cf
Outflow=4.17 cfs 13,925 cf

Reach 2R: POI2 Inflow=1.48 cfs 5,479 cf
Outflow=1.48 cfs 5,479 cf

Reach 3R: POI3 Inflow=5.11 cfs 15,796 cf
Outflow=5.11 cfs 15,796 cf

Pond 3P: Green Roof Storage Peak Elev=0.04' Storage=1,228 cf Inflow=2.77 cfs 7,006 cf
Outflow=2.28 cfs 6,016 cf

Pond FP1: FocalPoint 20sf Peak Elev=46.83' Storage=50 cf Inflow=0.26 cfs 800 cf
Primary=0.05 cfs 634 cf Secondary=0.22 cfs 166 cf Outflow=0.26 cfs 800 cf

Pond P1: Cultec Chamber Peak Elev=41.13' Storage=162 cf Inflow=0.26 cfs 800 cf
Primary=0.03 cfs 704 cf Secondary=0.08 cfs 96 cf Outflow=0.11 cfs 800 cf

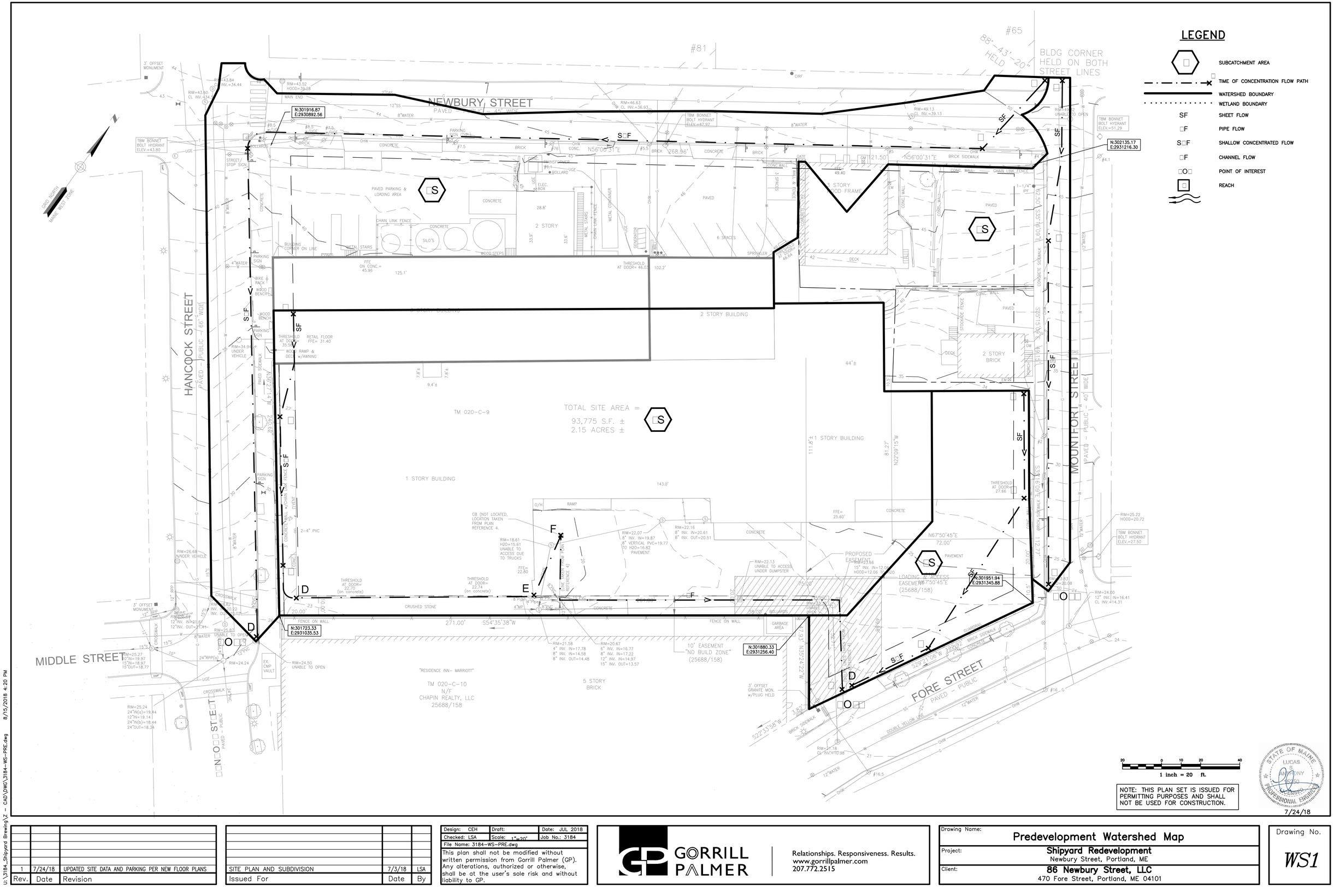
Pond P2: Cultec Chamber Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf

Total Runoff Area = 116,934 sf Runoff Volume = 36,190 cf Average Runoff Depth = 3.71"
35.72% Pervious = 41,768 sf 64.28% Impervious = 75,166 sf

ATTACHMENT F

PRE/POST WATERSHED MAP

PRE-DEVELOPMENT



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Rev.	Date	Revision
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft:	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184-WS-PRE.dwg		

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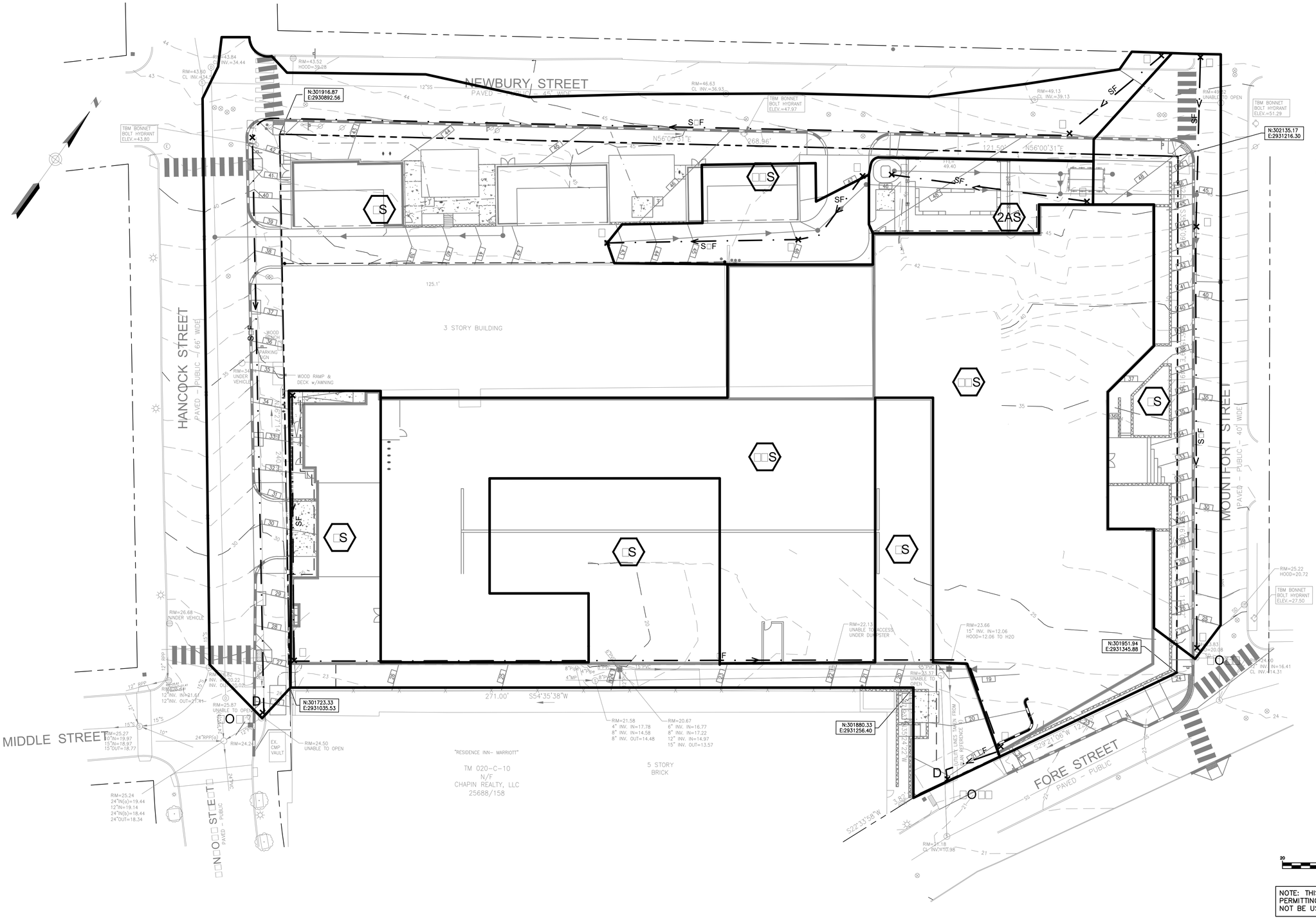
Drawing Name: **Predevelopment Watershed Map**

Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME

Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

Drawing No. *WS1*

POST DEVELOPMENT



LEGEND

- SUBCATCHMENT AREA
- TIME OF CONCENTRATION FLOW PATH
- WATERSHED BOUNDARY
- WETLAND BOUNDARY
- SF — SHEET FLOW
- □F — PIPE FLOW
- S□F — SHALLOW CONCENTRATED FLOW
- □F — CHANNEL FLOW
- □O□ — POINT OF INTEREST
- REACH

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Rev.	Date	Revision
2	8/17/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH	Draft:	Date: JUL 2018
Checked: LSA	Scale: 1"=20'	Job No.: 3184
File Name: 3184–WS–POST.dwg		

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207.772.2515

Drawing Name: **Postdevelopment Watershed Map**

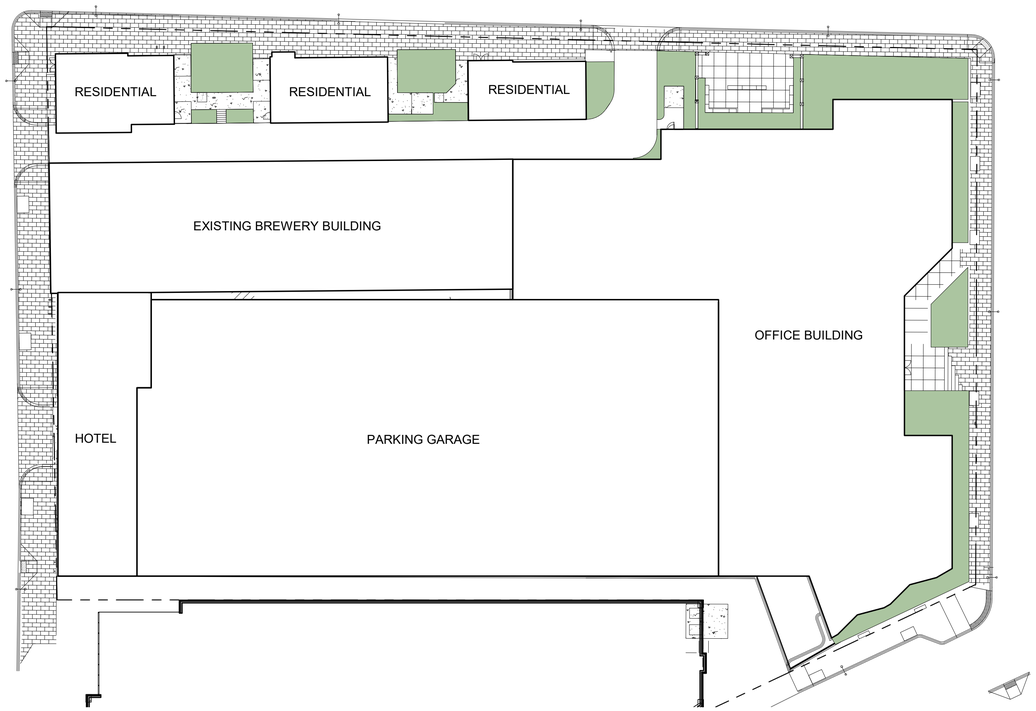
Project: **Shipyard Redevelopment**
Newbury Street, Portland, ME

Client: **86 Newbury Street, LLC**
470 Fore Street, Portland, ME 04101

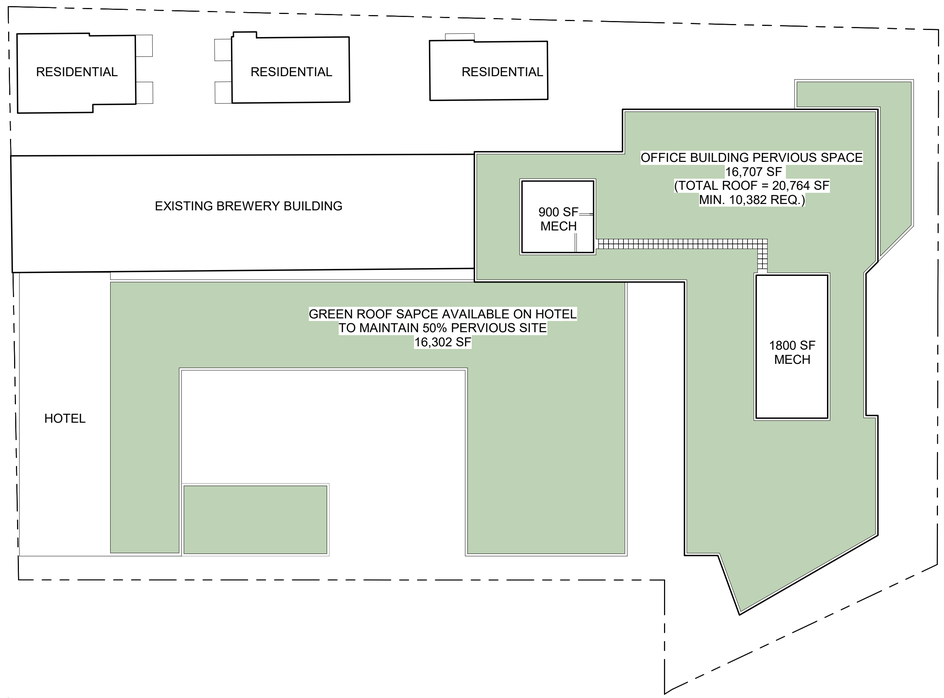
Drawing No. **WS2**

ATTACHMENT G

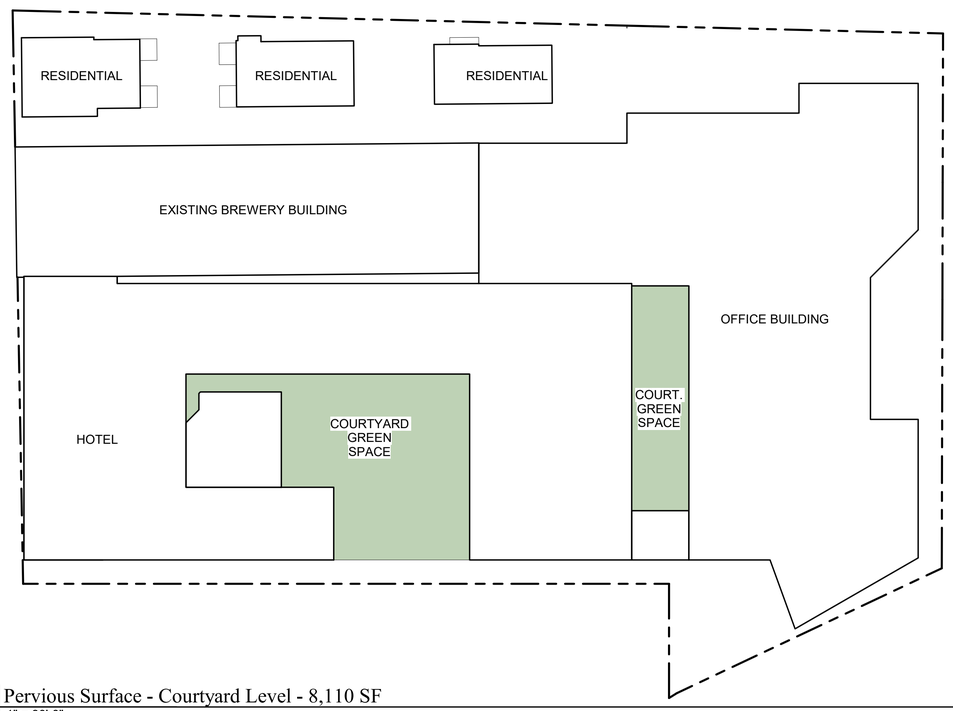
GREEN ROOF AND PERVIOUS AREA DIAGRAM



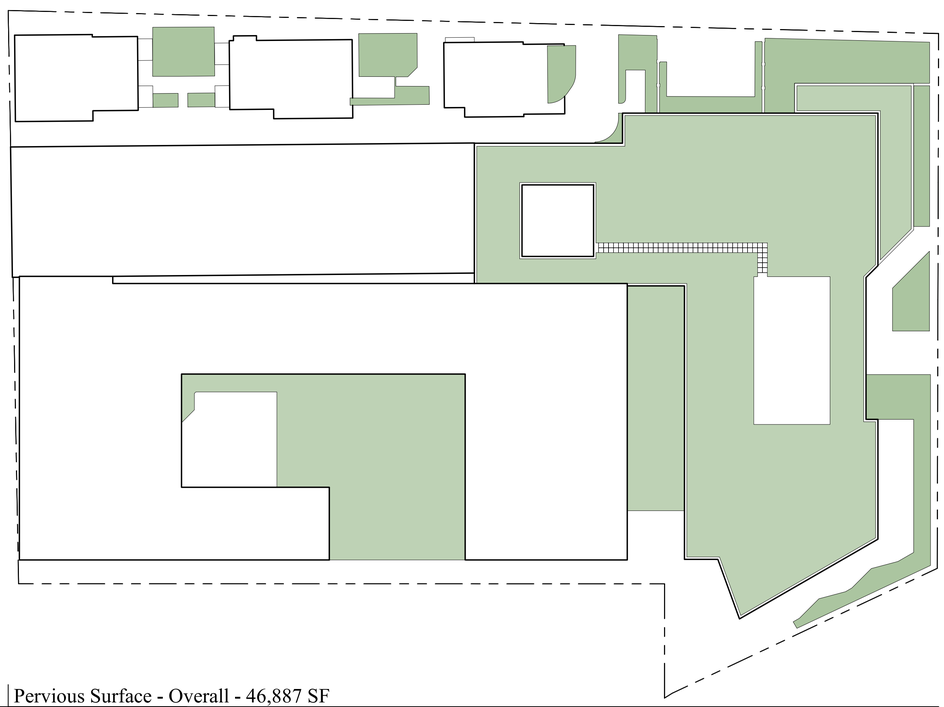
1 | Pervious Surface - Ground Level - 5,768 SF
1" = 30'-0"



3 | Pervious Surface - Roof - 33,009 SF
1" = 30'-0"



2 | Pervious Surface - Courtyard Level - 8,110 SF
1" = 30'-0"



4 | Pervious Surface - Overall - 46,887 SF
1" = 30'-0"

TOTAL SITE	= 93,774 SF
50%	= 46,887 SF
PERVIOUS AREA	
GROUND	= 5,768 SF
COURTYARD	= 8,110 SF
ROOF	= 33,009 SF
TOTAL	= 46,887 SF

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT

Revisions:

Scale: 1" = 30'-0"

Date: AUGUST 2018

PERVIOUS SURFACE

G1.01

ATTACHMENT H

GREEN ROOF STORAGE TABLE

Stage-Area-Storage for Pond 3P: Green Roof Storage

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
0.00	**33,009**	0
0.01	33,009	330
0.02	33,009	660
0.03	33,009	990
0.04	33,009	1,320
0.05	33,009	1,650
0.06	33,009	1,981
0.07	33,009	2,311
0.08	33,009	2,641
0.09	33,009	2,971
0.10	33,009	3,301
0.11	33,009	3,631
0.12	33,009	3,961
0.13	33,009	4,291
0.14	33,009	4,621
0.15	33,009	4,951
0.16	33,009	5,281
0.17	33,009	5,612
0.18	33,009	5,942
0.19	33,009	6,272
0.20	33,009	6,602
0.21	33,009	6,932
0.22	33,009	7,262
0.23	33,009	7,592
0.24	33,009	7,922
0.25	33,009	8,252
0.26	33,009	8,582
0.27	33,009	8,912
0.28	33,009	9,243
0.29	33,009	9,573
0.30	33,009	9,903
0.31	33,009	10,233
0.32	33,009	10,563
0.33	33,009	10,893
0.34	33,009	11,223
0.35	33,009	11,553
0.36	33,009	11,883
0.37	33,009	12,213
0.38	33,009	12,543
0.39	33,009	12,874
0.40	33,009	13,204
0.41	33,009	13,534
0.42	33,009	13,864
0.43	33,009	14,194
0.44	33,009	14,524
0.45	33,009	14,854
0.46	33,009	15,184
0.47	33,009	15,514
0.48	33,009	15,844
0.49	33,009	16,174
0.50	33,009	16,505
0.51	33,009	16,835
0.52	33,009	17,165
0.53	33,009	17,495
0.54	33,009	17,825
0.55	33,009	18,155
0.56	33,009	18,485
0.57	33,009	18,815
0.58	33,009	19,145
0.59	33,009	19,475
0.60	33,009	19,805
0.61	33,009	20,135
0.62	33,009	20,466
0.63	33,009	20,796
0.64	33,009	21,126
0.65	33,009	21,456
0.66	33,009	21,786
0.67	33,009	22,116
0.68	33,009	22,446
0.69	33,009	22,776
0.70	33,009	23,106
0.71	33,009	23,436
0.72	33,009	23,766
0.73	33,009	24,097
0.74	33,009	24,427
0.75	33,009	24,757
0.76	33,009	25,087
0.77	33,009	25,417
0.78	33,009	25,747
0.79	33,009	26,077
0.80	33,009	26,407
0.81	33,009	26,737
0.82	33,009	27,067
0.83	33,009	27,397
0.84	33,009	27,728
0.85	33,009	28,058
0.86	33,009	28,388
0.87	33,009	28,718
0.88	33,009	29,048
0.89	33,009	29,378
0.90	33,009	29,708
0.91	33,009	30,038
0.92	33,009	30,368
0.93	33,009	30,698
0.94	33,009	31,028
0.95	33,009	31,359
0.96	33,009	31,689
0.97	33,009	32,019
0.98	33,009	32,349
0.99	33,009	32,679
1.00	33,009	**33,009**

At 0.0316' Storage = 1,045 Cubic Feet

ATTACHMENT I

MIRADRAIN PRODUCT SHEET

CARLISLE SYNTEC SYSTEMS

ROOF GARDEN

MiraDRAIN® G4 Drainage Composite

Scan code to view installation video.

Overview

Carlisle's MiraDRAIN G4 Drainage Composite combines filter fabric, moisture retention mat, drainage mat, and heavy-duty protection fabric into a single, easy-to-apply product specifically designed for vegetated roofs.

Features and Benefits

- Greatly simplifies Roof Garden installations
- Excellent drainage rate and water-holding capacity
- Holds 1.97 pounds of water per square foot (0.24 gallons or 0.38" of rain)
- Moisture retention mat is 100% post-consumer recycled material
- High compressive strength allows a multitude of overburden options to be used, e.g. pavers or traditional ballast, for alternative stormwater retention systems
- Compatible with all Carlisle Roof Garden systems and warranted up to 20 years

Installation

1. Unroll and loose-lay MiraDRAIN G4 and orient the **GREEN SIDE UP**.
2. Butt adjacent rolls and overlap using the built-in 6" flap of moisture retention mat. Make sure to shingle the flap in the direction of the slope.
3. For end-to-end joints, peel back fabric and insert two rows of cups into the pre-existing piece.

Note: MiraDRAIN G4 **should not** be adhered to the membrane.

Review Carlisle specifications and details for complete installation information.

Roll Size

4' x 50' (200 square feet)

Typical Properties and Characteristics

Test	Test Method	Units	Result
Composite			
Thickness	ASTM D1777	in (mm)	1.1 (28)
Compressive Strength	ASTM D1621	psf (kN/m^2)	14,013 (671)
Flow Rate at 3:12 Slope	ASTM D4716	gpm/ft^2 ($L/min/m^2$)	32 (1,302)
Flow Rate at ¼:12 Slope	ASTM D4716	gpm/ft^2 ($L/min/m^2$)	7.8 (318)
Water Holding Capacity		gal/ft^2 (L/m^2)	0.24 (9.8)
Fabric			
Apparent Opening Size	ASTM D4751	US std. sieve (mm)	100 (0.132)
Flow Rate	ASTM D4491	gpm/ft^2 ($L/min/m^2$)	132 (5,382)
Gran Tensile Strength	ASTM D4632	lbs (kN)	169 (0.95)
Elongation	ASTM D4632	%	101
Puncture Resistance	ASTM D4833	lbs (kN)	97 (0.43)

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

LEED® Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	24%
Manufacturing Location	Terrell, TX
Solar Reflectance Index	N/A

800-479-6832 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7053 | **www.carlislesyntec.com**

06.24.14 © 2014 Carlisle.
REPRINT CODE: 603806 - "Carlisle MiraDRAIN G4 Product Data Sheet"

Carlisle and MiraDRAIN are trademarks of Carlisle.
LEED is a registered trademark of the U.S. Green Building Council.

STORMWATER DRAINAGE SYSTEM
MAINTENANCE AGREEMENT

For SUBDIVISIONS

IN CONSIDERATION OF the site plan and subdivision approval granted by the Planning Board of the City of Portland to the proposed Shipyard Brewing Redevelopment PL-000045-2018 shown on the Subdivision Plat (Exhibit A) recorded in Cumberland Registry of Deeds in Plan Book ____, Page ____ submitted by 86 Newbury Street, LLC, and associated Grading, Drainage & Erosion Control Plan (Exhibit B) prepared by Gorrill Palmer (engineer) of 707 Sable Oaks Drive, Suite 30, South Portland, ME, 04106 dated and pursuant to a condition thereof, 86 Newbury Street, LLC, a Maine limited liability company with a principal place of business in Portland, Maine, and having a mailing address of 470 Fore Street, Suite 400, Portland, ME 04101, the owner of the subject premises, does hereby agree, for itself, its successors and assigns (the "Owner"), as follows:

Maintenance Agreement

That it, its successors and assigns, will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the High Performance Biofiltration System (Focal Point), Subsurface Storage Chambers, Green Roof and conveyance system of pipes, inlets and manholes (*details of the system such as underdrained subsurface sand filter BMP system, rain gardens, storm drain pipes, underdrain pipes, catch basins*), (hereinafter collectively referred to as the "stormwater system"), as shown on the Grading, Drainage and Erosion Control Plan in Exhibit B and in strict compliance with the approved Post Construction Stormwater Maintenance and Inspection Manual within the Stormwater Management Report prepared for the Owner by Gorrill Palmer (copy attached in Exhibit C) and Chapter 32 of the Portland City Code.

Owner of the subject premises further agrees, at its own cost, to keep a Stormwater Maintenance Log. Such log shall be made available for inspection by the City of Portland upon reasonable notice and request.

Said agreement is for the benefit of the said City of Portland and all persons in lawful possession of said premises and abutters thereto; further, that the said City of Portland and said persons in lawful possession may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice and a stated time to perform, the said City of Portland, by its authorized agents or representatives, may, but is not obligated to, enter upon said premises to maintain, repair, or replace said stormwater system in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the Owner upon written demand. Any funds owed to the City under this paragraph shall be secured by a lien on the property.

This Agreement shall also not be construed to allow any change or deviation from the requirements of the subdivision and/or site plan most recently and formally approved by the Planning Board of the City of Portland.

This agreement shall bind the undersigned only so long as it retains any interest in said premises, and shall run with the land and be binding upon the Owner's successors and assigns as their interests may from time to time appear.

The Owner agrees to record a copy of this Agreement in the Cumberland County Registry of Deeds within thirty (30) days of final execution of this Agreement. The Owner further agrees to provide a copy of this Agreement to any successor or assign and to forward to the City an Addendum signed by any successor or assign in which the successor or assign states that the successor or assign has read the Agreement, agrees to all its terms and conditions and the successor or assign will obtain and forward to the City's Department of Public Services and Department of Planning and Urban Development a similar Addendum from any other successor or assign.

For the purpose of this agreement and release "Owner" is any person or entity who is a successor or assign and has a legal interest in part, or all, of the real estate and any building. The real estate shown by chart, block and lot number in the records on file in the City Assessor's office shall constitute "the property" that may be entered by the City and liened if the City is not paid all of its costs and charges following the mailing of a written demand for payment to the owner pursuant to the process and with the same force and effect as that established by 36 M.R.S.A. §§ 942 and 943 for real estate tax liens.

Any written notices or demands required by the agreement shall be complete on the date the notice is attached to one or more doors providing entry to any buildings and mailed by certified mail, return receipt requested or ordinary mail or both to the owner of record as shown on the tax roles on file in the City Assessor's Office.

If the property has more than one owner on the tax rolls, service shall be complete by mailing it to only the first listed owner. The failure to receive any written notice required by this agreement shall not prevent the City from entering the property and performing maintenance or repairs on the stormwater system, or any component thereof, or liening it or create a cause of action against the City.

Dated at Portland, Maine this _____ day of _____, 2018.

86 Newbury Street, LLC
(*name of company*)
David Bateman, Member
(*representative of owner, name and title*)

STATE OF MAINE
CUMBERLAND, ss. Date: _____

Personally appeared the above-named _____(*name and title*), and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,

_____
Notary Public/Attorney at Law

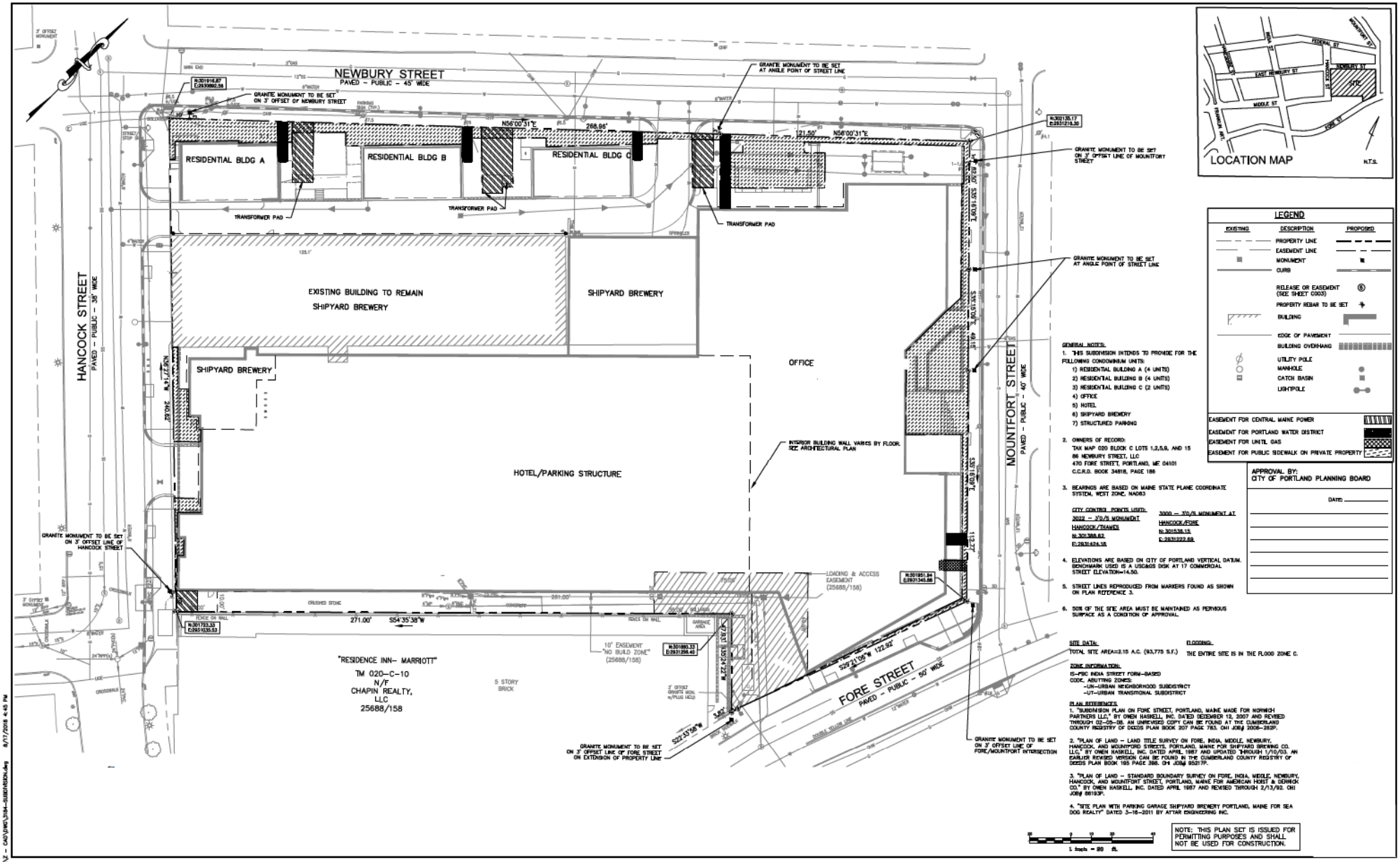
Print name: _____

Exhibit A: Subdivision Plat as recorded

Exhibit B: Approved Grading, Drainage and Erosion Control Plan

Exhibit C: Approved Post Construction Stormwater Maintenance and Inspection Plan (within the Stormwater Management Report)

EXHIBIT A



Rev.	Date	Revision
2	8/17/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CCH | Drawn: CAD | Date: JUL 2018
Checked: LSA | Scale: 1"=20' | Job No.: 3184
File Name: 3184–SUBDIVISION.dwg

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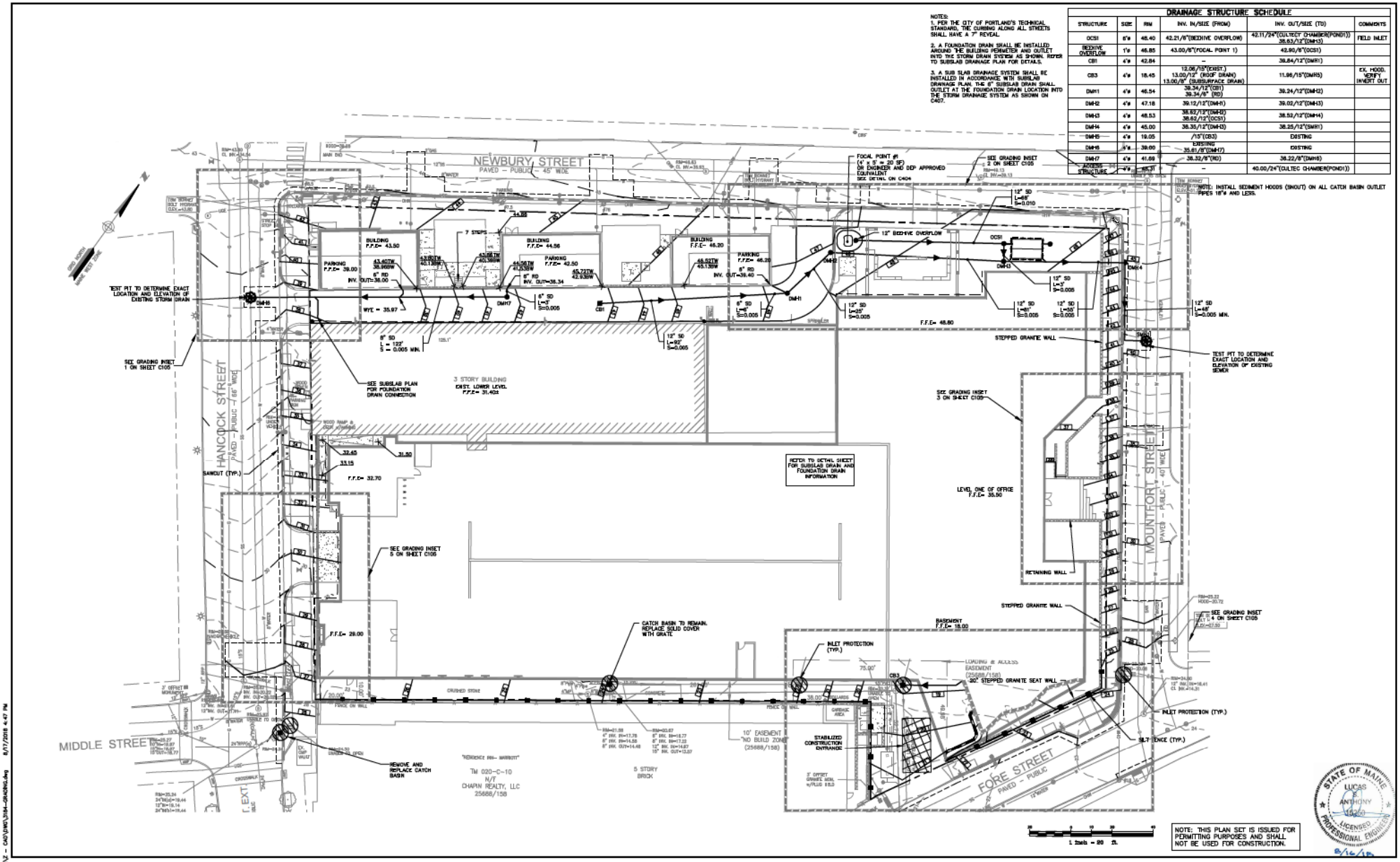
Drawing Name: PRELIMINARY SUBDIVISION PLAN
Project: Shipyard Redevelopment
Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC
470 Fore Street, Portland, ME 04101

Drawing No. C002

S:\3184_Shipyard Brewing\2 – CAD\plan\3184–SUBDIVISION.dwg 8/17/2018 4:45 PM

EXHIBIT B



NOTES:
1. PER THE CITY OF PORTLAND'S TECHNICAL STANDARD, THE CURBING ALONG ALL STREETS SHALL HAVE A 7" REVEAL.
2. A FOUNDATION DRAIN SHALL BE INSTALLED AROUND THE BUILDING PERIMETER AND OUTLET INTO THE STORM DRAIN SYSTEM AS SHOWN. REFER TO SUBSLAB DRAINAGE PLAN FOR DETAILS.
3. A SUB SLAB DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH SUBSLAB DRAINAGE PLAN. THE 6" SUBSLAB DRAIN SHALL OUTLET AT THE FOUNDATION DRAIN LOCATION INTO THE STORM DRAINAGE SYSTEM AS SHOWN ON C407.

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
OCS1	6'ø	46.40	42.21/8"(BEEHIVE OVERFLOW)	42.11/24"(CULTECT CHAMBER(POND1)) 38.63/12"(DMH13)	FIELD INLET
BEEHIVE OVERFLOW	1'ø	46.85	43.00/8"(FOCAL POINT 1)	42.90/8"(OCS1)	
CB1	4'ø	42.84	–	39.84/12"(DMH1)	
CB3	4'ø	18.45	12.06/15"(EXIST.) 13.00/12" (ROOF DRAIN) 13.00/8" (SUBSURFACE DRAIN)	11.96/15"(DMH5)	EX. HOOD. VERIFY INVERT OUT
DMH1	4'ø	46.54	38.34/12"(CB1) 39.34/8" (RD)	39.24/12"(DMH2)	
DMH2	4'ø	47.18	39.12/12"(DMH1)	39.02/12"(DMH3)	
DMH3	4'ø	48.53	38.82/12"(DMH2) 38.62/12"(OCS1)	38.52/12"(DMH4)	
DMH4	4'ø	45.00	38.35/12"(DMH3)	38.25/12"(SMH1)	
DMH5	4'ø	19.05	/15"(CB3)	EXISTING	
DMH6	4'ø	39.00	EXISTING 35.61/8"(DMH7)	EXISTING	
DMH7	4'ø	41.69	38.33/8"(RD)	38.22/8"(DMH6)	
ACCESS STRUCTURE	4'ø	46.37	–	40.00/24"(CULTEC CHAMBER(POND1))	

NOTE: INSTALL SEDIMENT HOODS (SNOUT) ON ALL CATCH BASIN OUTLET PIPES 18"ø AND LESS.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE – LUCAS ANTHONY 13250 – LICENSED PROFESSIONAL ENGINEER – 8/16/18

Rev.	Date	Revision
2	8/17/18	REVISED PER CITY COMMENTS
1	7/24/18	UPDATED SITE DATA AND PARKING PER NEW FLOOR PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	7/3/18	LSA

Design: CEH | Drafted: CG | Date: JUL 2018
Checked: LSA | Scale: 1"=20' | Job No.: 3184
File Name: 3184-GRADING.dwg

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Drawing Name: GRADING, DRAINAGE, & EROSION CONTROL PLAN
Project: Shipyard Redevelopment, Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC, 470 Fore Street, Portland, ME 04101

Drawing No. C104

S:\3184_Shipyard Brewing\2 – CAD\plan\3184-GRADING.dwg 8/17/2018 4:47 PM

EXHIBIT C

11. Post-Construction Stormwater Management Plan

The stormwater facilities will be maintained by the Applicant, 86 Newbury Street, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report.

Long-term operation/maintenance for the stormwater facilities must comply with Chapter 32 of the City of Portland Code of Ordinances. An excerpt for the annual report requirements is provided below:

The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.

Snow Storage:
Plowed snow stored on-site shall not be placed over the FocalPoint filter system. Snow shall be removed from the site by a private commercial waste hauler.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to observe that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Ditches, Swales, and other Open Stormwater Channels:
Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap

lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sideslopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Inlet/Outlet Control Structures:
Inspect structures and piping 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure.

Stormdrain Outlets:
Inspect outlets 2 times per year (preferably in Spring and Fall) to ensure that the outlets are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit Repair any erosion damage at the stormdrain outlet.

Subsurface Detention Chambers:
Inspect chambers per manufacturer's recommendation. At a minimum, inspect chambers two times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove sediment from isolator row when depth of sediment reaches three inches.

FocalPoint System:
A five-year maintenance and inspection contract shall be obtained with a professional with knowledge of erosion and stormwater control including experience with the FocalPoint system. The contract shall be renewed before its expiration. At a minimum the system shall be inspected every six months. Remove sediment and provide maintenance as required based upon the inspection.

Green Roof:
A maintenance and inspection contract shall be obtained with a trained and qualified professional using horticulture and safety best practices, as working on elevated structures may require safety training, and specialized protective equipment. At a minimum the system should be inspected per manufacture's recommendation. Basic green roof maintenance involves watering, weeding, and plant care in the spring, summer, and fall seasons.

EROSION AND SEDIMENTATION CONTROL
BASIC STANDARDS

1.1 Overview

This Exhibit demonstrates the Applicant has made adequate provision for controlling erosion and sedimentation.

1.2 Introduction

Gorrill Palmer has been retained by 86 Newbury Street, LLC. to prepare an Erosion and Sedimentation Control Report for the construction of a proposed six story multi-use building and parking structure. The development will consist of demolishing three existing buildings and the construction of a six story multi-use building and associated parking structure at 86 Newbury Street in Portland, Maine, currently the Shipyard Brewery. The parcel is bounded by Newbury, Fore, Mountfort, and Hancock Streets. The proposed development includes construction of one building with the following uses:

- Office
- Hotel
- Parking Structure
- Lab/Industrial
- Retail Space
- Residential

Figure 1 is a map showing the project location. 86 Newbury Street, LLC. is currently seeking a Maine Construction General Permit from the Maine Department of Environmental Protection (MDEP). Gorrill Palmer has prepared an Erosion and Sedimentation Control Plan for the proposed development. This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project.

1.3 Narrative

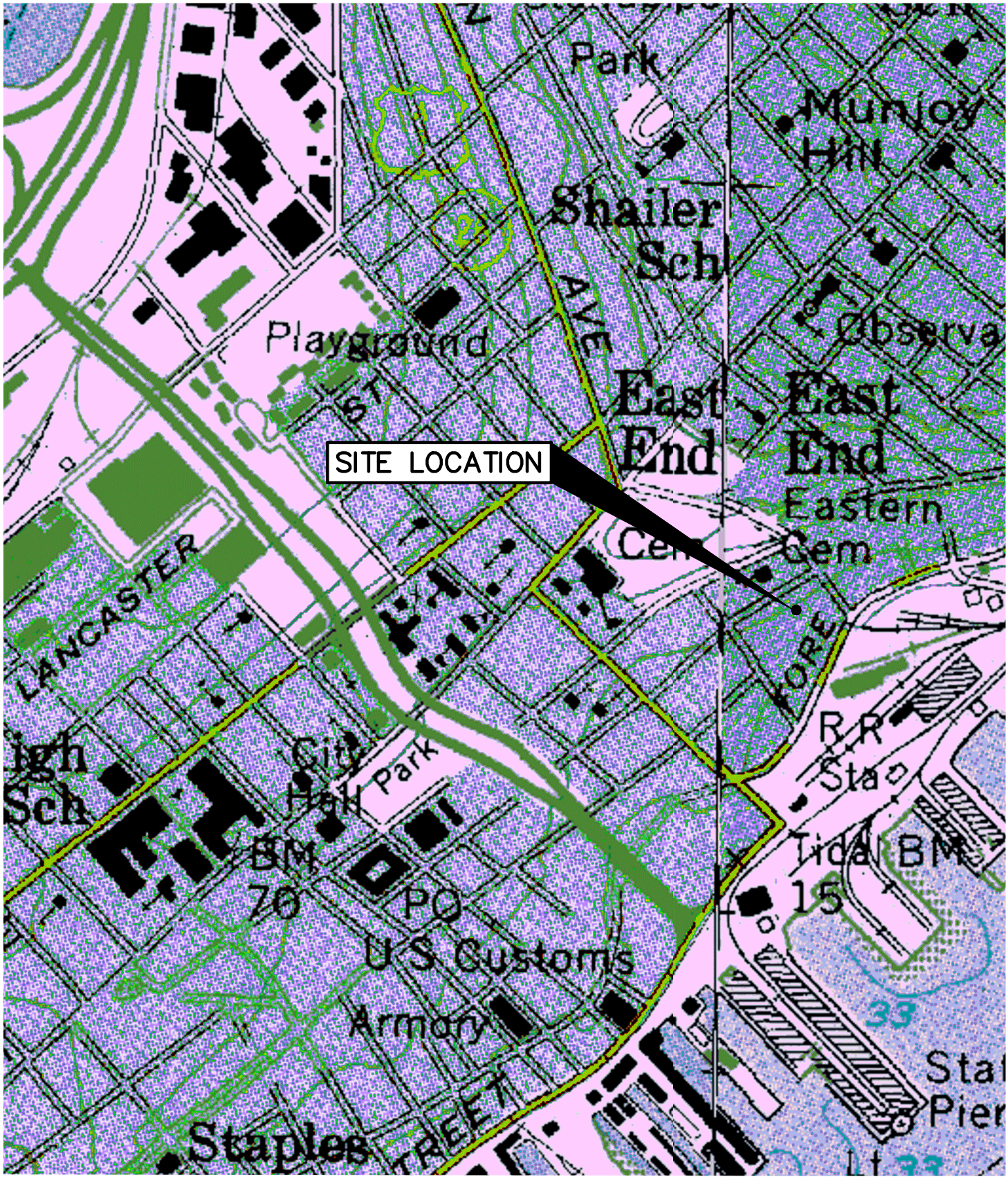
1.3.1 Existing Conditions and Soil Types

The site is approximately 2.1 acres in size and is currently developed with the Shipyard Brewery, two apartment buildings and parking areas. The total developed area is approximately 2.1 acres. Abutting land uses include:

- North –Residential (single family homes)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East — Residential (townhouses)

Topography in the area of the proposed construction generally slopes in the westerly direction with slopes in the range of 3% to 7%.

The Medium Intensity Soil Survey for Cumberland County as prepared by the Natural Resources Conservation Service was utilized in identifying the on-site soils. The soil report for this vicinity follows this page. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The higher values are



U.S.G.S. Location Map

Shipyard Brewing Company - Portland, Maine

U.S.G.S. Portland East/West, Maine -7.5 Minute Series (Topographic)

Design: BMG	Date: MARCH 2017
Draft: CG	Job No.: 3184
Checked: LSA	Scale: None
File Name: 3184-LOCATION.dwg	

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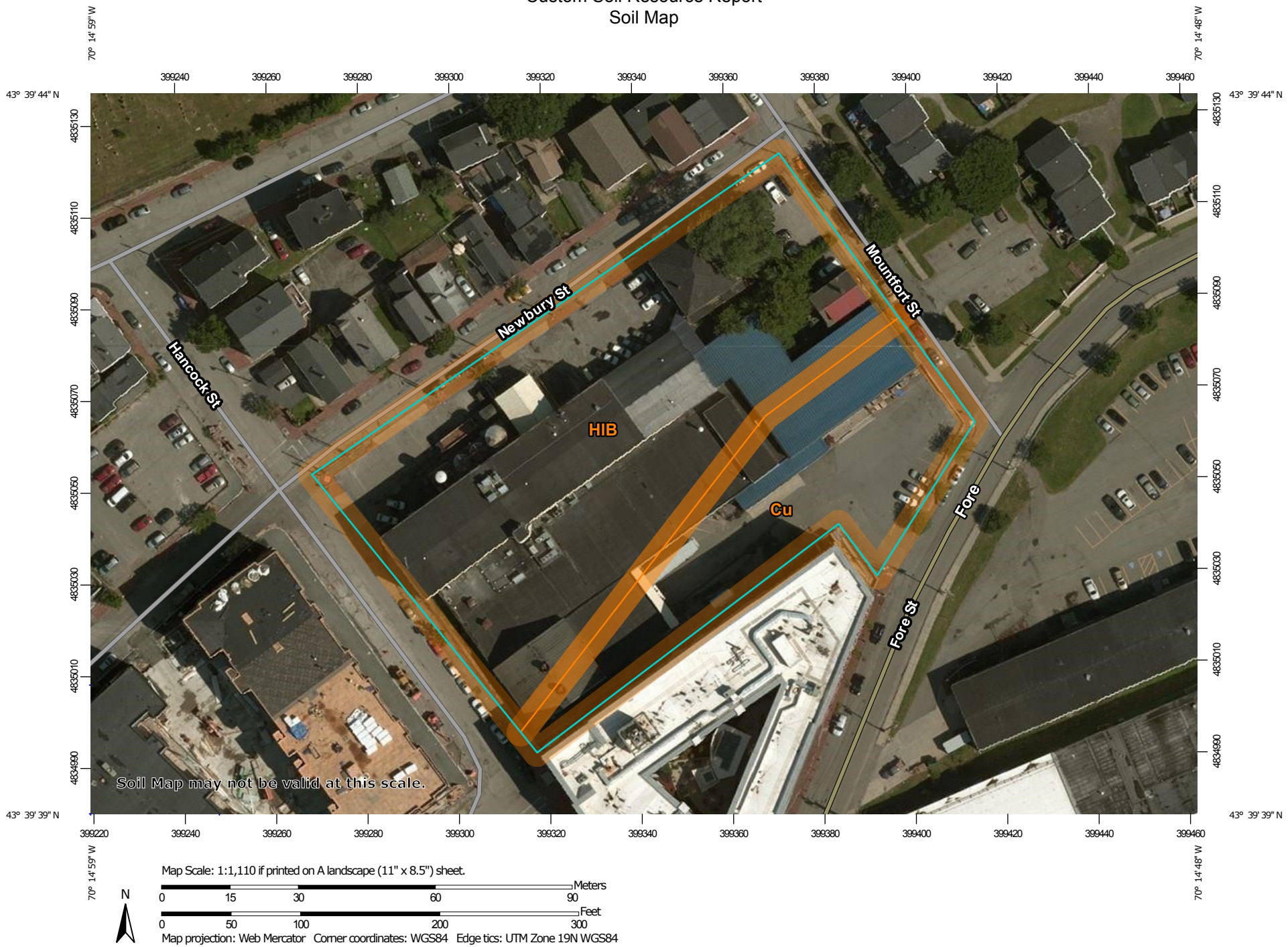
Figure 1

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,110 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 12, Sep 15, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 31, 2013—Aug 11, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Cu	Cut and fill land	0.7	28.9%
HIB	Hinckley loamy sand, 3 to 8 percent slopes	1.7	71.1%
Totals for Area of Interest		**2.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

indicative of the more erodible soils. The following table lists the soils found on site and their K values:

K VALUE		
Type	Subsurface	Substratum
Hinckley	0.17	0.17
Cut and Fill Land	NA	NA

The Hinckley soils have low susceptibility to erosion.

1.3.2 Existing Erosion Problems

Gorrill Palmer is not aware of any existing erosion problems onsite.

1.3.3 Critical Areas

Gorrill Palmer is not aware of any critical areas onsite.

1.3.4 Protected Natural Resources

The site does not contain any wetlands. Based upon the FEMA maps, the site is not located within a Zone A 100-year floodplain.

1.3.5 Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (hay bales/ stone check dams/silt fence, etc.)

The following temporary and permanent erosion and sediment control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control BMPS.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a

protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Monitoring

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

The following standards must be met during construction

(a) **Inspection and corrective action.** Inspect disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspect these areas at least once a week as well as before and within 24 hours after a storm event (rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including standards and conditions in the permit, shall conduct the inspections.

(b) **Maintenance.** If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If additional BMPs or significant repair of BMPs are necessary, implementation must be completed within 7 calendar days prior to any storm event (rainfall). All measures must be maintained in effective operating condition until areas are permanently stabilized.

(c) **Documentation.** Keep a log (report) summarizing the inspections and any corrective action taken. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicles access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

The log must be made accessible to MDEP and City of Portland staff and a copy must be provided upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

C. Temporary Erosion Control Measures

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. A crushed stone-stabilized construction entrance shall be placed at the approved drive off Fore Streets and Newbury Streets.

2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less then 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

4. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

a) Temporary stockpiles shall not be located within 50 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.

c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.

5. All denuded areas that are within 50 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 100 feet of an

undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

7. Hancock Street, Newbury Street, Mountfort Street, and Fore Street shall be swept to control mud and dust as necessary. Additional stone shall be added to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or approved sediment bags (such as Silt Sack). Installation details are provided in the plan set. The barriers shall be inspected after each rainfall and repairs made as necessary. Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. The barrier shall be removed when the tributary drainage area has been stabilized.

12. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

13. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric

netting, anchored with staples, shall be placed over the mulch in areas as noted in **Temporary Erosion Control Measures** paragraph 3 of this report. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

2. All storm drain pipe outlets shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized to the extent practicable prior to directing runoff to the tributary pipe or culvert.

3. Catch basins shall be provided with sediment sumps and inlet hoods (the Snout) for all outlet pipes that are 18" in diameter or less.

1.4 Implementation Schedule

The following construction sequence shall be required to insure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction of the project will commence in Fall of 2018 and be completed by Fall of 2019.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area.

1. Install stabilized construction entrance along Newbury Street and Fore Street.
2. Install perimeter silt fence and/or wood waste berms prior to commencement of demolition.
3. Perform demolition of existing site elements.
4. Foundation preparation area shall be excavated for installation of the building foundations. Building work will be on going through the remainder of the project.
5. Commence installation of drainage appartenances.
6. Commence earthwork and grading to subgrade.
7. Commence earthwork for Subsurface Chambers.
8. Commence installation of water and sewer lines.
9. Continue earthwork and grading to subgrade as necessary for construction.
10. Complete installation of underground utilities to within 5' of the buildings.
11. Install light pole foundations and light poles.
12. Complete remaining earthwork operations.

13. Complete installation of drainage appurtenances.

14. Install sub-base and base gravel within walkways, and drives.

15. Install brick sidewalk.

16. Install base course paving for drives and concrete surfaces.

17. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.

18. Install surface course paving for drives. Stripe per plan.

19. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.

20. Touch up loam and seed.

    Note: All denuded areas not subject to final paving, riprap, or gravel shall be revegetated.

Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

2. The work shall be conducted in sections which shall:

   a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.

   b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 50 feet of an undisturbed wetland and 7 days for all other areas. Areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.

   c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

1.5 Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control information is included in the plan set.

1.6 Details and Specifications

The Erosion Control details and specifications are included in the plan set.

1.7 Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to those areas in which work is expected to be under taken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway/parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

1. Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 50 feet from any natural resources.

2. Natural Resource Protection

Any areas within 50 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 50 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

3. Sediment Barriers

During frozen conditions, sediment barriers shall consist of woodwaste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

4. Mulching

An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

5. Mulching on Slopes and Ditches

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

6. Seeding

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

Standards for Timely Stabilization of Construction Sites During Winter

1. Standard for the timely stabilization of ditches and channels -- The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If

the applicant fails to stabilize a ditch or channel to be grass-lined by September 1, then the applicant will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch -- The applicant shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch --The applicant shall line the ditch with stone riprap by November 15. The applicant shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the applicant shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes -- The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope. If the applicant fails to stabilize any slope to be vegetated by September 1, then the applicant shall take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats -- By September 1 the applicant shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the applicant shall cover the slope with a layer of woodwaste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod -- The applicant shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the applicant pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The applicant shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with woodwaste compost -- The applicant shall place a six-inch layer of woodwaste compost on the slope by November 15. Prior to placing the woodwaste compost, the applicant shall remove any snow accumulation on the disturbed slope. The applicant shall not use woodwaste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap -- The applicant shall place a layer of stone riprap on the slope by November 15. The applicant shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

3. Standard for the timely stabilization of disturbed soils -- By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails

to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation -- By September 1 the applicant shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed soil before November 1, then the applicant shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod -- The applicant shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch -- By November 15 the applicant shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the applicant shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the applicant will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

1.8 Maintenance of facilities

The stormwater facilities will be maintained by the Applicant, 86 Newbury Street, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report.

Long-term operation/maintenance for the stormwater facilities must comply with Chapter 32 of the City of Portland Code of Ordinances. An excerpt for the annual report requirements is provided below:

> *The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.*

Snow Storage:
Plowed snow stored on-site shall not be placed over the FocalPoint filter system. Snow shall be removed from the site by a private commercial waste hauler.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to observe that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Ditches, Swales, and other Open Stormwater Channels:
Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sideslopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Inlet/Outlet Control Structures:
Inspect structures and piping 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure.

Stormdrain Outlets:
Inspect outlets 2 times per year (preferably in Spring and Fall) to ensure that the outlets are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit Repair any erosion damage at the stormdrain outlet.

Subsurface Detention Chambers:
Inspect chambers per manufacturer's recommendation. At a minimum, inspect chambers two times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove sediment from isolator row when depth of sediment reaches three inches.

FocalPoint System:
A five year maintenance and inspection contract shall be obtained with a professional with knowledge of erosion and stormwater control including experience with the FocalPoint system. The contract shall be renewed before its expiration. At a minimum the system shall be inspected every six months. Remove sediment and provide maintenance as required based upon the inspection.

Post-Construction Stormwater Management Plan

As part of the Stormwater Permit, the applicant is required to meet the standards in Section 5 of the City of Portland Technical Manual for Stormwater Management. The General Standard in item IV. Submission Requirements states that a project must submit a Post-Construction Stormwater Inspection & Maintenance Plan per Maine DEP Chapter 500 Appendix B with reporting requirements per Chapter 32 of City of Portland Code of Ordinances, and a Stormwater Maintenance Agreement. The management plan shall comply to Chapter 32 of City of Portland Code of Ordinances as follows:

(a) The owner or operator of a BMP shall hire a qualifies post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning, and maintenance requirements of the approved post-construction stormwater management plan.
(b) If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide record of the deficiency and corrective action(s) to the department of public works ("DPW") in the annual report.
(c) The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.
(d) Any person(s) required to file an annual certification under this section shall include with the annual certification a filing fee established by DPW to pay the administrative and technical costs of review of the annual certification.
(e) In order to determine compliance with this article and with the post-construction stormwater management plan, DPW may enter upon property at reasonable hours with the consent of the owner, occupant, or agent to inspect the BMPs.

Housekeeping

The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to MDEP Chapter 500 rules – Appendix C.

Spill Prevention:
Appropriate spill prevention, containment, and response planning/implementation shall be used to prevent pollutants from being discharged from materials on site.

Groundwater Protection:
During construction, hazardous materials with the potential to contaminate groundwater shall not be stored or handled in areas of the site which drain to an infiltration area.

Fugitive Sediment and Dust:
Appropriate measures shall be taken to ensure that activities do not result in noticeable erosion of the soils and water and/or calcium chloride shall be used to ensure that activities do not result in fugitive dust emissions during or after construction.

Debris and Other Materials:
Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench or Foundation De-watering:
Water collected through the process of trenching and/or de-watering must be removed from the ponded area, and must be spread through natural wooded buffers or other areas that are specifically designed to collect the maximum amount of sediment possible.

Non-stormwater Discharges:
Identify and prevent contamination by non-stormwater discharges.

Conclusion

The Applicant has provided temporary and permanent erosion control measures as well as specifying a sequence of construction as measures to minimize erosion and sedimentation.

Attachments

Attachment A - Seeding Plan

Attachment B - Inspection Report

Attachment C - Maintenance Log

ATTACHMENT A

SEEDING PLAN

SEEDING PLAN

Project: Shipyard Redevelopment

Site Location: 86 Newbury Street, Portland, Maine

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   50% Winter Rye

   50% Annual Rye

6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	13.8	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: Shipyard Redevelopment

Site Location: 86 Newbury Street, Portland, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   40% Creeping Red Fescue

   30% Charger II Perennial Ryegrass

   20% KenBlue Kentucky Bluegrass

   10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	18.4	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

ATTACHMENT B

INSPECTION REPORT

STORMWATER POLLUTION PREVENTION PLAN

INSPECTION REPORT

PROJECT INFORMATION

Project Name: Shipyard Redevelopment

Address: 86 Newbury Street
Portland, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN
(MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____
Signature

_____
Typed Name

_____
Title

_____
Date

ATTACHMENT C

MAINTENANCE LOG

STORMWATER INSPECTION LOG
86 NEWBURY STREET

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free to debris. Remove any obstructions to flow: remove floating debris at the time of the inspection.

Inlet/Outlet Control Structures:
Inspect structures and piping 2 times per year (Preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure.

Subsurface detention chambers:
Inspect chambers per manufacturer's recommendation. At a minimum inspect chambers 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove sediment from Isolator row when depth of sediment reaches 3 inches.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

FocalPoint Units:
Maintenance shall be performed at least 2 times per year (preferably in Spring and Fall). At a minimum, the maintenance shall consist of the following:
1. FocalPoint Unit Inspection
2. Foreign debris, silt, mulch & trash removal
3. Filter media evaluation and recharge as necessary

<u>Post-Construction Stormwater Management Plan</u>

As part of the Stormwater Permit, the applicant is required to meet the standards in Section 5 of the City of Portland Technical Manual for Stormwater Management. The General Standard in item IV. Submission Requirements states that a project must submit a Post-Construction Stormwater Inspection & Maintenance Plan per Maine DEP Chapter 500 Appendix B with reporting requirements per Chapter 32 of City of Portland Code of Ordinances, and a Stormwater Maintenance Agreement. The management plan shall comply to Chapter 32 of City of Portland Code of Ordinances as follows:

(a) The owner or operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and pones, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

(b) If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide record of the deficiency and corrective action(s) to the Homeowner's Association in an annual report.

(c) The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to the DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.

(d) Any persons required to file an annual certification under this section shall include with the annual certification a filing fee established by DPW to pay the administrative and technical costs of review of the annual certification.

(e) In order to determine compliance with this article and with the post-construction stormwater management plan, DPW may enter upon property at reasonable hours with the consent of the owner, occupant or agent to inspect the BMPs

Shipyard

Maintenance Log

Personnel:				
Date:				
Structure	**Condition**	**Depth of Sediment**	**Inspection Comments**	**Maintenance Required**
Ex. CB1				
Ex. CB2				
Ex. CB3				
OCS1				
OCS2				
Access Structure				
		Condition	**Inspection Comments**	**Maintenance Required**
FocalPoint				
Cultec Chambers				

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

June 14, 2018

Brad Roland
Department of Public Services
55 Portland Street
Portland, Maine 04101-2991

Re: Proposed Shipyard Brewing Redevelopment
Newbury Street, Portland
Letter of Ability to Serve

Dear Brad,

86 Newbury Street, LLC has retained Gorrill Palmer to prepare plans and permit applications for the proposed Shipyard Brewing Redevelopment at 86 Newbury Street. The project includes construction of a parking garage, office, hotel, specialty pharmacy and fulfillment facility, and residential units with retail in three separate buildings. A portion of the Shipyard building is proposed to remain. Preliminary sketches are enclosed for your review. We are requesting an ability to serve letter from the Department of Public Services. The Department's Application Form is attached.

Description of Development Site

The site encompasses Tax Map 20, lots C001, C002, C005, C009 and C015 and is approximately two acres in size. The site is bounded by Newbury, Mountfort, Fore, and Hancock Streets.

The site's current uses include the Shipyard Brewery and two multi-unit residential buildings. Abutting land uses include:

- North –Residential (single family homes)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East — Residential (townhouses)

Project Description

The proposed development includes the following:

- Four-level, 380 space parking garage
- 2,500 sf tasting room with 2,700 sf retail (existing Shipyard retail/tasting to remain)
- 9,590 sf brewery
- 105 room hotel
- 60,000 sf specialty pharmacy and fulfillment
- 107,171 sf office
- Three detached buildings, with retail or storage on the first floors, and a total of 10 residential units above

Existing sanitary sewer mains are located in Fore (48"), Mountfort (12"), Hancock (15") and Newbury Streets (12"). The existing sewer service which serves the retail space is proposed to remain, and will also serve the new tasting room. Service for the three detached retail/residential buildings along Newbury Street is proposed to be served from Newbury Street at shown on the attached plans. Sanitary service for the

office/garage/pharmacy/hotel, and a grease trap, are located on site, near Fore Street. The final design of the grease trap will be provided once the details of the hotel restaurant, if any, are known.

Anticipated Flows

The anticipated wastewater generation for the development was computed using the Maine Subsurface Waste Water Disposal Rules Table 4C. Based on the publication, *Water Supply and Pollution Control, Third Edition*, by Clark, Viessman and Hammer, Chapter 4, Section 5; the peak daily use can be considered to about 180% of the average daily use. The table below is a summary of the wastewater generation that is anticipated for the development vs the existing Shipyard usage.

Anticipated Wastewater Generation		
	Average Daily Wastewater Generation (gpd)	Peak Daily Wastewater Generation (gpd)
Proposed Development	8,912	16,041
Existing Development	100,000 (approx.)	180,000
Total Change:	-91,088	-163,959

The Water/Wastewater Generation Calculation sheet is attached to this letter.

Ability to Serve

The City of Portland Wastewater Capacity Application is attached and has been submitted to the City. In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of the Department of Public Services to serve the proposed project. In addition, we are interested in receiving:

- As-built information in the proposed connection areas.
- Any impact or connection fees associated with the development.
- Issues relating to any combined stormwater/sewer system which may affect the project.
- Any other information that you believe would be useful as this project proceeds.

Please contact me if you have any questions relative to this matter at 772-2515 or at cholmes@gorrillpalmer.com.

Sincerely,

Gorrill Palmer

Christi Holmes

Christi Holmes, Design Engineer

Enclosure

LA/ceh/U:\3184_Shipyard Brewing\H Utilities\Wastewater Portland.doc

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division

Date: 6/14/18

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 86 Newbury Street

Chart Block Lot Number: Map 20, Block C: 1, 2, 5, 9, 15

Proposed Use: Mixed-use office/hotel/commercial/residential
Previous Use: Commercial/residential
Existing Sanitary Flows: <500 est. GPD
Existing Process Flows: 100,000 GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.
12" in Newbury and existing on site manhole which connects to 8" in Fore St

Site Category		
	Commercial *(see part 4 below)*	X
	Industrial *(complete part 5 below)*	
	Governmental	
	Residential	
	Other *(specify)*	

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: Caitlin Cameron Phone: 874-8901
Owner/Developer Name: 86 Newbury Street, LLC, attn: David Bateman
Owner/Developer Address: 470 Fore Street, Portland, ME 04101
Phone: 772-2992 Fax: E-mail: david@batemanpartnersllc.com
Engineering Consultant Name: Gorrill Palmer, attn: Lucas Anthony
Engineering Consultant Address: 707 Sable Oaks Drive, Suite 30, South Portland, ME 04106
Phone: 772-2515 Fax: 772-2520 E-mail: lanthony@gorrillpalmer.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 8,912 average, 16,041 peak GPD
Peaking Factor/ Peak Times: 8am to 11am
Specify the source of design guidelines: *(i.e.* X *"Handbook of Subsurface Wastewater Disposal in Maine,"* __ *"Plumbers and Pipe Fitters Calculation Manual,"* __ *Portland Water District Records, Other (specify)* _____

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: _____

Size of External Grease Interceptor: 1,500 gal is currently shown. Final design will be

Retention Time: Determined Upon Final Design

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: n/a GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

See attached calculations

JOB	Shipyard Redevelopment			
SHEET NO.	1	OF	1	
CALCULATED BY	CEH	DATE	6/4/2018	
CHECKED BY	LSA	DATE	6/4/2018	
SCALE	None			

Task: Compute Proposed Design Flow for Shipyard Redevelopment based on Tables 4A and 4C of the Maine Subsurface Wastewater Disposal Rules for comparison to the Existing Flow.
Facility Information (retail, number of units) provided by Archetype

Assumptions:

1 employee per	200	sf office	1 employee per	1000	sf laboratory/fullfillment
1 employee per	400	sf specialty retail	1 employee per	10	rooms of hotel
1 seat per	100	sf bar/tavern	1 employee per	2000	sf brewery
1 employee per	1000	sf bar/tavern			

Proposed Use:

Office	107,171	SF
Fulfillment	34,808	SF
Laboratory	24,190	SF
Hotel	105	rooms
Specialty Retail	3,798	SF
Apartments	10	two bedrooms units
Tasting Room/Bar	2,500	SF
Brewery	9,590	SF

Wastewater Flow Per Use:

Office - place of employment with no showers	12	gpd/employee		
Laboratory/Fulfillment - place of employment with no showers	12	gpd/employee		
Hotel/Motel with Kitchen	60	gpd per bedroom	12	gpd per employee
Speciality Retail - place of employment with no showers	12	gpd/employee		
Two bedrooms or less	180	gpd/dwelling unit		
Bar/Tavern w/ limited food	15	gpd/seat	12	gpd/employee
Brewery	100	gpd	12	gpd/employee

Calculations: See Below

Conclusion: The proposed Peak Design Flow is **16,041** gallons/day

Water Use Calculations Based on Facility Usage

Office

Number of employees	536		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**6,430**	**gallons/day**	

Fulfillment

Number of employees	35		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**418**	**gallons/day**	

Laboratory

Number of employees	24		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**290**	**gallons/day**	

Hotel

Number of Rooms	105		
Flow Rate	60	gpd/bedroom	Per Table 4C
Number of employees	11		
Flow Rate	12	gpd/employee	
Subtotal	**6,426**	**gallons/day**	

Specialty Retail

Number of Employees	9		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**114**	**gallons/day**	

Two Bedrooms Units

Number of Units	10		
Flow Rate	180	gpd/unit	Per Table 4A
Subtotal	**1,800**	**gallons/day**	

Bar/Tavern

Number of Seats	25		
Flow Rate	15	gpd/seat	Per Table 4C
Number of Employees	3		
Flow Rate	12	gpd/employee	
Subtotal	**405**	**gallons/day**	

Brewery

Flow Rate (base)	100	gpd	
Number of Employees	5		
Flow Rate	12	gpd/employee	
Subtotal	**158**	**gallons/day**	

Total Design Flow **16,041** **gallons/day**

Christopher C. Branch, P.E.
Director of Public Works

Date: August 30, 2018

Re: Wastewater Capacity Authorization

Address: 86 Newbury Street
Applicant: 86 Newbury Street, LLC Attn: David Bateman

Planner: Caitlin Cameron

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Proposed flow				
Office				
Employees at place of employment with no showers	# Employees	447	12 GPD/Employee	5364
Fulfillment				
Employees at place of employment with no showers	# Employees	45	12 GPD/Employee	540
Laboratory				
Employees at place of employment with no showers	# Employees	35	12 GPD/Employee	420
Hotel				
Hotels and Motels with Private Bath	# Bedrooms	105	100 GPD/Bedroom	10500
Employees at place of employment with no showers	# Employees	11	12 GPD/Employee	132
Specialty Retail				
Employees at place of employment with no showers	# Employees	10	12 GPD/Employee	120
One or Two Bedroom Units				
Multiple Family Dwelling Units	2-Bedroom	10	180 GPD	1800

Bar/ Tavern (Tasting Room)				
Bar/ Tavern With Limited Food	# Seats	25	15 GPD/ Seat	375
Employees at place of employment with no showers	# Employees	3	12 GPD/Employee	36
Eating Place (Hotel Kitchen)				
Eating Place, 2 meals/ day	# Seats	50	20 GPD/ Seat	1000
Employees at place of employment with no showers	# Employees	15	12 GPD/Employee	180
Brewery				
Brewery	5475 Barrel Estimated Production		2325 GPD	2325
Employees at place of employment with no showers	# Employees	5	12 GPD/Employee	60
			Net Change	**+ 22,852**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,
CITY OF PORTLAND

Bradley A. Roland, P.E.
Senior Project Engineer

CC:
Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Stuart O'Brien, Planning Director, Department of Planning and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland

Keith Gray, City Engineer/Engineering Manager, Portland Department of Public Works

Nancy Gallinaro, Water Resources Manager, Portland Department of Public Works
Ben Pearson, Compliance Coordinator, Portland Department of Public Works

John Emerson, Wastewater Coordinator, Portland Department of Public Works

Lauren Swett, Woodard & Curran, DPW Development Review
Scott Firmin, Director of Wastewater, Portland Water District
Charlene Poulin, Wastewater Chief Operator – Systems

Christi Holmes

From: Cough, Jamie <Jamie.Cough@cmpco.com>
Sent: Friday, March 16, 2018 8:49 AM
To: Christi Holmes
Subject: Ability to Serve - Shipyard Redevelopment CMP Process Outline for Three Phase and CT rated services
Attachments: Easement_Information_Worksheet.doc; Standard Easement Sample.pdf; January 2018 EDET.xlsx

Christi Holmes
Design Engineer
Gorrill Palmer
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106
Sent via email to: cholmes@gorrillpalmer.com

RE: CMP Ability to Serve Letter for the Shipyard Brewery Site Development

Dear Ms. Holmes:

CMP has the ability to serve the proposed project in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please contact me.

Project Description:
Description of Development Site

The site encompasses Tax Map 20, lots C001, C002, C005, C009 and C015 and is approximately 2 acres in size. The site is bounded by Newbury, Mountfort, Fore, and Hancock Streets.

The site's current uses include the Shipyard Brewery and two multi-unit residential buildings. Abutting land uses include:

- North –Residential (single family homes)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East – Residential (townhouses)

Project Description

The proposed development includes the following:

- Three-story, 277 space parking garage
- 2,500 sf retail/tasting room (existing Shipyard retail/tasting to remain)
- 132 room hotel
- 60,000 sf specialty pharmacy and fulfillment
- 60,000 sf office

Existing overhead electric is located on Newbury, Mountfort and Fore Streets. The Shipyard Brewery is currently served by a pad mount transformer.

Here is our typical three phase process for getting your service installed. If you have any questions, please let me know.

Service Milestones for Three Phase Services and CT Rated Single Phase Services

- Call 1-800-565-3181 to establish a new account (if needed) and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete this CMP spreadsheet using load information
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

Please complete the attached forms (specific instructions are on each form) and email them back to me at your earliest convenience.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

CMP Handbook of Standard Requirements

Your deposit amount will be based on an estimated two month bill, calculated from your completed load sheet.

Please be advised that if you plan to install solar/wind/hydro generation, you must complete an application under the MPUC mandated Chapter 324 Interconnection Standards. If you go to http://www.cmpco.com/YourAccount/puc324.html and follow the instructions for the Small Generator Interconnection Procedures, CMP can do this work in parallel to your service request that will be handled by me. If you project is under 660 KW You will be able to have a Customer Net Energy Billing contract. Information concerning Chapter 313 (Customer Net Energy Billing) can be accessed thru the Chapter 324 website or by clicking here: Net Energy Billing .

If you have any questions, please contact me.

Attachments:

Excel Load Sheet
Easement Worksheet and Sample Standard Easement

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

==========

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==========

March 15, 2018

Christi Holmes
Gorrill Palmer
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106

Re: Shipyard Redevelopment, Newbury Street, Portland

Dear Ms. Holmes:

Thank you for your interest in using natural gas for the above referenced project.

This is to confirm that natural gas can be made available from our distribution system to serve your proposed project.

Any improvements to the existing distribution system necessary to provide this service, as well as the design of the gas system in the project itself will be established as the overall design and scope of your project progresses. Please provide gas load requirements in order for the evaluation to be completed.

If you have any further questions or require additional information, please contact Scott Carpenter directly at (207) 541-2543 or at carpenterc@unitil.com.

Sincerely,
Kelly Fowler
Business Development Executive
Unitil Corporation
(o) 207-541-2505 (f) 207-541-2565

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

June 15, 2018

Robert Bartels
AMAP MEANS
Portland Water District
225 Douglas Street
Portland, Maine 04104

Re: Proposed Shipyard Brewing Redevelopment
Newbury Street, Portland
Letter of Ability to Serve

Dear Robert,

86 Newbury Street, LLC has retained Gorrill Palmer to prepare plans and permit applications for the proposed Shipyard Brewing Redevelopment at 86 Newbury Street. The plans and proforma for the above referenced project have changed since we met last year. The project includes construction of a parking garage, office, hotel, specialty pharmacy and fulfillment facility, and residential units with retail in three separate buildings. A portion of the Shipyard building is proposed to remain. Preliminary sketches are enclosed for your review. We are requesting an ability to serve letter from the District.

Description of Development Site

The site encompasses Tax Map 20, lots C001, C002, C005, C009 and C015 and is approximately two acres in size. The site is bounded by Newbury, Mountfort, Fore, and Hancock Streets.

The site's current uses include the Shipyard Brewery and two multi-unit residential buildings. Abutting land uses include:

- North –Residential (single family homes)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East — Residential (townhouses)

Project Description

The proposed development includes the following:

- Four-level, 380 space parking garage
- 2,500 sf tasting room with 2,700 sf retail (existing Shipyard retail/tasting to remain)
- 9,590 sf brewery
- 105 room hotel
- 60,000 sf specialty pharmacy and fulfillment
- 107,171 sf office
- Three detached buildings, with retail or storage on the first floors, and a total of 10 residential units above

Existing water mains are located in Newbury (8"), Mountfort (12"), Fore (12") and Hancock (8") Streets. A 4" stub was installed in Hancock Street near the existing retail/tasting room. This location is expected to

serve the retail/tasting room and the brewery. Service for the three detached retail/residential buildings along Newbury Street is proposed to be served from Newbury Street as shown on the attached plans. The residential units are anticipated to be owned. Service for the office/garage/pharmacy/hotel will be served from two locations – Hancock and Mountfort Streets. Existing fire hydrants are located near the northwest corner of the parcel at the intersection of Hancock Street and Newbury Street, north of the parcel on Newbury Street, and the southeast corner at the intersection of Mountfort Street and Fore Street.

Anticipated Flows

The anticipated wastewater generation for the development was computed using the Maine Subsurface Waste Water Disposal Rules Table 4C. Based on the publication, *Water Supply and Pollution Control, Third Edition*, by Clark, Viessman and Hammer, Chapter 4, Section 5; the peak daily use can be considered to about 180% of the average daily use. The table below is a summary of the wastewater generation that is anticipated for the development vs the existing Shipyard usage.

Anticipated Wastewater Generation		
	Average Daily Wastewater Generation (gpd)	Peak Daily Wastewater Generation (gpd)
Proposed Development	8,912	16,041

The Water/Wastewater Generation Calculation sheet is attached to this letter.

Ability to Serve

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of Portland Water District to serve the project. In addition, we are interested in receiving:

- An estimate for any work the Water District would perform within the right-of-way.
- Information as to any easements that the District may require on-site.
- Any results of hydrant tests in the vicinity of the site.
- Any other information that you believe would be useful as this project proceeds.

Please contact me with any questions, or to set up a meeting. I can be reached at 772-2515 or at cholmes@gorrillpalmer.com

Sincerely,

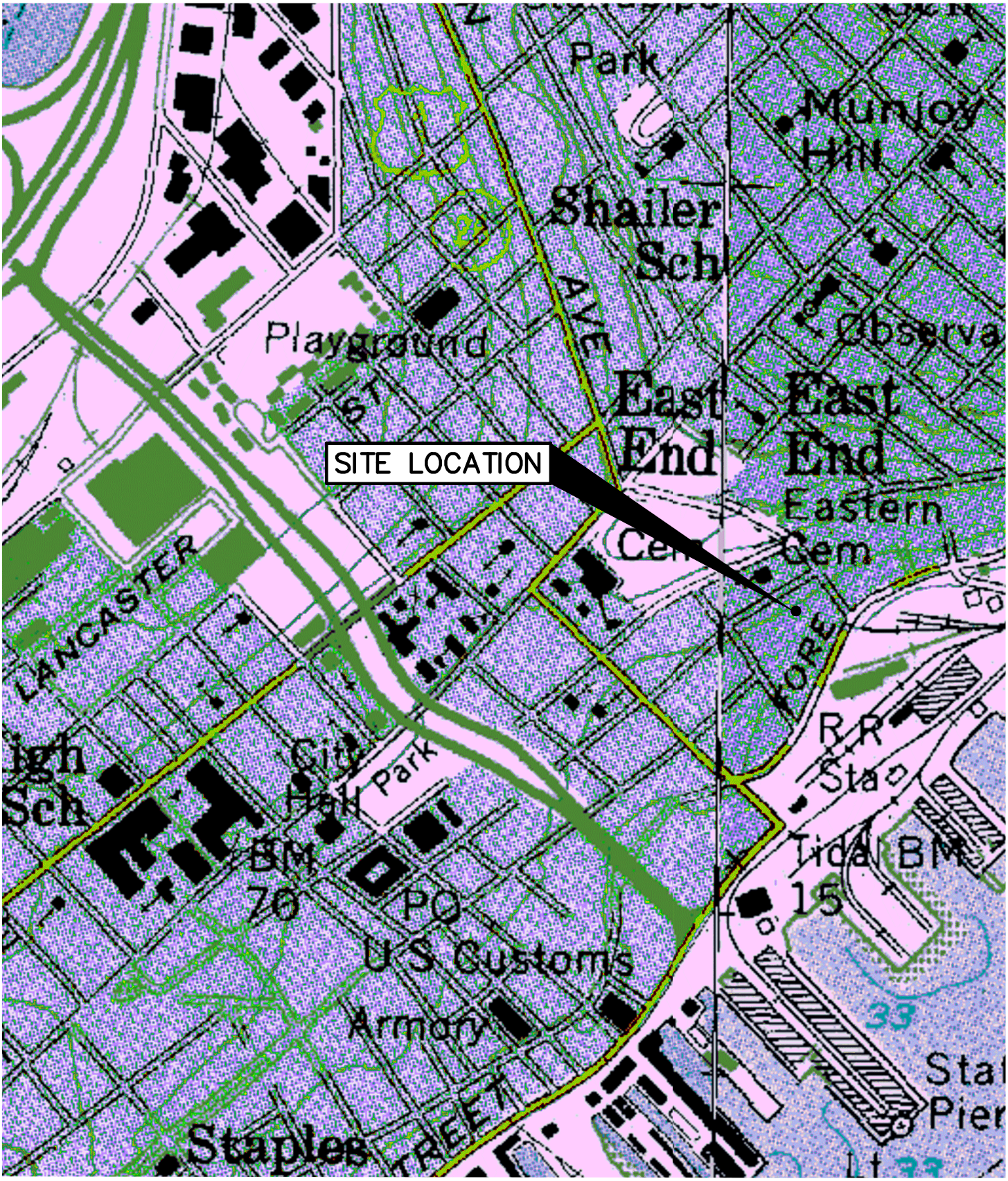
Gorrill Palmer

Christi Holmes

Christi Holmes
Design Engineer

Enclosure

LA/ceh/U:\3184_Shipyard Brewing\H Utilities\PWD.doc



U.S.G.S. Location Map

Shipyard Brewing Company - Portland, Maine

U.S.G.S. Portland East/West, Maine -7.5 Minute Series (Topographic)

Design: BMG	Date: MARCH 2017
Draft: CG	Job No.: 3184
Checked: LSA	Scale: None
File Name: 3184-LOCATION.dwg	

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Figure 1

JOB	Shipyard Redevelopment			
SHEET NO.	1	OF	1	
CALCULATED BY	CEH	DATE	6/4/2018	
CHECKED BY	LSA	DATE	6/4/2018	
SCALE	None			

Task: Compute Proposed Design Flow for Shipyard Redevelopment based on Tables 4A and 4C of the Maine Subsurface Wastewater Disposal Rules for comparison to the Existing Flow.
Facility Information (retail, number of units) provided by Archetype

Assumptions:

1 employee per	200	sf office	1 employee per	1000	sf laboratory/fullfillment
1 employee per	400	sf specialty retail	1 employee per	10	rooms of hotel
1 seat per	100	sf bar/tavern	1 employee per	2000	sf brewery
1 employee per	1000	sf bar/tavern			

Proposed Use:

Office	107,171	SF
Fulfillment	34,808	SF
Laboratory	24,190	SF
Hotel	105	rooms
Specialty Retail	3,798	SF
Apartments	10	two bedrooms units
Tasting Room/Bar	2,500	SF
Brewery	9,590	SF

Wastewater Flow Per Use:

Office - place of employment with no showers	12	gpd/employee		
Laboratory/Fulfillment - place of employment with no showers	12	gpd/employee		
Hotel/Motel with Kitchen	60	gpd per bedroom	12	gpd per employee
Speciality Retail - place of employment with no showers	12	gpd/employee		
Two bedrooms or less	180	gpd/dwelling unit		
Bar/Tavern w/ limited food	15	gpd/seat	12	gpd/employee
Brewery	100	gpd	12	gpd/employee

Calculations: See Below

Conclusion: The proposed Peak Design Flow is **16,041** gallons/day

Water Use Calculations Based on Facility Usage

Office

Number of employees	536		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**6,430**	**gallons/day**	

Fulfillment

Number of employees	35		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**418**	**gallons/day**	

Laboratory

Number of employees	24		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**290**	**gallons/day**	

Hotel

Number of Rooms	105		
Flow Rate	60	gpd/bedroom	Per Table 4C
Number of employees	11		
Flow Rate	12	gpd/employee	
Subtotal	**6,426**	**gallons/day**	

Specialty Retail

Number of Employees	9		
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	**114**	**gallons/day**	

Two Bedrooms Units

Number of Units	10		
Flow Rate	180	gpd/unit	Per Table 4A
Subtotal	**1,800**	**gallons/day**	

Bar/Tavern

Number of Seats	25		
Flow Rate	15	gpd/seat	Per Table 4C
Number of Employees	3		
Flow Rate	12	gpd/employee	
Subtotal	**405**	**gallons/day**	

Brewery

Flow Rate (base)	100	gpd	
Number of Employees	5		
Flow Rate	12	gpd/employee	
Subtotal	**158**	**gallons/day**	

Total Design Flow **16,041** **gallons/day**

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

September 19, 2018

Christi Holmes, P.E.
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106

Re: 86 Newbury Street, PO
Ability to Serve with PWD Water

Dear Ms. Holmes:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on March 16, 2018. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Please note that this letter does not constitute approval of this project from the District. Please review this letter for any special conditions specified by the District and to determine the appropriate next steps to take to move your project through the submittal and approval process. As your project progresses, we advise that you submit any preliminary design plans to MEANS for review of the water main and water service line configuration. We will work with you to ensure that the design meets our current standards.

Conditions of Service

The following conditions of service apply:

- New fire and domestic water services may be installed from the renewed water main in Newbury Street to the site. Size of fire and domestic services to be determined at a later date and approved by the District.
- New fire and domestic water services may be installed from the existing 8-inch DI water main in Hancock Street. Size of fire and domestic service to be determined at a later date and approved by the District.
- New fire and domestic water services may be installed from the existing 12-inch DI water main in Mountfort Street. Size of fire and domestic serve to be determined at a later date and approved by the District.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.
- An approved backflow prevention device must be installed on the domestic service line directly after the meter prior to service activation. Please refer to the PWD website for more information on cross-connection control policies.
- The existing services at this site may be used by the proposed development as long as the project team determines that they will provide adequate flow and pressure for the proposed use. If any of the existing services will no longer be used as a result of the development then they must be retired per PWD standards.

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does currently have existing water service. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of these services.

Water System Characteristics

According to District records, there is an 8-inch diameter cast iron water main in Newbury Street, an 8-inch diameter ductile iron water main in Hancock Street, a 12-inch diameter ductile iron water main in Mountfort Street, and a public fire hydrant located adjacent to the site. Recent flow data is not available in this area. The most recent static pressure reading was 90 psi.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the City of Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 15, 2018

Scott Derrig
Fairpoint Communications
5 Davis Farm Rd
Portland, ME 04103

Re: Proposed Shipyard Brewing Redevelopment
86 Newbury Street, Portland
Letter of Ability to Serve

Dear Scott:

The plans and proforma for the above referenced project have changed and we are requesting an updated ability to serve indication. The project includes construction of a parking garage, office, hotel and specialty pharmacy and fulfillment facility. A portion of the Shipyard building is proposed to remain. Preliminary sketches are enclosed for your review.

Description of Development Site

The site encompasses Tax Map 20, lots C001, C002, C005, C009 and C015 and is approximately 2 acres in size. The site is bounded by Newbury, Mountfort, Fore, and Hancock Streets.

The site's current uses include the Shipyard Brewery and two multi-unit residential buildings. Abutting land uses include:

- North –Residential (single family homes)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East — Residential (townhouses)

Project Description

The proposed development includes the following:

- Three-story, 277 space parking garage
- 2,500 sf retail/tasting room (existing Shipyard retail/tasting to remain)
- 132 room hotel
- 60,000 sf specialty pharmacy and fulfillment
- 60,000 sf office

Existing overhead service is located on Newbury, Mountfort and Fore Streets. It appears that the Shipyard Brewery is currently served by a pad mount transformer, and overhead service on the Newbury Street side of the building. It is unknown at this time where the proposed development will be served.

Ability to Serve

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of Fairpoint to serve the project. An email is sufficient and may be sent to cholmes@gorrillpalmer.com We will invite you to attend a utility coordination meeting as the project progresses.

If you require additional information, please contact me at 772-2515.

Sincerely,

Gorrill Palmer

Christi Holmes

Christi Holmes
Design Engineer

Enclosure

CEH/U:\3184_Shipyard Brewing\H Utilities\Fairpoint.doc

5 Davis Farm Rd
Portland, ME 04103
207- 878-0831 office
207-745-9363 cell
207- 797-1098 fax

April 16, 2018

To Whom It May Concern:

My name is Patrick Morrison and I am the engineer for the Westbrook area. This letter is to inform that Consolidated Communications has the capacity and willingness to serve the proposed redevelopment at Newbury ST in Portland, ME. Consolidated Communications currently has aerial copper facilities feeding the existing Shipyard Brewery at the site. We have fiber optics cable in the nearby area on Fore St. Please do not hesitate to contact me with any questions.

Sincerely,

Patrick Morrison

Consolidated Communications Outside Plant Engineer

207-878-0831 or 207-745-9363

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 15, 2018

Mark Pelletier
Spectrum
118 Johnson Road
Portland, ME 04102

Re: Proposed Shipyard Brewing Redevelopment
86 Newbury Street, Portland
Letter of Ability to Serve

Dear Mark:

The plans and proforma for the above referenced project have changed and we are requesting an updated ability to serve indication. The project includes construction of a parking garage, office, hotel and specialty pharmacy and fulfillment facility. A portion of the Shipyard building is proposed to remain. Preliminary sketches are enclosed for your review.

Description of Development Site

The site encompasses Tax Map 20, lots C001, C002, C005, C009 and C015 and is approximately 2 acres in size. The site is bounded by Newbury, Mountfort, Fore, and Hancock Streets.

The site's current uses include the Shipyard Brewery and two multi-unit residential buildings. Abutting land uses include:

- North –Residential (single family homes)
- West – Residential (condominiums)
- South – Commercial (Marriott Residence Inn)
- East — Residential (townhouses)

Project Description

The proposed development includes the following:

- Three-story, 277 space parking garage
- 2,500 sf retail/tasting room (existing Shipyard retail/tasting to remain)
- 132 room hotel
- 60,000 sf specialty pharmacy and fulfillment
- 60,000 sf office

Existing overhead service is located on Newbury, Mountfort and Fore Streets. It appears that the Shipyard Brewery is currently served by a pad mount transformer, and overhead service on the Newbury Street side of the building. It is unknown at this time where the proposed development will be served.

Ability to Serve

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of Spectrum to serve the project. An email is sufficient and may be sent to cholmes@gorrillpalmer.com We will invite you to attend a utility coordination meeting as the project progresses.

For additional information, please contact me at 772-2515.

Sincerely,

Gorrill Palmer

Christi Holmes

Christi Holmes
Design Engineer

Enclosure

CEH/U:\3184_Shipyard Brewing\H Utilities/Spectrum.doc

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

April 3, 2017

Christi Holmes
Gorrill and Palmer
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106

Via email: cholmes@gorrillpalmer.com

Re: Rare and exemplary botanical features in proximity to: Project 3184, Shipyard Brewing Redevelopment, Portland, Maine

Dear Ms. Holmes:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received March 31, 2017 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. Based on the information in our files and the landscape context of this project, there is a low probability that rare or significant botanical features occur at this project location.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-8044
FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Don Cameron | Ecologist | Maine Natural Areas Program
207-287-8041 | don.s.cameron@maine.gov

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

April 8, 2017

Christi Holmes
Gorrill Palmer
P.O. Box 1237, 15 Shaker Road
Gray, ME 04039

RE: Information Request - Shipyard Brewing Company redevelopment, Portland

Dear Christi:

Per your request received March 31, 2017, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *Shipyard Brewing Company redevelopment Project* in Portland.

Our Department has not mapped any Essential or Significant Wildlife Habitats or fisheries habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats

Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (*M. lucifugus*, State Endangered); northern long-eared bat (*M. septentrionalis*, State Endangered); and eastern small-footed bat (*M. leibii*, State Threatened). The five remaining bat species are listed as Special Concern: big brown bat (*Eptesicus fuscus*); red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and tri-colored bat (*Perimyotis subflavus*). It is possible that some of these bat species could occupy the structure(s) in the project review area. Unless there is a threat to human health and safety, we recommend that construction or demolition work on bat-occupied portions of the structure not occur between June 1 and August 15, when young bats are still unable to fly and would likely die without parental care. For more information on preventing conflicts with bats, we recommend following the "Preventing Conflicts" guidelines found here[1].

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

1"Living with Wildlife: Bats." Maine Department of Inland Fisheries and Wildlife. https://www1.maine.gov/ifw/wildlife/human/lww_information/bats.html

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

John Perry
Environmental Review Coordinator

Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Portland, Shipyard Brewing Company redevelopment(Version 1)

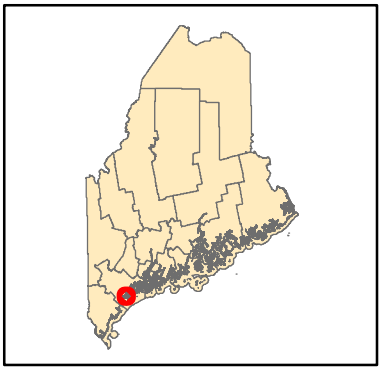
Maine Department of Inland Fisheries and Wildlife

0 0.125 0.25 0.5 0.75 1 Miles

Projection: UTM, NAD83, Zone 19N

Date: 4/4/2017

- Shorebird Areas
- Tidal Waterfowl/Wading Bird
- ETSc Environmental Review Polygons



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

RECEIVED
APR 26 2017

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

April 24, 2017

Ms. Christi Holmes
Design Engineer
Gorrill Palmer
77 Sable Oaks Drive, Suite 30
South Portland, ME 04106

Project: MHPC #0430-17 86 Newbury Street LLC; Map 20; Lots C001, 002, 005, 009, 015
Proposed Shipyard Brewing Redevelopment

Town: Portland, ME

Dear Ms. Holmes:

In response to your recent request, I have reviewed the information received April 5, 2017 to initiate consultation on the above referenced project in accordance with the City of Portland's regulations.

The proposed project area is not only sensitive to historic archaeology but located near the National Register Listed Abyssinian Meeting House. The project is located near the adjacent India Street Historic District which is a local historic district. The two buildings that are proposed to be demolished as part of the project are the William Mundy House and the William Mundy Block. Information at our office includes historic photographs of the buildings from the 1924 Portland tax records and architectural survey forms from 2003 that have details of deed research completed at that time. At this time, additional information is needed on these two buildings in order for our office to make a determination of eligibility for the National Register of Historic Places. If possible, please provide our office with a detailed history of these two buildings including information on the various tenants of both buildings since their construction, where they worked and their ethnicity, as well as additional information on William Mundy and who he was in Portland's history. Please include interior photos of each building.

The block within which the proposed project is to occur has witnessed a long period of development that spans the 18th through 21st centuries. The earliest 18th-century occupation consisted of residences on Fore Street that overlooked Portland harbor and had access to a private wharf (see 1770s map). Subsequent development by the mid-19th century consisted of dwellings and shops on all street faces (1851, 1857 maps). The fact that the Abyssinian Meeting House is directly across the street from the project area suggests that the ethnic makeup of the neighborhood at that time may have included African Americans, the homes of which are archaeologically undocumented in Portland. In time industrial development occurred in the south and central portion of the block in the form of a sugar refinery (1871 map). Other commercial and industrial buildings followed, such that by the mid-20th century the block had been largely transformed to industrial production (machine shops among others). This trend has continued to the present with only a few domestic residences remaining on Newbury and Mountfort Streets.

Such a progression of development is frequently assumed to have destroyed evidence of earlier occupation that would be of archaeological significance. It is often the case, however, that the history of occupation is surprisingly well preserved in the form of archaeological remains, even under existing buildings and in areas that have escaped deep excavation for cellars. Due to this fact much of the proposed project area maintains the potential to contain significant domestic and industrial archaeological resources associated with Euro-American and African American occupation in the form of foundations, cellars, trash pits, privies and deposits resulting from specific activities.

A Phase I Archaeological Reconnaissance Survey, therefore, is recommended for the proposed project area. This survey should consist of documentary and map research and assessment of existing structures to document the site's land use history and potential for preservation of intact archaeological resources. This work should be accompanied by Phase I shovel testing of available yard spaces where such testing is deemed to be warranted.

If the findings of the Phase I survey result in a recommendation for further investigation at the Phase II level, it is suspected that much of that investigation will consist of monitoring construction-associated excavation in close cooperation with the site contractor. The purpose of the monitoring is to identify and document archaeological resources before they are removed. This approach will save time, but will require that archaeologists be given time to document any findings.

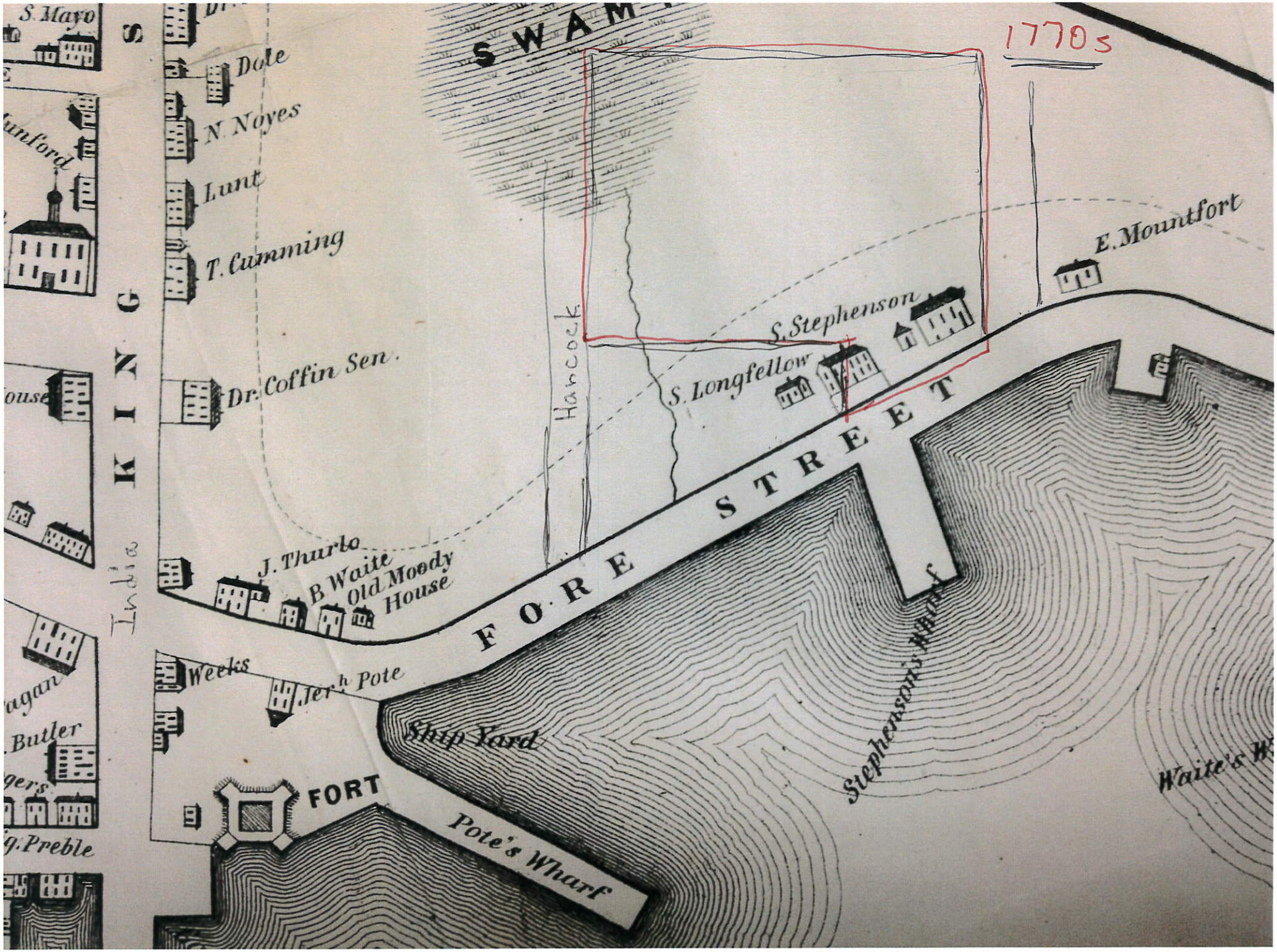
Once this information is received, we will forward a response regarding the results of our evaluation. Please contact Megan Hopkin at (207) 287-2992 or megan.m.hopkin@maine.gov if you have any questions regarding this request.

Sincerely,

Kirk F. Mohney

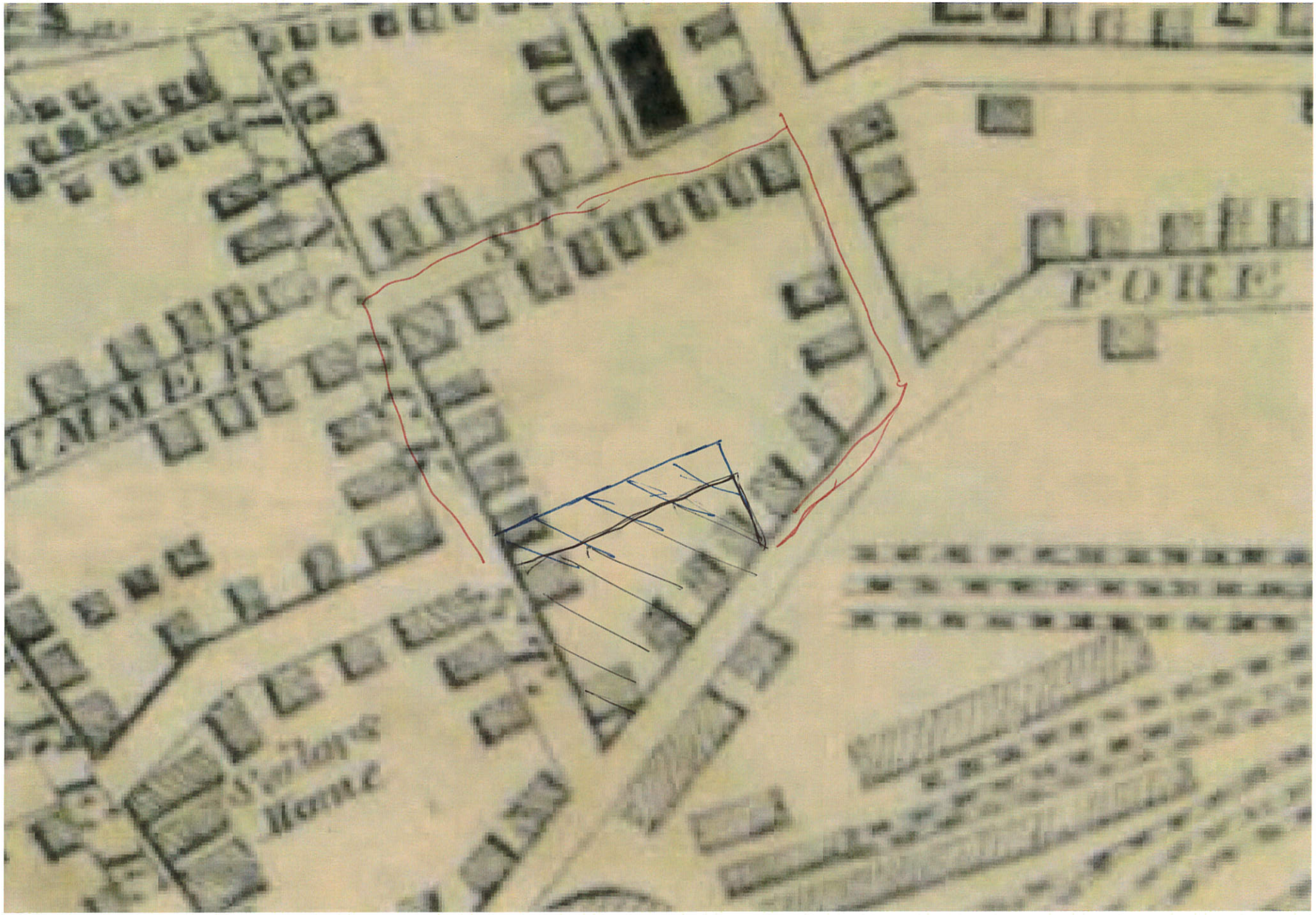
Kirk F. Mohney
State Historic Preservation Officer

Enc.


1770s
S. Mayo
Dole
N. Noyes
Lunt
T. Cumming
Dr. Coffin Sen.
J. Thurlo
B. Waite
Old Moody House
Weeks
Jer.h Pote
Ship Yard
FORT
Pote's Wharf
Hancock
S. Stephenson
S. Longfellow
E. Mountfort
FORE STREET
Stephenson's Wharf
KING
India
Butler
Preble

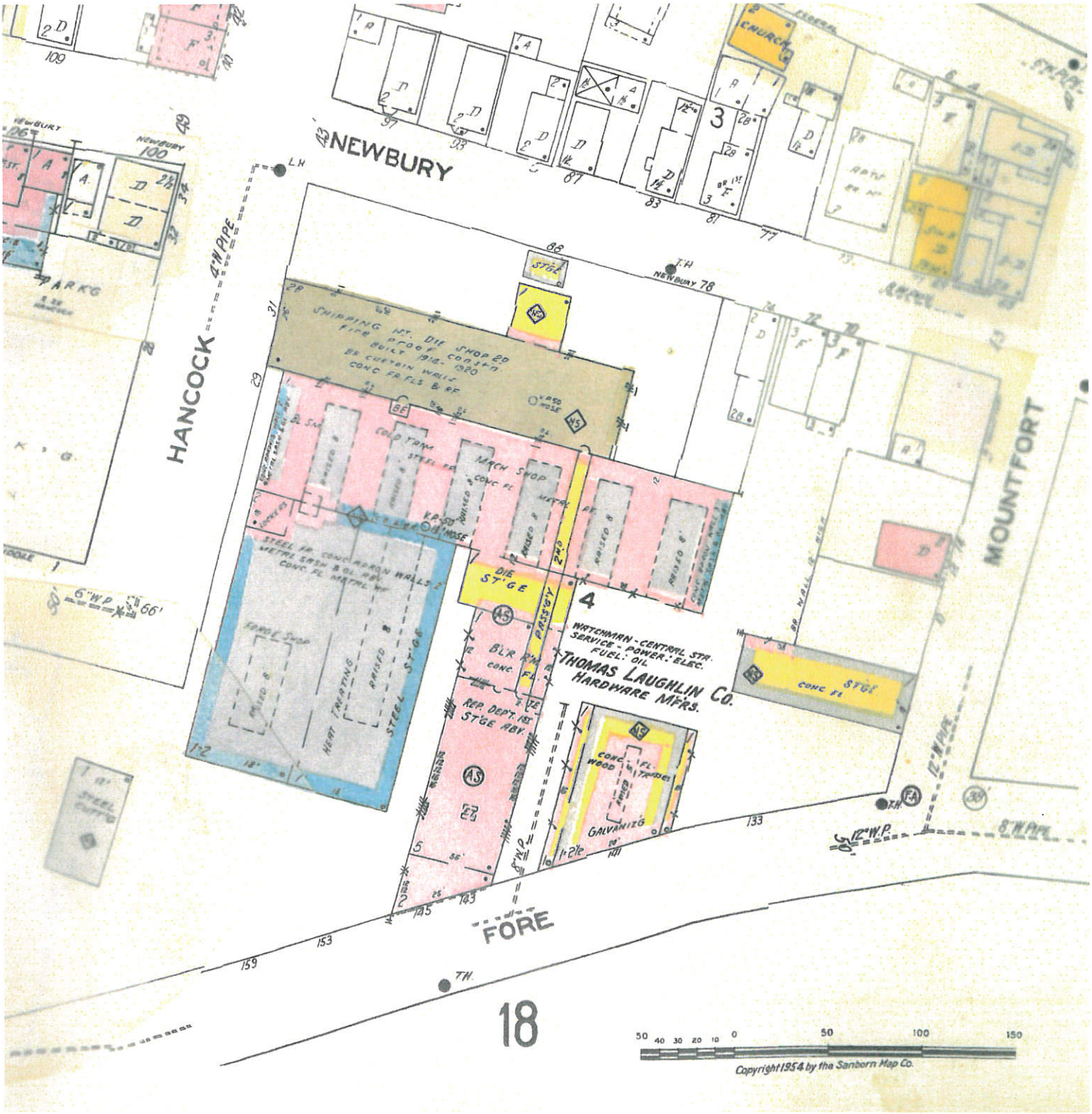
1851
METERY
Armenian St
HANCOCK
ST.
MONTFORT
ST.
ADAMS
ST
ST
A & S L R R Co

1857



B.S.
J. Cammet
B.S. Wilber
Eagle Sugar Refinery
Refinery
P. Johnson
O'Neil
E.P. Talbot
J.S. Miller
B. Swett
Bradbury
Mrs. Fickett
J. Howe
HANCOCK
McCarthy
Mrs. Tomes
Mrs. Howe
Heirs

1956


NEWBURY
HANCOCK
MOUNTFORT
FORE
4" W. PIPE
6" W.P.
12" W.P.
8" W.P.
SHIPPING MT. DIE SHOP 2S FIRE PROOF CONST'N BUILT 1918-1920 BR CURTAIN WALLS CONC FR FLS & RF
MACH SHOP
DIE ST'GE
PASSEY
WATCHMAN - CENTRAL STR. SERVICE - POWER - ELEC. FUEL - OIL
THOMAS LAUGHLIN CO. HARDWARE MFRS.
CONC FL ST'GE
REP. DEPT. 1ST ST'GE ABV.
GALVANIZG
CHURCH
PARKG
18
50 40 30 20 10 0 50 100 150
Copyright 1954 by the Sanborn Map Co.

SURVEY MAP NAME _____

MHPC USE ONLY
1023
INVENTORY NO.

MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): William Mundy Block
2. PROPERTY NAME (OTHER): _____
3. STREET ADDRESS: 70-72 Newbury Street
4. TOWN: Portland
5. COUNTY: Cumberland
6. DATE RECORDED: July 2001
7. SURVEYOR: Martha Deppe
8. OWNER NAME: _____
ADDRESS: _____
9. PRIMARY USE (PRESENT):
___ SINGLE FAMILY
✓ MULTI-FAMILY
___ INDUSTRY
___ TRANSPORTATION
___ RECREATION/CULTURE
___ OTHER _____
___ AGRICULTURE
___ GOVERNMENTAL
___ RELIGIOUS
___ DEFENSE
___ UNKNOWN
___ COMMERCIAL/TRADE
___ EDUCATION
___ HOTEL
___ SUMMER COTTAGE/CAMP
___ FUNERARY
___ HEALTH CARE
___ LANDSCAPE
___ SOCIAL
10. CONDITION: ✓ GOOD ___ FAIR ___ POOR ___ DESTROYED, DATE ___/___/___

ARCHITECTURAL DATA

11. PRIMARY STYLISTIC CATEGORY:
___ COLONIAL
___ FEDERAL
___ GREEK REVIVAL
___ GOTHIC REVIVAL
✓ ITALIANATE
___ SECOND EMPIRE
___ STICK STYLE
___ QUEEN ANNE
___ SHINGLE STYLE
___ R. ROMANESQUE
___ ROMANESQUE
___ HIGH VIC. GOTHIC
___ NEO-CLASSICAL REV.
___ RENAISSANCE REV.
___ 19TH/20TH C. REVIVAL
___ ARTS & CRAFTS
___ BUNGALOW
OTHER _____
___ FOUR SQUARE
___ ART DECO
___ INTERNATIONAL
___ RANCH
___ VERNACULAR

12. OTHER STYLISTIC CATEGORY:
___ COLONIAL
___ FEDERAL
___ GREEK REVIVAL
___ GOTHIC REVIVAL
___ ITALIANATE
___ SECOND EMPIRE
___ STICK STYLE
___ QUEEN ANNE
___ SHINGLE STYLE
___ R. ROMANESQUE
___ ROMANESQUE
___ HIGH VIC. GOTHIC
___ NEO-CLASSICAL REV.
___ RENAISSANCE REV.
___ 19TH/20TH C. REVIVAL
___ ARTS & CRAFTS
___ BUNGALOW
OTHER Colonial Revival
___ FOUR SQUARE
___ ART DECO
___ INTERNATIONAL
___ RANCH
___ VERNACULAR

13. HEIGHT:
___ 1 STORY ___ 1½ STORY ___ 2 STORY ___ 2½ STORY ✓ 3 STORY ___ 4 STORY
___ 5 STORY ___ OVER 5 (___)

14. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):
___ 1 BAY ___ 2 BAY ___ 3 BAY ___ 4 BAY ___ 5 BAY ✓ MORE THAN 5 (6)

15. APPENDAGES:
___ SIDE ELL ✓ REAR ELL ___ FRONT TOWER ___ ADDED STORIES ___ SHED
___ DORMERS ✓ PORCH ___ CUPOLA ✓ BAY WINDOW

PHOTOGRAPH:

16. PORCH: ATTACHED ✓ ENGAGED ___ ONE STORY ___ MORE THAN ONE ✓ FULL WIDTH ✓
LESS THAN FULL WIDTH ___ WRAPAROUND ___ SLEEP PORCH ___ OTHER PORCH ___

17. PLAN:
___ HALL AND PARLOR ___ 1/2 CAPE ___ CENTRAL HALL ___ SIDE HALL
___ BACK HALL ___ IRREGULAR OTHER ___

18. PRIMARY STRUCTURAL SYSTEM:
___ TIMBER FRAME ___ BRACED FRAME ___ BRICK ___ STONE ___ BALLOON FRAME
___ CONCRETE ___ STEEL ___ LOG ___ PLANK WALL ___ PLATFORM FRAME
✓ FRAME CONSTRUCTION - TYPE UNKNOWN ___ OTHER ___

19. CHIMNEY PLACEMENT:
✓ INTERIOR ___ INTERIOR FRONT/REAR ___ CENTER ___ INTERIOR END ___ EXTERIOR
OTHER ___

20. ROOF CONFIGURATION:
___ GABLE SIDE ___ GABLE FRONT ✓ HIP ___ MANSARD ___ FLAT
___ GAMBREL ___ PARAPET GABLE ___ SHED ___ CROSS ___ GABLE
___ COMPOUND OTHER ___

21. ROOF MATERIAL: WOOD ___ METAL ___ TILE ___ SLATE ___ ASPHALT ___ ASBESTOS ___

22. EXTERIOR WALL MATERIALS:
✓ CLAPBOARD ___ BRICK ___ FLUSH SHEATHING ___ WOOD SHINGLE ___ STONE
___ LOG ___ PRESSED METAL ___ CONCRETE ___ STUCCO ___ ASPHALT
___ GRANITE ___ ASBESTOS ___ TERRA COTTA ___ BOARD AND BATTEN ___ ALUMINUM/VINYL
___ OTHER ___

23. FOUNDATION MATERIAL:
___ FIELDSTONE ✓ BRICK ___ WOOD ___ CONCRETE ___ GRANITE ___ ORNAMENTAL CONC. BLOCK
OTHER ___

24. OUTBUILDINGS/FEATURES:
___ CARRIAGE HOUSE ___ FENCE OR WALL ___ CEMETERY ___ BARN (CONNECTED)
___ BARN (DETACHED) ___ FORMAL GARDEN ___ LANDSCAPE/PLANT MAT. ___ ARCHAEOLOGICAL SITE
___ GARAGE OTHER ___

HISTORICAL DATA

25. DOCUMENTED DATE OF CONSTRUCTION: 1893 26. ESTIMATED DATE OF CONSTRUCTION: ___

27. DATE MAJOR ADDITIONS/ALTERATIONS: ___

28. ARCHITECT: ___ 29. CONTRACTOR: ___

30. ORIGINAL OWNER: William Mundy

31. SUBSEQUENT SIGNIFICANT OWNER: ___ DATES: ___

32. CULTURAL/ETHNIC AFFILIATION:
___ ENGLISH ___ FRENCH ACADIAN ___ NATIVE AMERICAN ___ SCOTTISH ___ FRENCH CANADIAN
___ EAST EUROPEAN ___ IRISH OTHER ___

33. HISTORIC CONTEXT(S):
___ COMMERCE ___ INDUSTRY ___ TRANSPORTATION ___ AGRICULTURE ___ MILITARY
___ RELIGION ___ CIVIC AFFAIRS ___ RECREATION ___ HABITATION ___ EDUCATION
___ ART, LIT, SCIENCE ___ SOCIAL

34. COMMENTS/SOURCES: GPL marker - 1882 Rierdan, Allen - P Morgan Est Area 3332 - 2 bldgs. 1914 map 72 Newbury 3332 - 1 bldg, Max W. Simmons owner; Valuations 1893 Mundy, William [Mundy, Mary Jane] land & W. Bld S. Side Newbury St # 68 to 72 Area - 3332 Value 500 [additions & corrections in pencil] 1894 Mundy, Mary Jane land & W. Bldg S side Newbury St. # 68 to 72 Area 3332 400 to 2000 Et to Warren Coffey] CCR 611/158 (2/21/1894) Abstract of will of Wm Mundy - all real estate to wife Mary S. Mundy. 615/246 (7/5/1894) Mary S. Mundy → Warren Coffey

35. HISTORICAL DRAWINGS EXIST: ___ YES ___ NO LOCATION: ___

ENVIRONMENTAL DATA

36. SITE INTEGRITY: ORIGINAL ___ MOVED DATE MOVED ___
37. SETTING: ___ RURAL/UNDISTURBED ___ RURAL/BUILT UP ___ SMALL TOWN ___ URBAN ___ SUBURBAN
38. QUADRANGLE MAP USED: ___ QUADRANGLE #: ___
39. UTM NORTHING: ___ 40. UTM EASTING: ___
41. FACADE DIRECTION (CIRCLE ONE): N S E W NE NW SE SW

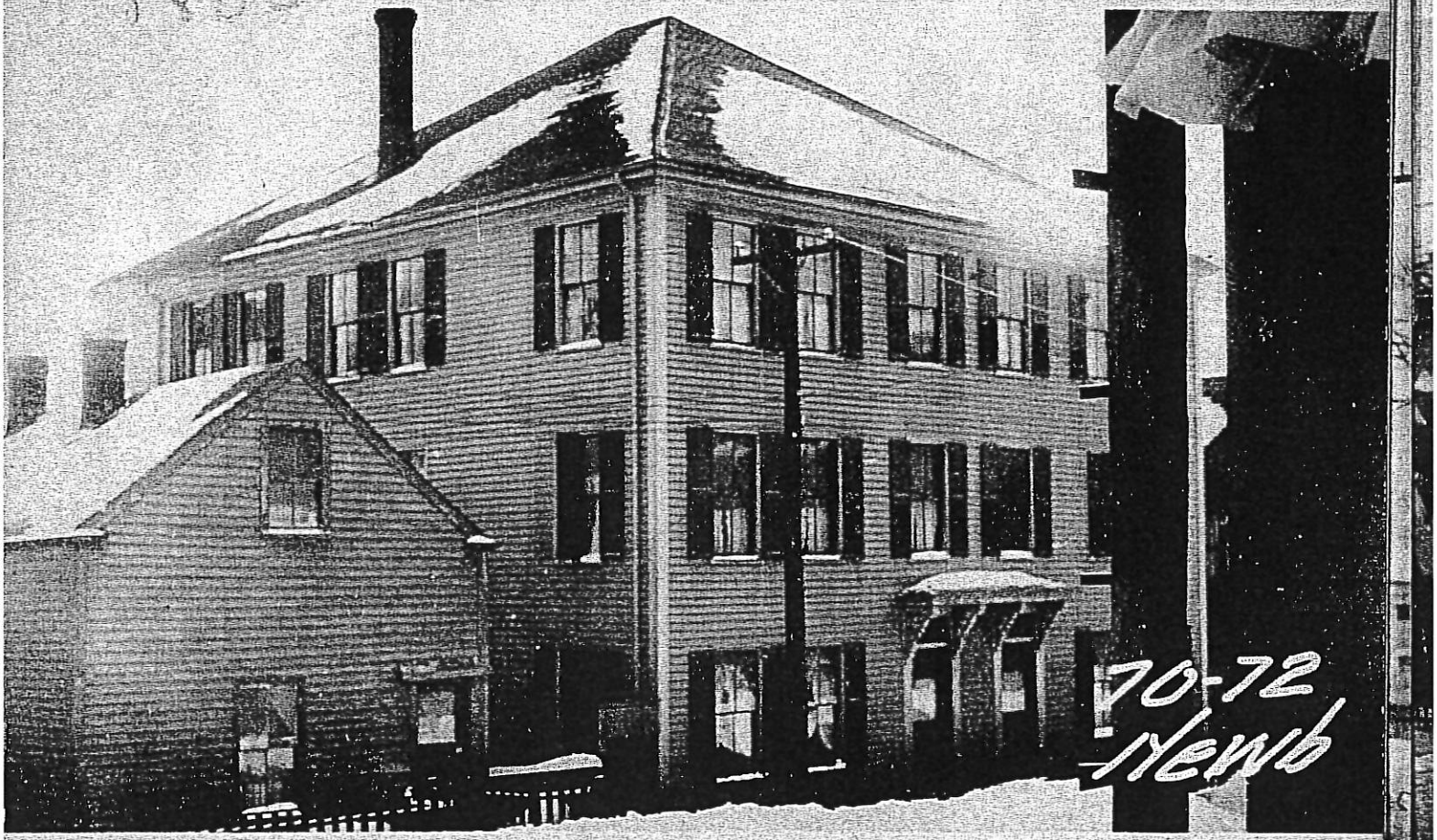
MHPC USE ONLY

DATE ENTERED IN INVENTORY: 11/24/04 PHOTO FILE #: Cabot binder
NR STATUS: L ___ HD ___ E ___ NE ___ ND X REVIEWER CAM
DATA SOURCE: ✓ HPF ___ CLG ___ R&C ___ STAFF ___ STATE SURVEY OTHER ___ LEVEL OF SURVEY: ___ R X I

FORM K:\KIRK\ARCH-SVY.FRM\HBSSFSVY.MAS

Area	Multiplier	Coefficient
3332	121	4031

Year	Unit	Coefficient	Land Value
19 .	3,108	4031	3225



Surveyed by Walter Arnold

APR 26 1924

(Remarks on other Side)

MHPC USE ONLY

1023

INVENTORY NO.

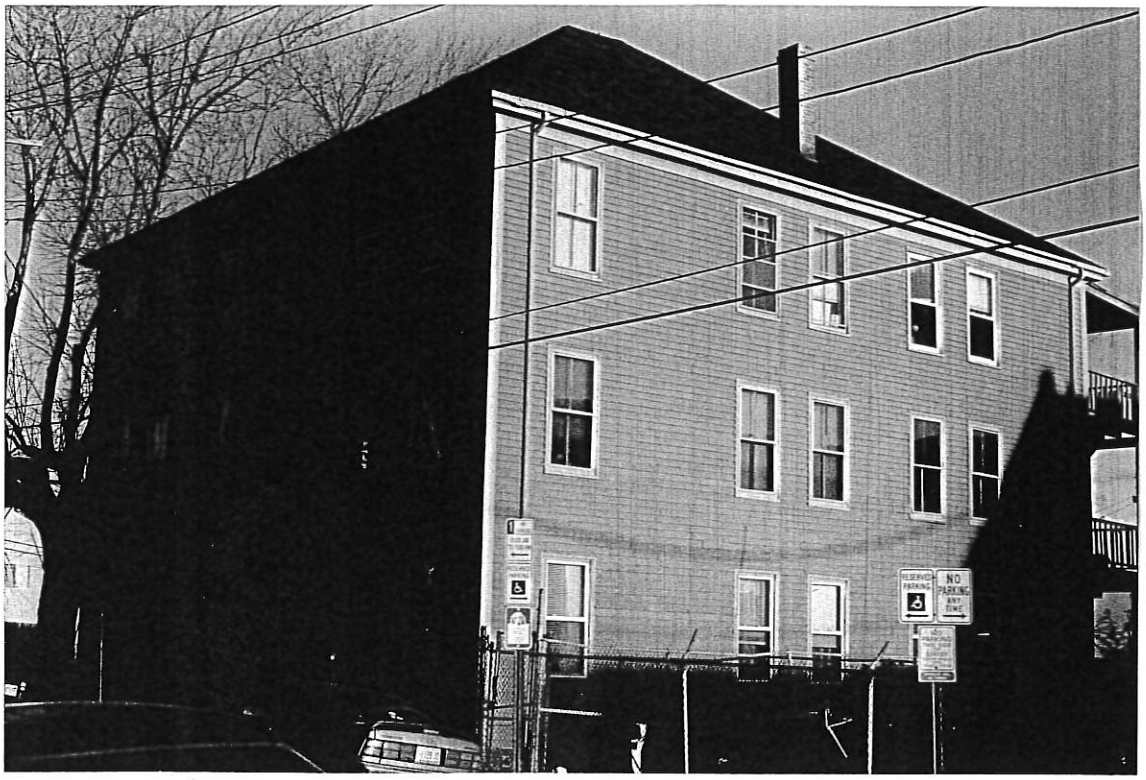
MAINE HISTORIC PRESERVATION COMMISSION
Historic Building/Structure Survey Form
Continuation Sheet

PROPERTY NAME: William Mundy Block

TOWN: PORTLAND COUNTY: Cumberland

SURVEYOR: Martha DuPrez DATE: July 2001

DATA FIELD # (From Survey Form): _____



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Gorrill Palmer: Shipyard Brewery Redevelopment
Portland, Maine
Executive Summary
MHPC Review No. 0430-17
By Jessica Cofelice, MA, RPA
and Kathleen Wheeler, PhD, RPA
Independent Archaeological Consulting, LLC
Revised September 13, 2018

Independent Archaeological Consulting, LLC (IAC) conducted a Phase I Reconnaissance Survey of the proposed Shipyard Mixed-Use Development project area in Portland (Cumberland County), Maine. A 2017 Maine Historic Preservation Commission (MHPC) review (MHPC #0430-17) identified the location as sensitive for Post-Contact Euroamerican archaeological resources. In August 2018 MHPC concluded they have no jurisdiction over this project. Therefore, they are not required to review this project under Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470). However, the client has voluntarily elected to proceed with the recommended Phase 0 archaeological survey, Phase I reconnaissance survey and proposed Phase II trench work.

The property (Map 20; Lots C001, 002, 005, 009 and 015) is located across the street from the National Register Listed Abyssinian Meeting House and adjacent to the India Street Historic District. Redevelopment plans require the demolition of two historic structures on the property: the circa 1893 William Mundy Block at 70-72 Newbury Street and the circa 1876 William Mundy House at 12-14 Mountfort Street (Figure 1).

Comparison of existing conditions plans with historic maps of Portland showed proposed impacts to three historic lots (Lots 1, 2, and 3) at the corner of Newbury and Mountfort Streets (see Figure 1). For our Phase I testing, IAC proposed the hand excavation of a series of test pits in grassy yard spaces behind the Mundy Block tenement and the Mundy House. With the exception of a thin grassy strip along the western edge of the parking lot, most of Lot 2 is paved.

Principal Investigator Jessica Cofelice completed the Phase I testing over the course of three days, on June 25, 26 and 28, 2018. Jacob Tumelaire, Maya Carter, Anthony Viola, Emily Rux, Nadia Kline, and Roxanne Pendleton assisted in the Phase I reconnaissance, excavating a total area of 5.75 m^2 (62 ft^2) and recovering 2,603 artifacts (see Figure 1). The bulk of artifacts derived from thick coal ash deposits, and due to the high volume and redundancy of cultural material, IAC modified their field collection strategy and collected only a sample of diagnostic artifacts.

The Phase I investigation resulted in the identification and registering of two archaeological sites – the Mundy House (ME 357-136) on Mountford Street and the Mundy Block (ME 357-137). Sampling of Lot 2 did not confirm the presence of a discrete archaeological site, although historic maps indicate the presence of a dwelling here. In TU-1 behind the Mundy Block tenement on Lot 1, crews encountered an east-west oriented segment of brick wall overlying a concrete footing (Plate 1). IAC speculates the wall may be associated with a late-nineteenth- or early-twentieth-century septic or cesspool feature related to the multiple tenants in the Mundy Block. In the backyard of the house located at 12-14 Mountfort Street (Lot 3), archaeologists exposed a north-south oriented segment of fieldstone foundation wall underlying 1 m (3.28 ft) of coal ash, whose function is not understood at this time.

IAC finds the two sites are potentially eligible for listing in the National Register of Historic Places under Criterion D and proposes a Phase II site evaluation. Due to the presence of thick coal ash deposits and

possible health hazards, in lieu of additional hand excavation, IAC is recommending the mechanical excavation of six trenches for the Phase II effort to expose deeply buried archaeological features and deposits (Figure 2). A team of archaeologists will be on site to monitor the trench work, and crews will record any exposed features and all wall profiles with digital photographs and hand-drawn scaled wall profile drawings. The objective will be to ascertain that the rich artifact deposits can be directly associated with individuals or households occupying the Mundy Block tenement and Mundy House sites.

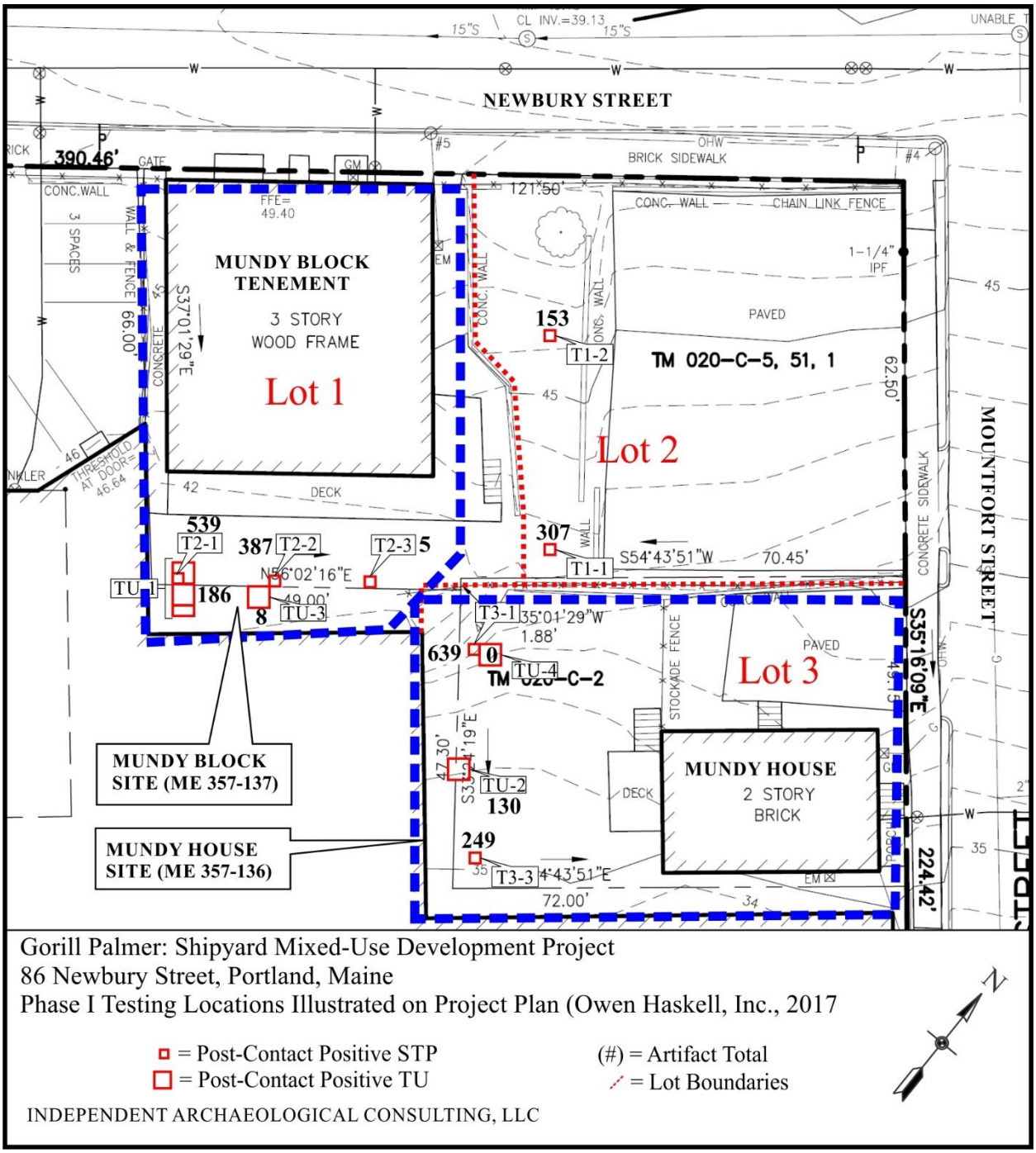


Figure 1. Phase I testhole locations with two sites and artifact totals illustrated on site plan.

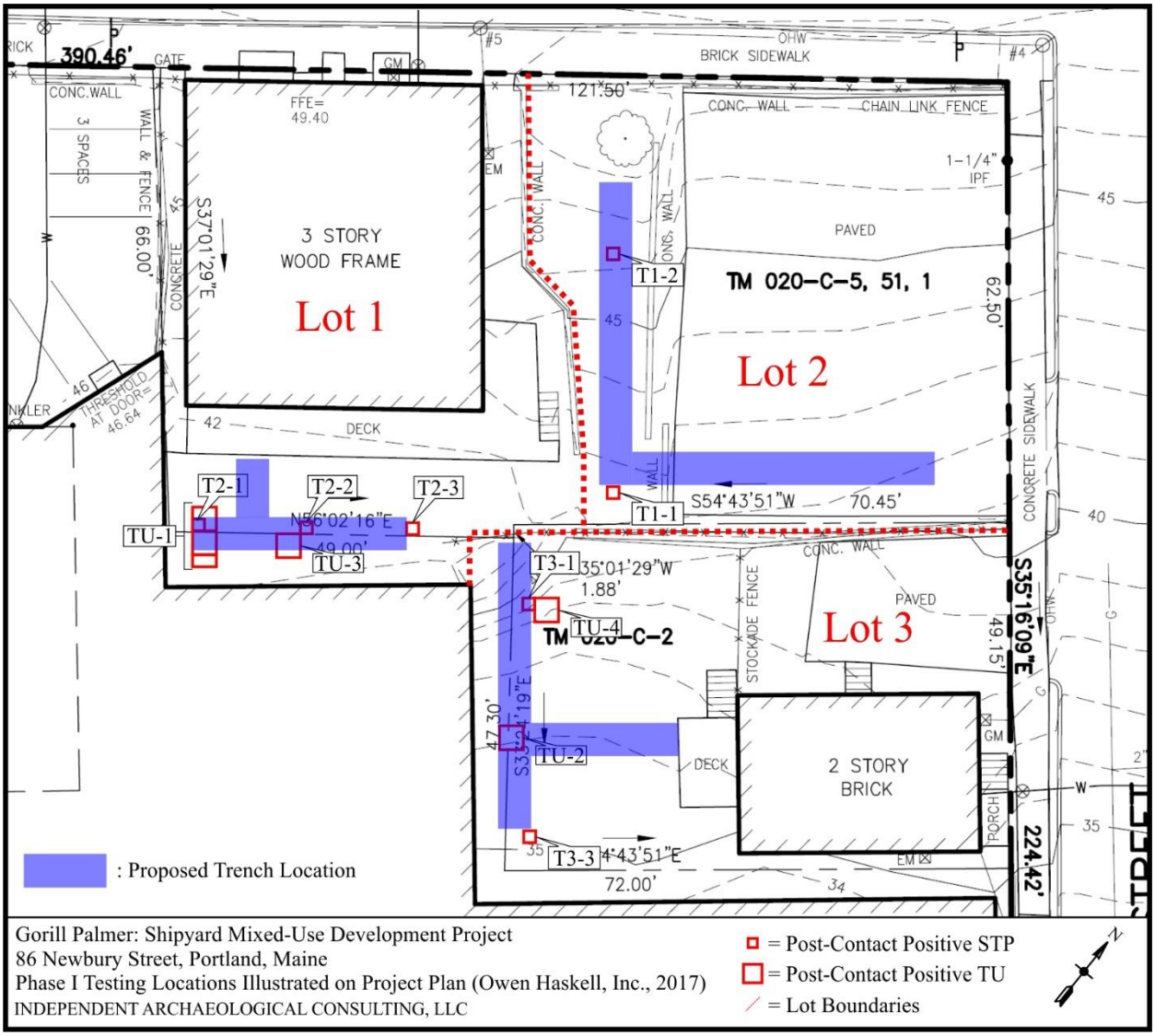


Figure 2. Proposed location of Phase II mechanical trenching illustrated on site plan.

Plate 1. Overview of the brick wall and footing encountered in TU-1, view south. Feature is likely to be a privy or outdoor toilet facility associated with the Mundy Block Tenement (ME 357-137).

Plate 2. Plan view of TU-2 showing location of north-south oriented fieldstone wall (circled in red) in back yard behind the Mundy House (ME 357-136).

Bateman Investments, LLC

470 Fore Street, Suite 400
Portland, ME 04101

March 6, 2018

86 Newbury Street, LLC
470 Fore Street, Suite 400
Portland, ME 04101

RE: Signatory Authority

To Whom It May Concern:

This letter is to confirm that Bateman Investments, LLC is a member of 86 Newbury Street, LLC. 86 Newbury Street, LLC consists of two members, Bateman Investments, LLC and Shipyard Brewery Company, LLC (the property owner).

This letter further confirms that David H. Bateman, as member of Bateman Investments, LLC, has the authority to sign and submit this application on behalf of 86 Newbury Street, LLC to the City of Portland, Maine.

Signed,

Nathan Bateman
Manager
Bateman Investments, LLC

Doc#: 19878 Bk:34818 Pg: 188

Quitclaim Deed with Covenant

Shipyard Brewing Company, Limited Liability Company, a Maine Limited Liability Company with a place of business at 86 Newbury Street, Portland, County of Cumberland, State of Maine, for consideration paid, grants to **86 Newbury Street, LLC,** a Maine Limited Liability Company with a place of business at 86 Newbury Street, Portland, County of Cumberland, State of Maine, with **Quitclaim Covenants**, certain real property together with any improvements thereon, situated in the City of Portland, Cumberland County and State of Maine, more particularly described on Exhibit A attached hereto and made a part hereof.

MAINE REAL ESTATE TAX PAID

In Witness Whereof, Shipyard Brewing Company, Limited Liability Company has caused this instrument to be executed by Fred M. Forsley, its Member, thereunto duly authorized, this 10th day of April, 2018.

Shipyard Brewing Company,
Limited Liability Company

By: _____
Fred M. Forsley, its Member

State of Maine
Cumberland, ss.

April 10th, 2018

Personally appeared the above-named **Fred M. Forsley** in his capacity as Member, duly authorized, of **Shipyard Brewing Company, Limited Liability Company,** and acknowledged the foregoing instrument as his free act and deed, in said capacity, and the free act and deed of **Shipyard Brewing Company, Limited Liability Company.** Before me,

_____
Notary Public/Attorney-at-Law
Print Name: Adam P. Moses
Exp: 9/29/2023

Exhibit A

Parcel One - 86 Newbury Street, Portland, Maine

A certain lot or parcel of land, with buildings thereon, situated in the block bounded by the Southerly side of Middle Street, Easterly side of Hancock Street, Southerly side of Newbury Street, Westerly side of Mountfort Street, Northerly side of Fore Street in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a point on the Southerly side of said Middle Street, marking the Northeasterly corner of land conveyed to Micucci Brothers, Inc. by deed recorded in the Cumberland County Registry of Deeds in Book 11090, Page 193;

Thence, by the Southerly side of said Middle Street, N 63° 31' 00" E a distance of 222.36 feet to a point marking the intersection of the southerly side of said Middle Street and the Easterly side of said Hancock Street;

Thence, by the Easterly side of said Hancock Street, N 23° 20' W a distance of 276.62 feet to a point marking the intersection of the Easterly side of said Hancock Street and the southerly side of said Newbury Street;

Thence, by the Southerly side of said Newbury Street, N 69° 07' 25" E a distance of 268.96 feet to a point marking the northwesterly corner of land conveyed to David McCain by deed recorded in said Registry in Book 4680, Page 313;

Thence, by the Westerly line of said McCain land S 23° 54' 35" E a distance of 66.00 feet to McCain's southwesterly corner;

Thence, by the southerly line of said McCain N 69° 09' 10" E a distance of 49.00 feet to the Northwesterly corner of land conveyed to Charles W. & Susan Ann Cherwinski by deed recorded in said Registry in Book 5069, Page 278;

Thence, by the westerly line of said Cherwinski S 20° 17' 25" E a distance of 47.30 feet to Cherwinski's Southwesterly corner;

Thence, by the Southerly line of said Cherwinski N 67° 50' 45° E a distance of 72.00 feet to a point marking the Westerly side of said Mountfort Street;

Thence, by the Westerly side of said Mountfort Street S 22° 09' 15" E a distance of 112.77 feet to a point marking the intersection of the Westerly side of said Mountfort Street and the Northerly side of said Fore Street;

Thence, by the Northerly side of said Fore Street on the following courses:

S 42° 28' 00" W a distance of 122.92 feet to an angle point;
S 35° 40' 50" W a distance of 327.64 feet to an angle point;

S 41° 54' 00" W a distance of 83.68 feet to a point of curvature;

Thence, by a curve to the right, whose radius is 384.90 feet, an arc distance of 86.10 feet to a point marking a compound curve;

Thence, continuing by said compound curve to the right, whose radius is 341.90 feet, an arc distance of 97.07 feet to a point of tangency;

Thence, S 70° 59' 00" W a distance of 40.66 feet to a point marking the southeasterly corner of land conveyed to Guy Centafante by deed recorded in said Registry in Book 2127, Page 98, said point being located N 70° 59' 00" E a distance of 51.75 feet from the intersection of the easterly side of said India Street and the northerly side of said Fore Street;

Thence, by land of said Centafante on the following courses:

N 27° 56' 30" W a distance of 75.83 feet to a point;

N 57° 47' 00" E a distance of 39.00 feet to a point;

N 33° 35' 00" W a distance of 46.29 feet to land of said Micucci Brothers, Inc.

Thence, N 57° 47' 00" E a distance of 77.95 feet to a point;

Thence, N 35° 35' 32" W a distance of 99.90 feet to the point of beginning containing 4.02 acres, more or less.

Bearings are based on Magnetic North 1955.

The property is conveyed subject to the following:

1. Agreement described in a deed from The Portland Historical Society to American Hoist & Derrick Company dated August 5, 1955, recorded in the Cumberland County Registry of Deeds in Book 2253, Page 85.

2. Possible rights or claims of the stockholders of The Marine Liquidating Corporation and/or their heirs and assigns in and to that certain portion of the real estate described on Exhibit A which was originally acquired by the entity then known as The Thomas Laughlin Company by deeds of Robert Seeley, dated September 14, 1906, recorded in the Cumberland County Registry of Deeds in Book 791, Page 275 and John M. Burke dated June 21, 1907 and recorded in said Registry of Deeds in Book 805, Page 252.

3. Rights and easements granted to Central Maine Power Company and New England Telephone and Telegraph Company be deed of American Hoist & Derrick Co. dated August 29, 1966 and recorded in the Cumberland County Registry of Deeds in Book 2978, Page 29.

4. Terms and conditions of a State of Maine Department of Environmental Protection Order dated December 18, 1990 and recorded in the Cumberland County Registry of Deeds in Book 9936, Page 205.

5. Declaration of Restrictive Covenant by Amdura Corporation dated as of March 9, 1992 and recorded in the Cumberland County Registry of Deeds in Book 9973, Page 122.

Subject to the following:

1. Conveyance to the City of Portland described in the Quitclaim Deed with Covenant dated July 19, 2006 recorded at Book 24191, Page 210 of the Cumberland County Registry of Deeds.

2. Quitclaim Deed dated September 29, 2006 to Ocean Gateway Garage, LLC recorded at Book 24419, Page 111 of the Cumberland County Registry of Deeds.

3. Rights referenced in the Quitclaim Deed with Covenant dated December 14, 2007 to Chapin Realty, LLC recorded at Book 25688, Page 158 of the Cumberland County Registry of Deeds.

Meaning and Intending to convey the property referenced in the Quitclaim Deed with Covenant given by Longfellow, Inc. to Shipyard Brewing Company, Limited Liability Company recorded on November 9, 1995 at Book 12206, Page 170.

Parcel Two - 12-14 Mountford Street, Portland, Maine

A certain lot or parcel of land, with the building thereon, situated on the westerly side of Mountfort Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stake on said westerly side of Mountfort Street at the southeasterly corner of the lot of land conveyed by The Thomas Laughlin Company to Carmina Spizuocco by deed dated August 11, 1927 and recorded in the Cumberland County Registry of Deeds in Book 1273, Page 269; thence southerly by said westerly side of Mountfort Street forty-nine and fifteen hundredths (49.15) feet to a spike in a fence; thence westerly at right angles to said Mountfort Street seventy-two (72) feet to other land now or formerly of said The Thomas Laughlin Company; thence northerly by land now or formerly of said Company

forty-nine and fifteen hundredths (49.15) feet to land conveyed by said Company to Gaetana Bruni by deed dated August 11, 1927; thence easterly by land now or formerly of said Spizuocco about seventy and four tenths (70.4) feet to said westerly side of Mountfort Street and the point of beginning.

Meaning and Intending to convey the property referenced in the Warranty Deed given by Ashleigh, Inc. to Fred Forsley dated September 22, 2005 and recorded in the Cumberland County Registry of Deeds at Book 23197, Page 64.

Exhibit A - Continued

Parcel Three - 70-72 Newbury Street

A certain lot or parcel of land with the buildings thereon, situated on the southeasterly side of Newbury Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the southeasterly side line of said Newbury Street at the most westerly corner of a lot of land conveyed to Mary J. Mundy by Samuel Sweetsir, et al by deed dated December 7, 1875, and recorded in the Cumberland County Registry of Deeds in Book 428, Page 320; thence running southeastwardly by said Mundy land and by land formerly of William Mundy, sixty-six (66) feet, more or less, to land now or formerly of William McSweeney; thence southwestwardly by said McSweeney land forty-nine (49) feet, more or less, to land now or formerly of Emeline S. Dutton; thence northwestwardly by said Dutton land sixty-six (66) feet, more or less, to said Newbury Street; thence northeastwardly by said Newbury Street, forty-nine (49) feet and six (6) inches, more or less, to the place of beginning.

Parcel Four - 70-72 Newbury Street

A certain lot or parcel of land with any buildings thereon situated on the southeasterly side of Newbury Street, in Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the southeasterly side line of said Newbury Street at the northerly corner of land formerly of Mrs. Wilson, and later of Joseph J. Bruni, which point is about seventy-two (72) feet from the intersection of said line of Newbury Street with the southwesterly line of Mountfort Street; thence running northeastwardly by said line of Newbury Street twenty (20) feet and four (4) inches; thence southeastwardly parallel with the northeasterly side line of land of Joseph J. Bruni to land formerly of Mrs. Hannah Roberts; thence southwestwardly by said Roberts land twenty (20) feet, more or less, to said land of Joseph J. Bruni; thence northwestwardly by said land of Joseph J. Bruni seventy-two (72) feet, more or less, to the point of beginning.

Being a strip of land twenty (20) feet and four (4) inches wide extending across the southwesterly end of land conveyed to Carmela Spizzuoco and Sabato Spizzuoco, by deed of Fannie Jacobson dated February 4, 1925 and recorded in the Cumberland County Registry of Deeds in Book 1192, Page 220.

Parcel Five - 70-72 Newbury Street

A certain lot or parcel of land with any buildings thereon situated in Portland, County of Cumberland and State of Maine and being in the rear of the westerly side of Mountfort Street, and in the rear of a certain lot or parcel of land conveyed by The Thomas Laughlin Company to Carmela Spizzuoco, and bounded and described as follows:

Beginning at a point in a line of a fence extending northerly to Newbury Street, said point being determined by measuring forty-eight and six-tenths (48.6) feet on a line at right angles to Newbury Street from a stake at a post set in the ground sixty-two and five-tenths (62.5) feet southerly of Newbury Street (sic) and at the southwesterly corner of said lot of land conveyed to said Spizzuoco; thence westerly on a course at right angles to Mountfort Street about twenty-one and eight-tenths (21.8) feet to a stake set in the ground at land of Bruni; thence northerly by land of said Bruni nine and eight-tenths (9.8) feet to a point; thence easterly on a line parallel with first described line about twenty-one and eight-tenths (21.8) feet to said fence extending northerly to Newbury Street; thence southerly nine and eight-tenths (9.8) feet to the point of beginning.

Parcel Six - 70-72 Newbury Street

A certain lot or parcel of land with the buildings and improvements thereon, situated on the southerly side of Newbury Street and the westerly side of Mountfort Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point marking the intersection of the southerly side of said Newbury Street and the westerly side of said Mountfort Street; thence by the westerly side of said Mountfort Street South 22° 09' 15" East, a distance of 62.50 feet to a point marking the northeasterly corner of land conveyed to Charles W. and Susan Ann Cherwinski by deed recorded in the Cumberland County Registry of Deeds in Book 5069, Page 278; thence, by the northerly line of said Cherwinski land South 67° 50' 45" West, a distance of 48.60 feet to a point marking land conveyed to David McCain by deed recorded in said Registry of Deeds in Book 4680, Page 313; thence by the easterly line of said McCain land on the following courses: North 23° 34' 05" West, a distance of 9.80 feet to a point; South 67° 50' 45" West, a distance of 1.57 feet to a point; North 23° 28' 30" West, a distance of 53.87 feet to a point marking the southerly side of said Newbury Street; thence by the southerly side of said Newbury Street North 69° 07' 25" East, a distance of 51.67 feet to the point of beginning.

Above courses are magnetic 1985.

Together with all rights and easements appurtenant to said premises. The premises conveyed herein are subject to the matters set forth in a Quitclaim Deed with Covenant dated September 4, 2003, from McCain General Partnership to 70-72 Newbury Street Associates, LLC recorded in said Registry in Book 20130, Page 281.

Meaning and Intending to convey the same premises conveyed by 70-72 Newbury Street Associates, LLC to 70-72 Newbury St., LLC by Quitclaim Deed without Covenant dated March 30, 2007 and recorded in the Cumberland County Registry of Deeds at Book 24966, Page 65.

Received
Recorded Register of Deeds
May 03,2018 03:21:28P
Cumberland County
Nancy A. Lane

Cumberland County Register of Deeds Current datetime: 4/5/2018 1:24:22 PM

DETAILS REPORT

**Note: Report is Sorted in Ascending Order by Office, Recorded Date, Document Number

Doc#	File Date	Rec Time	Type Desc.
76174	12/14/2007	4:10PM	DEED

# of Pgs.	Book/Page	Doc. Status
11	25688/158	Verified/Certified

Town
PORTLAND

Grantor	Grantee	Street	Property Description
SHIPYARD BREWING CO LLC	CHAPIN REALTY LLC		

References

Book/Vlm/Page	Description	Recorded year
S/25903/232	MUNICIPAL MISCELLANEOUS	2008

FINAL 12-13-07

SHORT FORM QUITCLAIM DEED WITH COVENANT

Shipyard Brewing Company Limited Liability Company, a Maine limited liability company with a mailing address of 86 Newbury Street, Portland, Maine, FOR CONSIDERATION PAID, grants to Chapin Realty LLC, a Delaware limited liability company, with a mailing address of 10 Morgan Drive, Lebanon, NH 03766, with Quitclaim Covenant, certain real property together with any improvements thereon, situated in the City of Portland, Cumberland County, and the State of Maine, more particularly shown as Lot 5 on the Plan entitled "Subdivision Plan on Fore Street, Portland, Maine, Made For Norwich Partners LLC," (the "Plan") by Owen Haskell, Inc., dated November 20, 2007, to be recorded herewith, as said Lot 5 is further described on Exhibit A, attached hereto and made a part hereof (the "Property").

MAINE REAL ESTATE TAX PAID

The Property is conveyed subject to and with the benefit of the following:

1. No Build Zone 10' Easement.

a. The Grantor hereby grants to the Grantee, subject to the terms and provisions hereof, the right to use the area labeled "No Build Zone 10' Easement," as shown on the Plan, and as more particularly described on Exhibit B-1 and further shown on the Easement Plan attached as Exhibit B-2, a copy of which is attached hereto and incorporated herein, together with the right to install, maintain, replace, and repair subsurface structures or other subsurface improvements to be located by Grantee within such No Build Zone 10' Easement to serve the Property, (subject however to Grantor's right to install, maintain, replace and repair subsurface utility lines within the No Build 10' Easement) as well as the right on a temporary basis during any period of construction to use the No Build Zone 10' Easement for purposes of laying down materials or staging and to cross or occupy the No Build Zone 10' Easement with workers, vehicles and equipment in connection with any construction, maintenance and/or repair activities on the Property or the improvements to be constructed thereon.

b. Grantor covenants and agrees that Grantor shall not place or maintain on or about the No Build Zone 10' Easement, any structure, material, equipment, building, debris, or vehicles. Notwithstanding the foregoing, the Grantor reserves the right to install, maintain, replace and repair underground utility lines in the No Build Zone 10' Easement and the Grantor further reserves the right to and shall be allowed to temporarily use the No Build Zone 10' Easement area during any construction or maintenance activities of Grantor on its retained lands. Further, both the Grantor and Grantee shall have the right, but not the obligation, to install landscaping, including placement of surface materials such as brick, granite, or other stone materials, in that portion of the No Build Zone 10' Easement that abuts the northerly sideline of the Property.

c. Grantor hereby reserves all its rights in and interest to the portion of the No Build Zone 10' Easement that abuts the easterly boundary of the Property (the "Grantor's Access Easement") for its use as a passage for its vehicles and pedestrians as well as for the replacement of underground utilities and for building construction and maintenance activities, and for no other purposes. Grantor hereby covenants and agrees that the Grantor's use of the Grantor's

Access Easement shall not block (other than temporarily during periods of construction and maintenance) or otherwise interfere with the Grantee's use and enjoyment of the No Build Zone 10' Easement.

2. Loading and Access Easement.

a. The Grantor hereby grants to the Grantee, subject to the terms and provisions hereof, the right to use the area labeled "Loading and Access Easement" on the Plan, and as more particularly shown and described on Exhibit C-1 and as further shown on the Easement Plan attached as Exhibit C-2, for the passage of vehicles (including, without limitation, trucks) and for the delivery and unloading of goods to the Property. The Grantor hereby grants to the Grantee the right to park its delivery vehicles for a reasonable period of time during the unloading of goods to the Property. Grantor reserves the right to use said Loading and Access Easement area for all uses, provided that the same does not unreasonably interfere with the Grantee's use of said Loading and Access Easement area for the purposes defined herein. In particular, Grantor reserves the right to place buildings in the air space above the Loading and Access Easement area so long as 14' of clearance (measured from the pavement) for vehicles is maintained in the Loading and Access Easement area and so long as no buildings or overhangs are placed within or in the air space above the No Build Zone 10' Easement area. Provided, the Grantor shall be permitted to place one or more steel support beams within the Loading and Access Easement (exclusive of the No Build Zone 10' Easement area) in an area to be agreed upon between the Grantor and the Grantee as long as same does not interfere with or prohibit the construction and operation of the Hotel or other structures to be constructed by the Grantee on the Property. If the Grantor elects to relocate the Loading and Access Easement in accordance herewith, Grantor shall provide Grantee, at its sole cost and expense, (i) a new plan that depicts the relocated Loading and Access Easement, which plan shall be subject to Grantee's approval, which approval shall be provided so long as Grantee is accorded reasonable alternative access therein, and (ii) an endorsement to Grantee's title policy insuring the relocated Loading and Access Easement if located on Grantor's land, it being the Grantor's responsibility to secure all consents that may be required to issue said endorsement.

3. The easements and covenants expressly set forth herein are for the benefit of and appurtenant to the Property conveyed to Grantee by this Deed and shall run with the land of both the Grantor and the Grantee. Unless an easement is expressly described herein, no rights or easements are implied or are intended to be reserved, conveyed or created, by "dedication", "estoppel" or any other similar theory, to benefit either the Property or Lot 6 on the Plan by virtue of any notation on or reference to the Plan.

4. All construction conducted by or on behalf of the Grantee within the aforesaid No Build Zone 10' Easement and/or the Loading and Access Easement shall be conducted in accordance with all applicable laws, regulations, by-laws, orders, permits and approvals of all public authorities having jurisdiction. Any Grantee, or its agents, employees or contractors, entering such the aforesaid No Build Zone 10' Easement and/or the Loading and Access Easement shall maintain statutory worker's compensation insurance and liability insurance (with completed operations and contractual liability endorsements) with a combined single limit of not less than One Million Dollars covering the Grantor and Grantor's mortgagee, and their successors and

assigns, against all claims, suits, obligations, liabilities and damages, including reasonable attorneys' fees, based upon or arising out of actual or alleged personal injuries or property damage resulting from or occurring in the course of, on, or about and otherwise relating to the use of the aforesaid No Build Zone 10' Easement and/or the Loading and Access Easement granted herein. Any Grantee, or its agents, employees or contractors, prior to entering the aforesaid No Build Zone 10' Easement and/or the Loading and Access Easement, will upon request deliver to the Grantor and Grantor's mortgagee, and their successors or assigns a Certificate of Insurance providing such insurance is in full force and effect and all premiums have been paid.

5. Grantee shall save Grantor, Grantor's trustees, members, principals, beneficiaries, partners, officers, directors, employees, and agents harmless and indemnified against injury, loss or damage to any persons or property on or about the Loading and Access Easement area as a result of a claim or liability arising from the negligence or willful misconduct of Grantee, its employees, agents or contractors.)

(SIGNATURE PAGES FOLLOW)

IN WITNESS WHEREOF, Shipyard Brewing Company Limited Liability Company has caused this instrument to be executed by Fred Forsley, its President thereunto, duly authorized, this fourteenth day of December, 2007.

Witness:

By:_____
Name: Nathan H. Smith

Shipyard Brewing Company Limited Liability Company:

By:_____
Name: Fred Forsley
Its: President

CONTINUED ON NEXT PAGE

ACCEPTANCE OF GRANTEE

Grantee hereby accepts the conveyance of the Property and agrees to the covenants, conditions and agreements set forth herein.

CHAPIN REALTY, LLC
BY: NORWICH PARTNERS OF PORTLAND, LLC

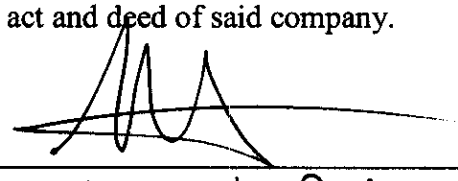
By: _____
Its: David Leatherwood
Managing Member

CONTINUED ON NEXT PAGE

State of Maine
County of Cumberland, ss. December 14, 2007

PERSONALLY APPEARED the above named Fred Forsley, President of Shipyard Brewing Company Limited Liability Company as aforesaid, and acknowledges the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said company.

Before me,



Nathan H. Smith

Attorney at Law/ ~~Notary Public~~

EXHIBIT A

A certain parcel of land situated on the northeasterly side of Hancock Street and the northwesterly side of Fore Street in the City of Portland, County of Cumberland, State of Maine being bounded and described as follows:

Beginning on the northeasterly sideline of Hancock Street at its intersection with the southeasterly sideline of Middle Street as shown on a plan entitled "Subdivision Plan on Fore Street, Portland, Maine Made for Norwich Partners LLC" dated November 20, 2007 by Owen Haskell, Inc.;

Thence N 36° 26' 28" W along said sideline of Hancock Street a distance of 36.00 feet;

Thence N 54° 36' 24" E a distance of 271.00 feet;

Thence S 35° 23' 36" E a distance of 47.81 feet to the northwesterly sideline of Fore Street;

Thence S 22° 34' 01" W along said sideline a distance of 266.58 feet to the northeasterly sideline of Hancock Street Extension;

Thence westerly along said sideline and along a curve concave to the right having a radius of 15.00 feet an arc distance of 28.51 feet, said curve having a chord which bears S 77° 00' 30" W a distance of 24.41 feet;

Thence N 48° 33' 01" W along said sideline a distance of 91.29 feet;

Thence northwesterly along said sideline and along a curve concave to the right having a radius of 273.00 feet an arc distance of 55.15 feet to the southeasterly sideline of said Middle Street, said curve having a chord which bears N 42° 45' 45" W a distance of 55.06 feet;

Thence N 50° 24' 52" E along said sideline a distance of 6.06 feet to the Point of Beginning, containing 34,069 square feet, more or less.

File: 2006-262-01R-WCS

EXHIBIT B-1

No Build Zone 10' Easement

A certain parcel of land situated on the northwesterly side of Fore Street in the City of Portland, County of Cumberland, State of Maine being bounded and described as follows:

Beginning on the northwesterly sideline of Fore Street at a point which bears N 22° 34' 01" E and a distance of 266.58 feet from the northeasterly sideline of Proposed Hancock Street Extension as shown on a plan entitled "Subdivision Plan on Fore Street, Portland, Maine made for Norwich Partners LLC" dated November 20, 2007 by Owen Haskell, Inc.;

Thence N 35° 23' 36" W a distance of 47.81 feet;

Thence S 54° 36' 24" W a distance of 251.00 feet;

Thence N 35° 23' 36" W a distance of 10.00 feet;

Thence N 54° 36' 24" E a distance of 261.00 feet;

Thence S 35° 23' 36" E a distance of 52.60 feet to the northwesterly sideline of said Fore Street;

Thence S 29° 22' 06" W along said sideline a distance of 7.48 feet;

Thence S 22° 34' 01" W a long said sideline a distance of 3.82 feet to the point of beginning.

File: 2006-262-03R-JWS

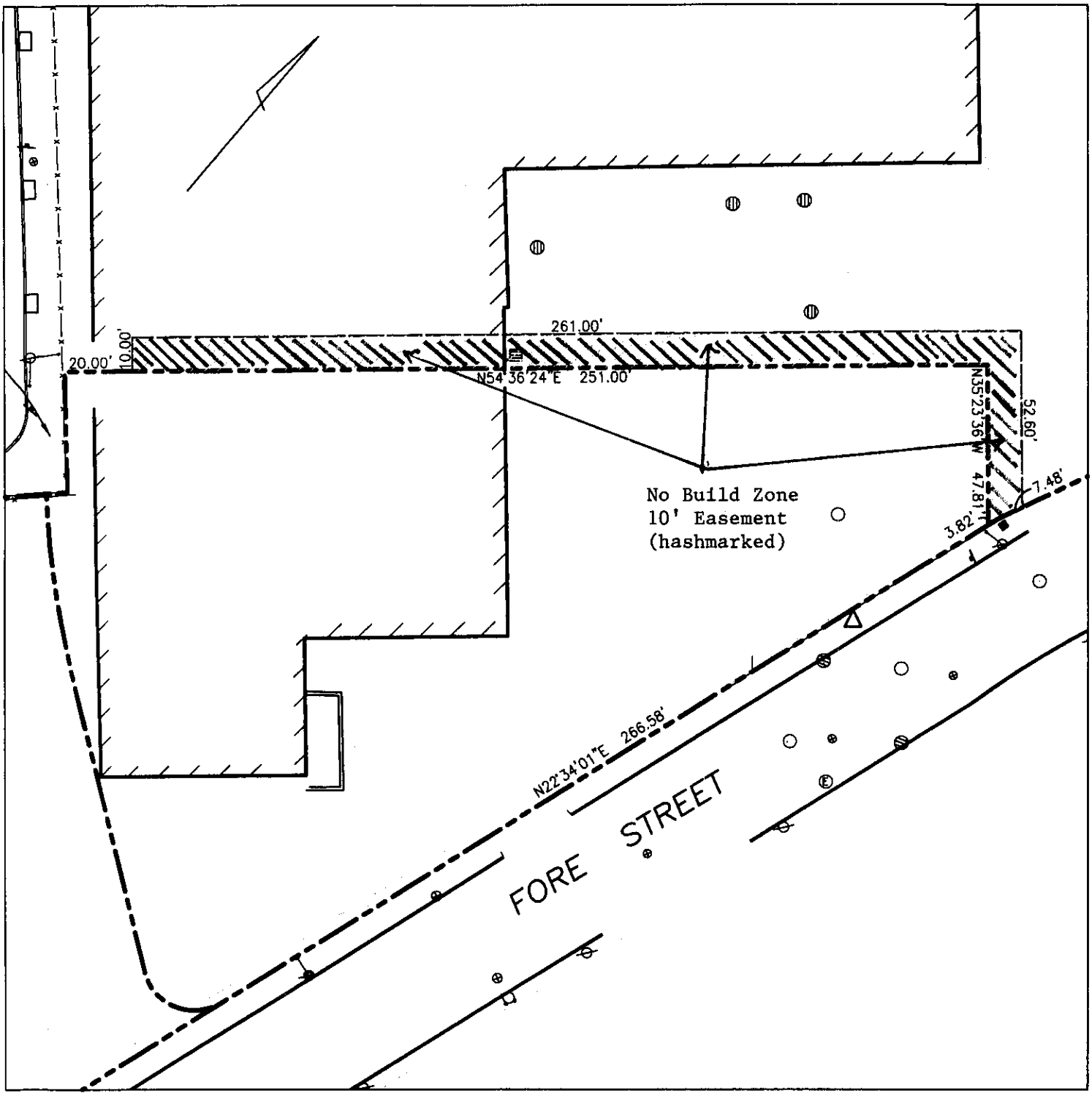


EXHIBIT B-2

NO BUILD ZONE

OWEN HASKELL, INC. 16 CASCO STREET, PORTLAND, ME 04101 (207)774-0424 PROFESSIONAL LAND SURVEYORS	Drwn By RWC Trace By RWC	Date DEC., 13, 2007	2006-262 P 2006-262 P
	Check By JWS Book No. FILE	Scale 1" = 40'	Drwg. No. 2

EXHIBIT C-1

Loading and Access Easement

A certain parcel of land situated on the northwesterly side of Fore Street in the City of Portland, County of Cumberland, State of Maine being bounded and described as follows:

Beginning on the northwesterly sideline of Fore Street at a point which bears N 22° 34' 01" E and a distance of 266.58 feet from the northeasterly sideline of Proposed Hancock Street Extension as shown on a plan entitled "Subdivision Plan on Fore Street, Portland, Maine made for Norwich Partners LLC" dated January 7, 2007 by Owen Haskell, Inc.;

Thence N 35° 23' 36" W a distance of 47.81 feet;

Thence S 54° 36' 24" W a distance of 38.00 feet;

Thence N 35° 23' 36" W a distance of 20.00 feet;

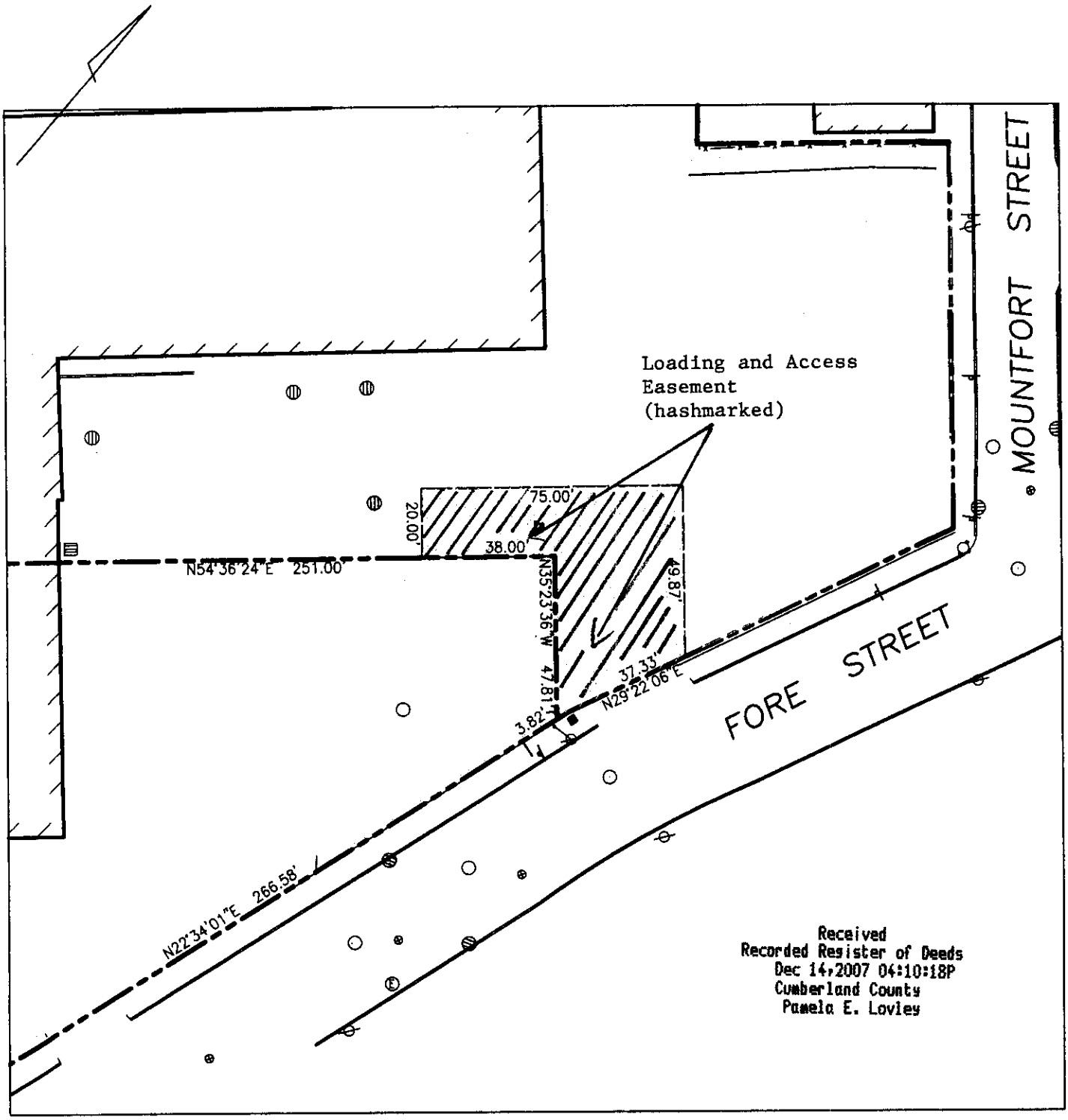
Thence N 54° 36' 24" E a distance of 75.00 feet;

Thence S 35° 23' 36" E a distance of 49.87 feet to the northwesterly sideline of said Fore Street;

Thence S 29° 22' 06" W along said sideline a distance of 37.33 feet;

Thence S 22° 34' 01" W a long said sideline a distance of 3.82 feet to the point of beginning.

File: 2006-262-01R-WCS

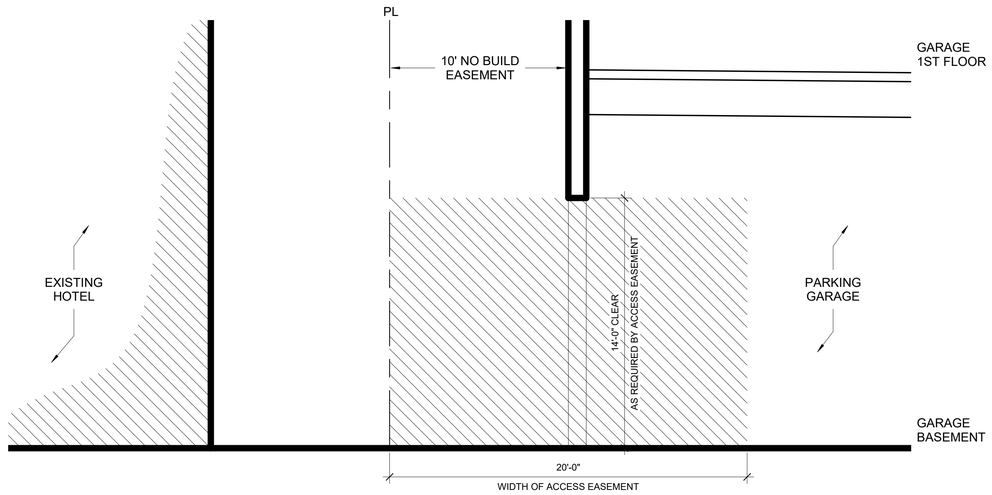


Received
Recorded Register of Deeds
Dec 14,2007 04:10:18P
Cumberland County
Pamela E. Lovley

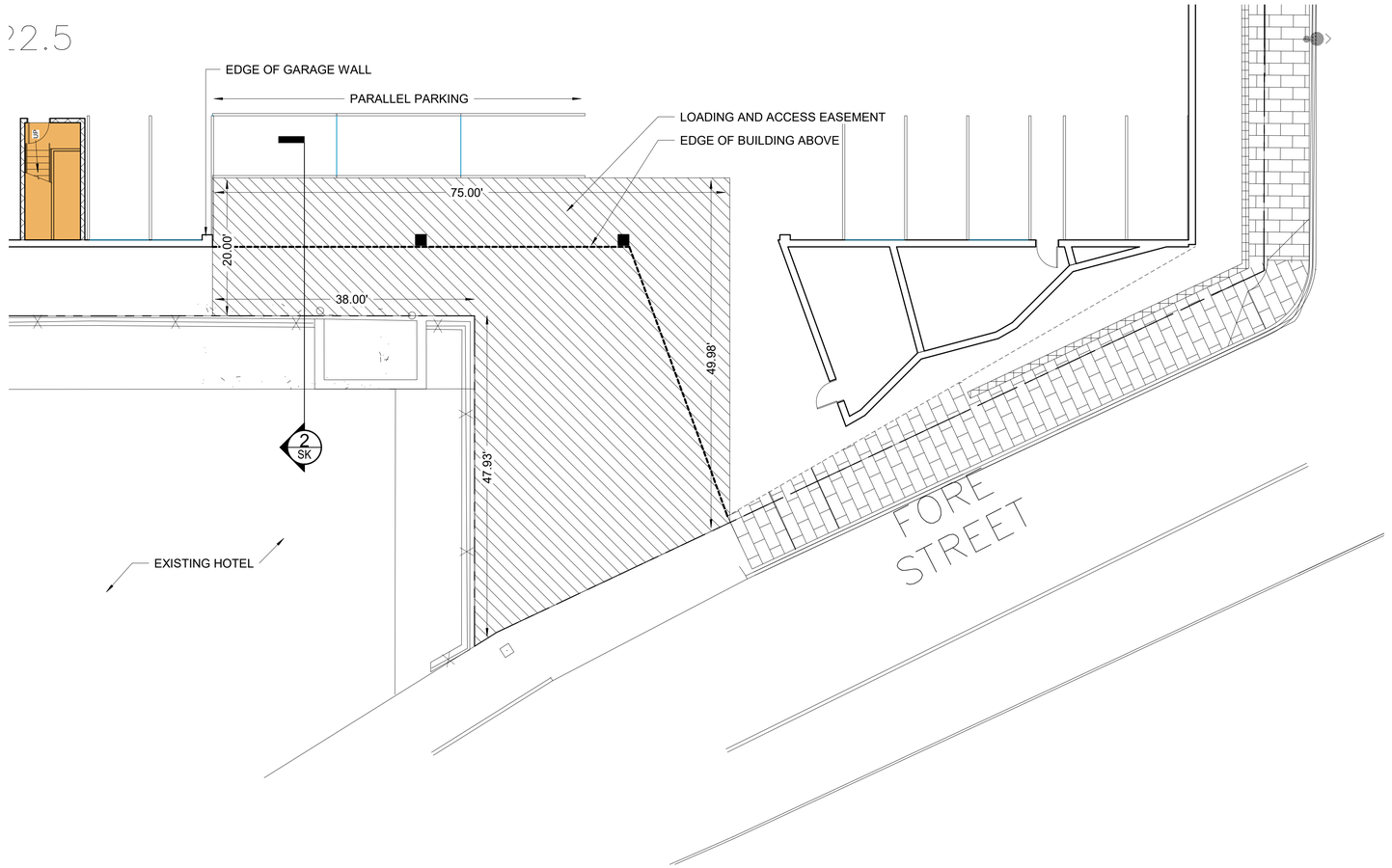
EXHIBIT C-2

LOADING AND ACCESS EASEMENT

OWEN HASKELL, INC. 16 CASCO STREET, PORTLAND, ME 04101 (207)774-0424 PROFESSIONAL LAND SURVEYORS	Drwn By	RWC	Date DEC. 12, 2007	2006-262 P 2006-262 P
	Trace By	RWC		
	Check By	JWS	Scale 1" = 40'	Drwg. No. 1
	Book No.	FILE		



2 | SECTION THROUGH ACCESS EASEMENT
1/4" = 1'-0"



1 | ENLARGED PLAN OF ACCESS EASEMENT
1" = 10'-0"

Prepared For: Owner

Consultant:

Architect: ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: SHIPYARD DEVELOPMENT
Address
City, State

Revisions:

Scale: As indicated

Date: JULY 2018

ACCESS EASEMENT

SK

CODE SUMMARY PER NFPA 1 AND FIRE DEPT STANDARDS

In accordance with instructions in the City's Level III Site Plan Review packet, please find enclosed the drawings necessary for your review of the proposed redevelopment of the Shipyard Brewing site. As part of the building design, the architect will retain a third-party Fire Protection Engineer to review NFPA 101. We have listed each item in your checklist below, followed by our response.

1. Name, address, telephone number of applicant.

86 Newbury Street, LLC
Attn: David Bateman
470 Fore Street, Suite 400
Portland, ME 04101
207-772-2992

2. Name, address, telephone number of architect.

Archetype PA
Attn: David Lloyd
48 Union Wharf
Portland, ME 04101
207-772-6022

3. Proposed uses of the structures (NFPA and IBC Classification)

Building	IBC Code	NFPA Code	Sprinkler
Office	(B) Business	(B) Business	13
Specialty Pharmacy/Fulfillment	(B) Business	(B) Business	13
Retail	(M)Mercantile/(A)Assembly	(M) / (A)	13
Hotel	(R1) Hotel	Hotel	13

4. Square footage of all structures (total and per story)

Building	Footprint Area (SF)
Basement	53,422 SF
1st Floor	68,051 SF
2nd Floor	73,987 SF
3rd Floor	62,192 SF
4th Floor	60,301 SF
5th Floor	39,698 SF
6th Floor	37,432 SF

5. Elevation of all Structures

The maximum building height varies between 45'-0", 65'-0" and 77'-0", with the first-floor finish elevation of approximately 22.58 NGVD 1929. Architectural building elevations accompany this letter and they show the various locations of door openings, etc. around the building perimeter.

6. Proposed Fire Protection of all Structures

The proposed building will have a sprinkler system with additional protection per code. Fire flows and requirements for system storage or booster pumping are subject to the fire system design which will be performed prior to the request for a building permit.

7. Hydrant Locations

There are numerous hydrants located nearby, including those located at the 3 intersections that form the edges of the site. In addition, there is a hydrant mid-block on Newbury street on the same side of the street as the project. There are at least 4 hydrants within 50 feet of the site and others within 500 feet of the site located within nearby streets.

8. Water Main Size and Location

The Portland Water District (PWD) has existing water mains nearby including an 8" main in Newbury Street that the District indicated will likely be replaced during the project due to its age. Within Hancock Street there is an existing 4" water main, that does not appear to directly feed any existing hydrants. There are also water mains within Hancock, Newbury Mountfort and Fore Street. It is anticipated that the proposed sprinkler system will connect to a minimum 8" water main.

9. Access to all Structures (2 sides min)

The proposed building will be accessible on 3 sides from public streets. On the south, or Fore Street side of the property an existing narrow alley will remain between the new building and existing Residence Inn.

10. Code Summary per NFPA 1 and Technical Standards

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access: The project site occupies the block defined by Fore, Mountfort, Newbury and Hancock Streets, all of which are public City Streets with the following widths.

Street	Width (curb to curb)
Fore Street	33 feet
Mountfort Street	23 feet
Newbury Street	30 feet
Hancock Street	42 feet

The building has a small amount of frontage along Fore Street, and as noted above an existing alley approximately 20 feet wide will exist between the adjacent Residence Inn and the proposed building.

City of Portland Technical Standards

3.3.3 - As of September 16, 2010 all new construction of one and two-family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)

Response to 3.3.3 – not applicable

3.4.1. Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).

Response to 3.4.1 – not applicable

3.4.2. Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Response to 3.4.2 – as depicted on the plans and as noted above the structure can be accessed fully on 3 sides along Mountfort, Newbury and Hancock Streets and can be partially accessed from Fore Street.

3.4.3. Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- Building Height.
- Building Occupancy.
- Construction Type.
- Impediments to the Structures.
- Safety Features Provided.

Response to 3.4.3 - The proposed development layout has contemplated emergency access conditions and provides for safe and efficient access along the public streets for emergency vehicles.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Response to 3.4.4 – Fire Dept. access roads consisting of Public streets will be located within 50' of exterior doors.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Response to 3.4.5 – Access to the site from both Fore Street will provide approximately 14 feet of clearance height for ambulance access.

3.4.6. Elevators shall be sized to accommodate an 80 x 24 inch stretcher.

Response to 3.4.6 – Elevators will be a minimum of 80 x 24 inches.

3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Response to 3.4.7 - The applicant will work with the city's Public Services Division to assign street addresses and numbering to meet City Standards.

ZONING ANALYSIS Relevant Zone(s) IS-FBC (UN & UT subdistricts)

All Projects:

	Required	Proposed
Lot Size	none	2.15 ac
Area Per Dwelling Unit	none	tbd
Minimum Street Frontage	30 ft	122.92 ft
Front Yard Minimum	none	
Front Yard Maximum	5 ft (UN)	22 ft
Rear Yard	10 ft min.	10 ft
Yard Right	5 ft min. (UN)	n/a
Yard Left	5 ft min. (UN)	n/a
Side Street Setback	none	none
Step Back	10 ft after 45' ht	15 ft (UT)
Maximum Lot Coverage	90%	<90%
Minimum Lot Coverage	none	none
Maximum Height	45 ft (UN)	40 ft
Open Space	none	none
Maximum Impervious Area	none	none
Pavement Setback	none	none
Floor Area Ratio	none	none
Off Street Parking Spaces	323	360
Loading Bays	none	1
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	Required	Proposed
Minimum Lot Size		
Minimum Lot Area per Dwelling		
Maximum # Units per Building		
Maximum Building Length		
Maximum Accessory Building Length		
Minimum Setbacks		
Minimum Building Separation		
Minimum Open Space		

Affordable Housing Density Bonuses (if applicable)

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

Neighborhood Meeting Certification

I, Lucas Anthony of Gorrill Palmer, hereby certify that a neighborhood meeting was held on May 15, 2018 at the Residence Inn on Fore Street at 5:30pm.

I also certify that on Friday, May 4, 2018, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.

Signed,

Lucas Anthony, Agent of Applicant

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

May 1, 2018

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for a Level III Site Plan and Subdivision Application located at Shipyard Brewing, 86 Newbury Street.

Meeting Location: Residence Inn, 145 Fore Street
Meeting Date: Tuesday, May 15, 2018
Meeting Time: 5:30pm-7:00 pm

(The City code requires that property owners within 500 feet (1000 feet for proposed industrial subdivisions and industrial zone changes) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.)

If you have any questions, please call (207) 772-2515.

Sincerely,

Lucas Anthony, Agent for Applicant

Note:
Under Section 14-32(C) and 14-524(a)d of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within 30 days of submitting a preliminary application or 21 days of submitting a final site plan application, if a preliminary plans were not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street Portland, ME 04101 or by email: to bab@portlandmaine.gov

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

NEIGHBORHOOD MEETING NOTES

Project: Shipyard Redevelopment

Client: 87 Newbury Street, LLC

GP Project No: 3184

Date/Location of Meeting: May 15, 2018; 5:00 pm at the Marriot Residence Inn on Fore Street

Development Team: Nathan Bateman -86 Newbury Street, LLC
David Lloyd, Mike Coyne - Archetype Architects
Lucas Anthony, Emily Tynes, Chris DiMatteo – Gorrill Palmer

Attendees: see attached sign in sheet

Distribution: City of Portland, Development Team, File

Presentation

Nathan Bateman started the meeting, introduced the team and gave an overview of the project. David Lloyd began the discussion stating that he would discuss the project and take questions after he was finished. David gave an overview of the site and its existing conditions and which buildings were to remain and which were to be demolished. David presented the overall floor plan and described the various uses proposed for the project; office, brewery and hotel with parking garage. David showed elevations views of the proposed architecture from Street Level on Hancock, Newbury, Montfort and Fore Street, describing glass façade along Montfort transitioning to brick curtain wall on Newbury and Hancock. David discussed the proposed green area on Newbury Street across from the Abyssinian Church and mentioned that the project would be presented to the Historic Preservation Board tomorrow night. David mentioned that Historic Preservation Staff had expressed the preference for additional residential uses along Newbury Street rather than additional open space / green area. David finished his presentation and opened the discussion up for questions.

Lucas Anthony and Chris DiMatteo took notes.

Questions

Please note that the following summary of questions and answers are abridged and were not recorded verbatim and aim to concisely represent the general intent of the questions, answers, and discussion that took place at the meeting.

Q: Why is the building 6 stories?
A: (David) It's allowed per code and needed to provide the space requested by the office tenant.

Q: Will the building be higher than the adjacent Residence Inn?

A: (David/Mike) The building will be 65 feet tall overall, and approximately 45 feet above Newbury Street. A bonus story is being proposed as allowed by code, a "green roof" is being provided to obtain the bonus story.

Q: What is the construction timeline?
A: (Nathan) The buildout is expected to take 21 months and they would like to start in August of 2018.

Q: Will the entire site be demolished at one time? Has the EPA been notified?
A: (Nathan) Yes, the building will be demolished in July. The site is subject to a VRAP (Voluntary Response Action Program) due to soil contamination at the site. Waste from demolition and excess soil will be disposed offsite. The first phase of demolition will start in July and take 1-2 months.

Q: How do trucks access the site during construction?
A: (Nathan): Trucks will access the site from Fore Street. Construction will happen in continuous phases with the parking garage the first phase after demolition. The City, as part of Site Plan Approval, reviews a Construction Management Plan prepared by the General Contractor, Allied Cook Construction.

Q: Is the hotel on top of the garage?
A: (David) Yes

Q: How high above the Residence Inn is the building?
A: (David) 1 story approximately but depends on where you are on the site. Proposed hotel is 2 stories above the Shipyard building.

Q: How will the impact to nearby retailers be mitigated? Parking during construction of nearby projects has been an impact to business.
A: (Nathan) The Construction Management Plan will designate parking for construction employees and the City will approve it.

Q: Will there be Public Parking in the garage?
A: (Nathan) Parking during the day will be for the office tenant, and nights and weekends the garage may be open to public parking, up to 60%. A 100% of the required parking is provided on-site.

Q: Will residents view from Newbury Street be blocked?
A:(David) The building on Newbury Street will be 4 stories tall, so yes.

Q: Will the project impact on-street parking? Noted that it is difficult for residents, especially in the summer months.
A: (Nathan) The project is closing a number of existing driveways with the intent to add on-street parking.

Q: What are the hours of Construction?
A: (David) 6 days a week from 7am to 5pm.

Q: Where are the entrances to the parking garage?
A: (David) On Fore Street for the lower level and on Hancock Street for the upper levels.

Q: Where are people coming from to get to the site?
A: (Emily) Not fully clear yet, we are performing the traffic study presently. Anticipated to add 160 AM peak and 170 PM peak trip ends.

Q: Is the traffic from the WEX building considered in the traffic study?
A: (David) Yes, that will be taken into account in the Traffic Study.

Q: The City should be responsible for the traffic problems.
A: (Nathan) The City is aware of the growth in the area and studying it, potentially via an area-wide Traffic Movement Permit.

Q: How is the City addressing the traffic from the recent projects nearby and the construction traffic over the past few years of growth?
A: (David) The City is looking at the growth and studying the traffic on an area wide scale.

Q: Where can I present my concerns on traffic?
A: (David) At the Planning Board.

Q: Are the residential units rentals or sales?
A: (Nathan) Rentals and they are replacing the existing residential units on-site.

Q: Is the parking garage for the project only?
A: (Nathan) Generally yes, we don't anticipate any extra parking.

Q: Do the residential buildings have parking?
A: (Nathan) Yes, under the building.

Q: Is the parking on the Shipyard property along Newbury Street going away?
A: (Nathan/David) Yes, with residential units getting parking spaces under the buildings.

Q: What else is happening on Newbury Street?
A: (David) Green Space will be provided in front of the proposed building and will be open to the general public with benches, landscaping, etc.

Q: Will the Shipyard Tasting Room remain?
A: (Nathan) Yes, it will remain and occupy additional retail space along Hancock as well. It will also be renovated and provided with a new Accessible Ramp to the lower level.

Q: Where will Shipyard Trucks enter the site?
A: (David) On Fore Street, not on Newbury.

Q: What is the construction sequence? Staging area should be on Fore Street away from Newbury Street.
A: (David) Allied Cook Construction will prepare a document outlining the process that will be available for public review.

Q: Will overhead power lines on Newbury remain? Would like to request underground.
A: (David) The power lines will remain overhead on Newbury Street.

Q: Will there be new overhead lines on Hancock?
A: (Nathan) No.

Q: Will there be a new building on top of the Shipyard Building?
A: (David) No

Q: Are there any Historic Properties?
A: (Nathan) No, we can legally demo the existing buildings. Newbury Street is not in the Historic District, but are within a 100 feet of the national registered Abyssinian Church.

Q: Will there be a parapet to block the rooftop mechanical equipment and other appurtenances?
A: (David) Not sure yet but will work with the City on architecture and design.
Q: What is the maximum height of the rooftop mechanical equipment?
A: (David) Not sure yet, but the City does allow overruns for stairs and elevators and rooftop mechanical equipment.

Q: Can you use traction elevators to reduce the overrun height? What will be the view?
A: (David) Not sure on equipment yet but elevators are generally in the middle of the building and the rooftop portion is not likely to be visible. Elevator shaft is dictated by building code.

Q: Relative to the bonus floor, where is the green roof?
A: (David) This is in design but will occupy at least 50% of the roof. The floor is required to be further setback from the façade by 15 feet.

Q: Can you add more parking on site?
A: (David) No.

Q: How big is the office, and do you have a tenant?
A: (David) Approximately 100k square feet and yes, a tenant is in place.

Q: Are the power lines on Newbury coming down?
A: (David) No

Q: Will there be beer taps in the hotel rooms?
A: (David) No

Q: Is there a Planning Board hearing scheduled?
A: (David) Not at this time.

Q: Is the pharmacy use a dispensary?
A: (Nathan) No, it's a mail order pharmacy.

Q: Will there be day parking for the Tasting Room?
A: (Nathan) It's not clear yet, but possibly.

Q: Is the hotel a chain?
A: (Nathan) Yes. Shipyard will offer food and beverages within the hotel.

Q: How many bedrooms are the residential units?
A: (Nathan) It will be a mix of 1 and 2-bedroom units, with a number of them priced at 80% of the Adjusted Median Income.

Q: How will the Shipyard building be renovated? Will the mural stay?
A: (Nathan) Popping out openings and allowing more light in, and the mural will stay.

Q: How can I get more information and a schedule?
A: (David) Check the City website in the coming weeks.

The meeting adjourned.

The above questions and answers were interpreted and recorded from handwritten notes. Please note and relay any discrepancies or disputed information in the neighborhood meeting notes to our office so that they can be reviewed, revised, and resubmitted as necessary.

Shipyard Redevelopment
Portland, ME
JN 3184

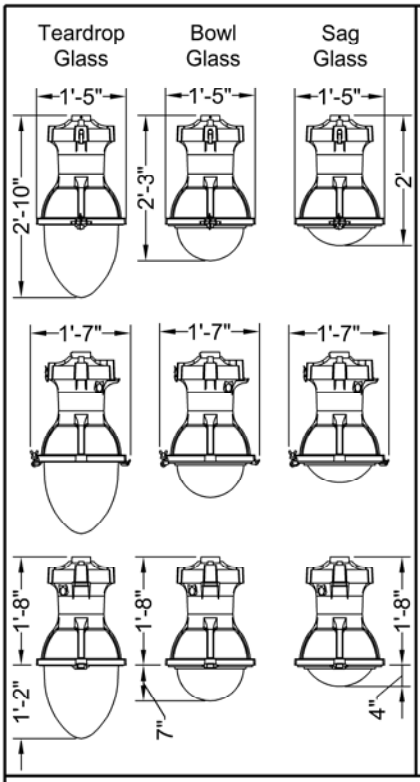
Neighborhood Meeting
Sign-In Sheet
5/15/18 @ 5:30PM
Page 1

Name:	Address:	Tel #:	Email:
Frank Reali	321 Capisic	318-8567	
Eugene Fetterolf	15 Middle St. Apt. B-204	799-0696	
Lucy Casey 740 Broadway LLC	15 Middle St	653.5807	
Mark Morin	69 Newbury	450-0735 899.2694	Bismark182@aol.
Liv Chase	52 Federal St.		livchase@yahoo.com
Ann + Christopher Sheldon	113 Newbury #401	207.835.0573	Answer@aol.com csheldon_8@yahoo.com
Melodie Cook	113 Newbury #402	207-780-8781	melodiesmail@earthlink.net
Erin Gilmann Tom Heckel	22 Hancock Unit 4303	617-852-0216	ErinGilm@gmail.com
Brent Adler	48 Hancock	2075187038	BrentAdler@gmail

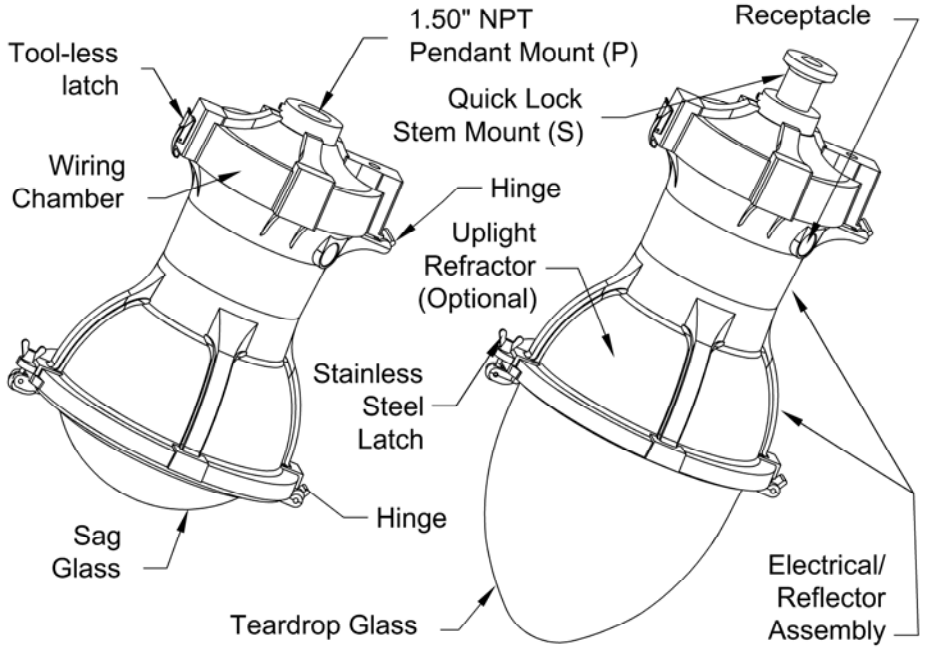
Shipyard Redevelopment
Portland, ME
JN 3184

Neighborhood Meeting
Sign-In Sheet
5/15/18 @ 5:30PM

Name:	Address:	Tel #:	Email:
MIKE CURRAN	22 HANCOCK ST	207 747 9639	MWCURRAN @GMAIL.COM
Casey Pentic	58 Fore St.		
Josie Crimmins	113 Newbury #310	207 5775746	Scrimmins53@yahoo.com



Maximum Effective Projected Area - 2.37 ft²
Maximum Weight - 69 lbs (Up Light Version)
Maximum Weight - 60 lbs (Down Light Version)



Esplanade® Utility Tear Drop LED 2

DECORATIVE OUTDOOR

EXAMPLE: ESL2 P10S 40K AS BK TG 3 S

ESL2

ORDERING INFORMATION:

LUMEN / WATTAGE PACKAGE (SEE PERFORMANCE TABLE FOR DETAILS, Page 2)
- P10S = DOWN LIGHT
- P10U = DOWN LIGHT AND UP LIGHT
- P20S = DOWN LIGHT
- P20U = DOWN LIGHT AND UP LIGHT[1]
- P30S = DOWN LIGHT
- P35S = DOWN LIGHT
- P40S = DOWN LIGHT
- P50S = DOWN LIGHT
- P60S = DOWN LIGHT

COLOR TEMPERATURE
- 27K = 2700 CCT
- 30K = 3000 CCT
- 40K = 4000 CCT
- 50K = 5000 CCT

VOLTAGE
- AS = AUTO-SENSING 120 - 277 V
- AH = AUTO-SENSING 347 - 480 V

COLOR
- BK = BLACK
- DB = DARK BLUE
- GR = GRAY
- GH = GRAPHITE
- GN = GREEN
- PP = PRIME PAINT
- WH = WHITE
- BZ = BRONZE
- TDC = TIGER DRYLAC COLOR (RAL***)
- CMC = CUSTOM MATCH COLOR
- XX = STD FINISH, TBD

DOOR AND GLASS
- TG = TEARDROP[2] GLASS & DOOR
- BG = BOWL GLASS & DOOR
- SG = SAG GLASS & DOOR

OPTIC
- 3 = TYPE 3 ASYMMETRIC
- 5 = TYPE 5 SYMMETRIC

TOP ENTRY
- P = 1.5 NPT PENDANT MOUNT
- S = QUICK LOCK STEM MOUNT

OPTIONS
- AO = ADJUSTABLE OUTPUT DIMMING *(NOT AVAILABLE WITH OPTIONS "P5", "P7", OR ANY OTHER DIMMING OPTION)*[3]
- R = NEMA TWISTLOCK PHOTOCONTROL RECEPTACLE (3 PIN)
- P5 = NEMA TWISTLOCK PHOTOCONTROL RECEPTACLE (5 PIN)
- P7 = NEMA TWISTLOCK PHOTOCONTROL RECEPTACLE (7 PIN)
- P3E = PREPARED FOR EXTERNAL 3PIN PHOTOCONTROL RECEPTACLE
- P5E = PREPARED FOR EXTERNAL 5PIN PHOTOCONTROL RECEPTACLE
- P7E = PREPARED FOR EXTERNAL 7PIN PHOTOCONTROL RECEPTACLE
- PSC = SHORTING CAP *(MUST BE USED WITH OPTION "R", "P5", OR "P7")*
- PCS = DTL TWISTLOCK PHOTOCONTROL FOR SOLID-STATE LIGHTING 120-277V *(MUST BE USED WITH OPTION "R", "P5", OR "P7")*
- PCLL = DTL LONG LIFE TWISTLOCK PHOTOCONTROL FOR SOLID-STATE LIGHTING 120-277V *(MUST BE USED WITH OPTION "R", "P5", OR "P7")*
- P34 = DTL TWISTLOCK PHOTOCONTROL 347V *(MUST BE USED WITH OPTION "R", "P5" OR "P7")*
- P48 = DTL TWISTLOCK PHOTOCONTROL 480V *(MUST BE USED WITH OPTION "R", "P5" OR "P7")*
- FPDXX = FACTORY PROGRAMMED DRIVER *(XX = PERCENTAGE OF LUMENS OR WATTS, SEE PAGE 3)*
- DE = ROAM CONCIERGE DIMMING CONTROL *(NOT AVAILABLE WITH VOLTAGE CODE AH, OR ANY OTHER PHOTOCONTROL OR DIMMING OPTION)*
- PND = 0-10V PART NIGHT DIMMING *(AS VOLTAGE ONLY, MUST BE USED WITH OPTION "R")*
- DS = 30 INCH DIAMETER DEEP SKIRT FOR CUTOFF REQUIREMENT
- SS = 30 INCH DIAMETER SHALLOW SKIRT FOR CUTOFF REQUIREMENT

OPTIONS (Cont.)
- L1H = 3FT PREWIRED LEADS
- L10 = 10FT PREWIRED LEADS
- L20 = 20FT PREWIRED LEADS
- L25 = 25FT PREWIRED LEADS
- L30 = 30FT PREWIRED LEADS
- NL2X2 = 2"x2" ANSI WATTAGE LABEL
- NL3X3 = 3"x3" ANSI WATTAGE LABEL

ACCESSORIES
- LT3HSS90 = HOUSE SIDE SHIELD, 90 DEGREE *(AVAILABLE ON P10S, P10U, P20S, P20U, P30S, AND P35S)*
- LT3HSS120 = HOUSE SIDE SHIELD, 120 DEGREE *(AVAILABLE ON P10S, P10U, P20S, P20U, P30S, AND P35S)*
- LT3HSS180 = HOUSE SIDE SHIELD, 180 DEGREE *(AVAILABLE ON P10S, P10U, P20S, P20U, P30S, AND P35S)*
- LT5HSS90 = HOUSE SIDE SHIELD, 90 DEGREE *(AVAILABLE ON P40S, P50S, AND P60S)*
- LT5HSS120 = HOUSE SIDE SHIELD, 120 DEGREE *(AVAILABLE ON P40S, P50S, AND P60S)*
- LT5HSS180 = HOUSE SIDE SHIELD, 180 DEGREE *(AVAILABLE ON P40S, P50S, AND P60S)*

NOTES:
1. ONLY AVAILABLE WITH "AS" VOLTAGE
2. ONLY AVAILABLE IN TYPE 3
3. FOR AO DATA, REFER TO PAGE 7 OF INSTRUCTION SHEET ON WEBSITE (IM-396)

HOLOPHANE® LEADER IN LIGHTING SOLUTIONS
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ORDER #:
TYPE:
DRAWN: RAF
DATE: 8/10/2017
DWG NO: LUM_ESL2

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Performance Data. For skirt and house side shield options, consult factory or website.

LED Package	Glass	Distribution	System Watts	27K (2700K, 70 CRI)					30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
				Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P10S	TG 3	T3S	57	6,947	122	1	3	3	7,101	125	1	3	3	7,451	131	1	3	3	7,400	130	1	3	3
	BG 3	T4M	57	6,731	118	2	3	3	6,880	121	2	3	3	7,220	127	2	3	3	7,170	126	2	3	3
	BG 5	T5S	57	7,087	124	3	3	2	7,244	127	3	3	2	7,601	133	3	3	3	7,549	132	3	3	3
	SG 3	T3S	57	6,822	120	1	3	3	6,973	122	1	3	3	7,317	128	1	3	3	7,266	127	1	3	3
	SG 5	T5S	57	7,164	126	3	2	1	7,322	128	3	3	1	7,683	135	3	3	1	7,631	134	3	3	1
P10U	TG 3	T3S	75	8,651	115	1	5	3	8,843	118	1	5	3	9,279	124	1	5	3	9,215	123	1	5	3
	BG 3	T4M	75	8,372	112	2	5	3	8,558	114	2	5	3	8,980	120	2	5	3	8,918	119	2	5	3
	BG 5	T5S	75	8,838	118	3	5	2	9,034	120	3	5	2	9,480	126	3	5	2	9,415	126	3	5	2
	SG 3	T3S	75	8,422	112	1	5	2	8,609	115	1	5	3	9,033	120	1	5	3	8,972	120	1	5	3
	SG 5	T5S	75	8,647	115	2	5	3	8,839	118	2	5	3	9,275	124	2	5	3	9,211	123	2	5	3
P20S	TG 3	T3S	83	9,610	116	2	3	3	9,823	118	2	3	3	10,308	124	2	3	3	10,237	123	2	3	3
	BG 3	T4M	83	9,312	112	2	3	4	9,519	115	2	3	4	9,988	120	2	3	4	9,919	120	2	3	4
	BG 5	T5S	83	9,804	118	3	3	3	10,021	121	3	3	3	10,515	127	4	3	3	10,443	126	4	3	3
	SG 3	T3S	83	9,437	114	1	3	3	9,646	116	2	3	3	10,122	122	2	3	3	10,053	121	2	3	3
	SG 5	T5S	83	9,910	119	3	3	2	10,130	122	3	3	2	10,630	128	3	3	2	10,557	127	3	3	2
P20U	TG 3	T3S	109	11,551	106	2	5	3	11,807	108	2	5	3	12,389	114	2	5	3	12,304	113	2	5	3
	BG 3	T4M	109	11,179	103	2	5	4	11,427	105	2	5	4	11,990	110	2	5	4	11,908	109	2	5	4
	BG 5	T5S	109	11,801	108	3	5	3	12,063	111	3	5	3	12,657	116	3	5	3	12,571	115	3	5	3
	SG 3	T3S	109	11,245	103	2	5	3	11,495	105	2	5	3	12,061	111	2	5	3	11,979	110	2	5	3
	SG 5	T5S	109	11,546	106	2	5	3	11,802	108	2	5	3	12,384	114	2	5	3	12,299	113	2	5	3
P30S	TG 3	T3S	118	12,634	107	2	3	3	12,914	109	2	3	3	13,551	115	2	3	3	13,458	114	2	3	3
	BG 3	T4M	118	12,242	104	2	3	4	12,513	106	2	3	4	13,130	111	3	3	5	13,040	111	3	3	5
	BG 5	T5S	118	12,888	109	4	3	3	13,174	112	4	3	3	13,823	117	4	3	3	13,729	116	4	3	3
	SG 3	T3S	118	12,406	105	2	3	3	12,681	107	2	3	3	13,307	113	2	3	3	13,215	112	2	3	3
	SG 5	T5S	118	13,028	110	3	3	2	13,317	113	3	3	2	13,974	118	4	3	2	13,879	118	4	3	2
P35S	TG 3	T3S	144	14,335	100	2	3	4	14,653	102	2	3	4	15,375	107	2	3	4	15,270	106	2	3	4
	BG 3	T4M	144	13,890	96	3	3	5	14,198	99	3	3	5	14,898	103	3	3	5	14,796	103	3	3	5
	BG 5	T5S	144	14,623	102	4	3	3	14,948	104	4	3	3	15,685	109	4	3	3	15,577	108	4	3	3
	SG 3	T3S	144	14,077	98	2	3	3	14,389	100	2	3	3	15,098	105	2	3	3	14,995	104	2	3	3
	SG 5	T5S	144	14,782	103	4	3	2	15,110	105	4	3	2	15,855	110	4	3	2	15,747	109	4	3	2
P40S	TG 3	T3S	140	15,649	112	3	3	4	15,996	114	3	3	4	16,785	120	3	3	4	16,670	119	3	3	4
	BG 3	T4M	140	14,746	105	3	4	5	15,073	108	3	4	5	15,816	113	3	4	5	15,707	112	3	4	5
	BG 5	T5S	140	15,484	111	4	3	4	15,827	113	4	3	4	16,608	119	4	4	4	16,494	118	4	4	4
	SG 3	T3S	140	14,937	107	2	3	4	15,268	109	2	3	4	16,021	114	2	3	4	15,911	114	2	3	4
	SG 5	T5S	140	16,071	115	4	3	3	16,427	117	4	3	3	17,237	123	4	3	3	17,119	122	4	3	3
P50S	TG 3	T3S	174	18,715	108	3	3	4	19,130	110	3	3	4	20,073	115	3	3	4	19,935	115	3	3	4
	BG 3	T4M	174	17,634	101	3	4	5	18,025	104	3	4	5	18,914	109	3	4	5	18,784	108	3	4	5
	BG 5	T5S	174	18,517	106	4	4	4	18,928	109	4	4	4	19,861	114	4	4	4	19,725	113	4	4	4
	SG 3	T3S	174	17,863	103	2	3	4	18,259	105	2	3	4	19,160	110	2	3	5	19,028	109	2	3	4
	SG 5	T5S	174	19,219	110	4	3	3	19,645	113	4	3	3	20,614	118	4	3	3	20,472	118	4	3	3
P60S	TG 3	T3S	242	22,997	95	3	3	5	23,508	97	3	3	5	24,667	102	3	3	5	24,497	101	3	3	5
	BG 3	T4M	242	21,670	90	3	4	5	22,150	92	3	4	5	23,244	96	3	4	5	23,083	95	3	4	5
	BG 5	T5S	242	22,755	94	5	4	5	23,259	96	5	4	5	24,409	101	5	4	5	24,239	100	5	4	5
	SG 3	T3S	242	21,951	91	3	3	5	22,438	93	3	3	5	23,545	97	3	3	5	23,383	97	3	3	5
	SG 5	T5S	242	23,617	98	4	3	3	24,141	100	4	3	3	25,331	105	4	3	3	25,157	104	4	3	3

S = Short M = Medium

Lumen Ambient Temperature Data

Lumen Ambient Temperature (LAT) Multipliers									
°C	P10U	P20U	P10S	P20S	P30S	P35S	P40S	P50S	P60S
0	1.04	1.05	1.04	1.05	1.06	1.07	1.06	1.07	1.09
10	1.03	1.03	1.03	1.03	1.04	1.04	1.04	1.04	1.05
20	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02
25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.98
40	0.97	0.97	0.97	0.97	0.96	0.95	0.96	0.95	0.94

Lumen Maintenance Data

Lumen Maintenance (same for all LED packages)				
Hours	0	25,000	50,000	100,000
Factor	1	0.9	0.84	0.75

ORDER #:
TYPE:
DRAWN: RAF
DATE: 8/10/2017
DWG NO: LUM_ESL2

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LEADER IN LIGHTING SOLUTIONS
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DECORATIVE OUTDOOR

Esplanade®
Utility Tear Drop LED 2

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FPDXX Data Options

FPDxx setting	P10S 27K						P10S 30K						P10S 40K						P10S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	6,947	6,731	7,087	6,822	7,164	57	7,101	6,880	7,244	6,973	7,322	57	7,451	7,220	7,601	7,317	7,683	57	7,400	7,170	7,549	7,266	7,631	57
FPD95	6,638	6,432	6,772	6,519	6,846	54	6,785	6,574	6,922	6,663	6,997	54	7,120	6,899	7,263	6,992	7,342	54	7,071	6,851	7,213	6,943	7,292	54
FPD90	6,326	6,129	6,453	6,212	6,523	51	6,466	6,265	6,596	6,349	6,667	51	6,785	6,574	6,921	6,663	6,996	51	6,738	6,529	6,874	6,616	6,948	51
FPD85	6,009	5,822	6,130	5,901	6,197	48	6,142	5,951	6,266	6,032	6,334	48	6,445	6,245	6,575	6,329	6,646	48	6,401	6,202	6,530	6,285	6,601	48
FPD80	5,689	5,512	5,804	5,587	5,867	45	5,815	5,634	5,932	5,710	5,996	45	6,102	5,913	6,225	5,992	6,292	45	6,060	5,872	6,182	5,950	6,249	45
FPD75	5,365	5,199	5,474	5,269	5,533	43	5,484	5,314	5,595	5,386	5,655	43	5,755	5,576	5,871	5,651	5,934	43	5,715	5,538	5,830	5,612	5,894	43

FPDxx setting	P10U 27K						P10U 30K						P10U 40K						P10U 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	8,651	8,372	8,838	8,422	8,647	75	8,843	8,558	9,034	8,609	8,839	75	9,279	8,980	9,480	9,033	9,275	75	9,215	8,918	9,415	8,972	9,211	75
FPD95	8,264	7,998	8,443	8,046	8,261	72	8,448	8,176	8,630	8,224	8,444	72	8,864	8,579	9,056	8,629	8,861	72	8,803	8,519	8,994	8,571	8,799	72
FPD90	7,873	7,619	8,044	7,665	7,870	68	8,048	7,789	8,222	7,835	8,044	68	8,445	8,173	8,628	8,221	8,441	68	8,387	8,116	8,569	8,166	8,383	68
FPD85	7,478	7,237	7,639	7,280	7,474	64	7,644	7,397	7,809	7,442	7,640	64	8,021	7,762	8,194	7,808	8,017	64	7,965	7,709	8,138	7,755	7,962	64
FPD80	7,078	6,850	7,231	6,891	7,075	61	7,235	7,002	7,391	7,044	7,232	61	7,592	7,347	7,756	7,390	7,588	61	7,539	7,296	7,703	7,341	7,536	61
FPD75	6,674	6,458	6,818	6,497	6,671	57	6,822	6,602	6,969	6,641	6,819	57	7,158	6,928	7,313	6,968	7,155	57	7,109	6,880	7,263	6,921	7,106	57

FPDxx setting	P20S 27K						P20S 30K						P20S 40K						P20S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	9,610	9,312	9,804	9,437	9,910	83	9,823	9,519	10,021	9,646	10,130	83	10,308	9,988	10,515	10,122	10,630	83	10,237	9,919	10,443	10,053	10,557	83
FPD95	9,212	8,926	9,398	9,046	9,499	79	9,416	9,125	9,606	9,246	9,710	79	9,881	9,574	10,079	9,703	10,190	79	9,813	9,508	10,010	9,637	10,120	79
FPD90	8,805	8,532	8,982	8,646	9,080	75	9,000	8,721	9,181	8,838	9,281	75	9,444	9,151	9,634	9,274	9,739	75	9,379	9,088	9,568	9,211	9,672	75
FPD85	8,389	8,129	8,558	8,238	8,651	71	8,575	8,309	8,747	8,420	8,843	71	8,998	8,719	9,179	8,836	9,279	71	8,936	8,658	9,116	8,775	9,215	71
FPD80	7,964	7,717	8,125	7,820	8,212	66	8,140	7,888	8,304	7,994	8,395	66	8,542	8,277	8,714	8,388	8,809	66	8,483	8,220	8,654	8,331	8,749	66
FPD75	7,530	7,297	7,682	7,395	7,765	62	7,697	7,459	7,852	7,559	7,938	62	8,077	7,827	8,240	7,932	8,330	62	8,022	7,773	8,183	7,878	8,272	62

FPDxx setting	P20U 27K						P20U 30K						P20U 40K						P20U 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	11,551	11,179	11,801	11,245	11,546	109	11,807	11,427	12,063	11,495	11,802	109	12,389	11,990	12,657	12,061	12,384	109	12,304	11,908	12,571	11,979	12,299	109
FPD95	11,066	10,710	11,306	10,773	11,061	104	11,311	10,947	11,557	11,013	11,307	104	11,869	11,487	12,126	11,555	11,864	104	11,788	11,408	12,043	11,476	11,783	104
FPD90	10,571	10,231	10,800	10,291	10,567	98	10,806	10,458	11,040	10,520	10,801	98	11,338	10,973	11,584	11,038	11,334	98	11,260	10,898	11,505	10,963	11,256	98
FPD85	10,067	9,742	10,284	9,800	10,062	93	10,290	9,958	10,513	10,018	10,285	93	10,797	10,449	11,030	10,511	10,792	93	10,723	10,378	10,955	10,440	10,718	93
FPD80	9,552	9,244	9,759	9,299	9,548	88	9,764	9,449	9,975	9,506	9,760	88	10,245	9,915	10,467	9,974	10,241	88	10,175	9,847	10,395	9,906	10,171	88
FPD75	9,028	8,737	9,223	8,789	9,024	82	9,228	8,931	9,428	8,984	9,224	82	9,683	9,371	9,892	9,426	9,679	82	9,616	9,307	9,825	9,362	9,612	82

FPDxx setting	P30S 27K						P30S 30K						P30S 40K						P30S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	12,634	12,242	12,888	12,406	13,028	118	12,914	12,513	13,174	12,681	13,317	118	13,551	13,130	13,823	13,307	13,974	118	13,458	13,040	13,729	13,215	13,879	118
FPD95	12,177	11,799	12,422	11,957	12,556	112	12,447	12,060	12,697	12,222	12,835	112	13,061	12,655	13,323	12,825	13,468	112	12,971	12,568	13,232	12,737	13,377	112
FPD90	11,699	11,336	11,934	11,488	12,064	105	11,958	11,587	12,199	11,742	12,331	105	12,548	12,158	12,800	12,322	12,940	105	12,462	12,075	12,713	12,237	12,852	105
FPD85	11,201	10,854	11,426	10,999	11,551	99	11,449	11,094	11,680	11,243	11,807	99	12,014	11,641	12,255	11,798	12,389	99	11,932	11,561	12,172	11,716	12,305	99
FPD80	10,684	10,352	10,899	10,491	11,017	93	10,921	10,582	11,141	10,724	11,261	93	11,459	11,103	11,689	11,253	11,817	93	11,381	11,027	11,610	11,175	11,737	93
FPD75	10,147	9,833	10,351	9,964	10,464	87	10,372	10,050	10,581	10,185	10,696	87	10,884	10,546	11,102	10,688	11,224	87	10,809	10,474	11,027	10,614	11,147	87

FPDxx setting	P35S 27K						P35S 30K						P35S 40K						P35S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	14,335	13,890	14,623	14,077	14,782	144	14,653	14,198	14,948	14,389	15,110	144	15,375	14,898	15,685	15,098	15,855	144	15,270	14,796	15,577	14,995	15,747	144
FPD95	13,886	13,455	14,165	13,636	14,319	136	14,194	13,753	14,480	13,938	14,637	136	14,893	14,431	15,194	14,625	15,358	136	14,792	14,333	15,089	14,525	15,254	136
FPD90	13,405	12,989	13,674	13,163	13,823	129	13,702	13,277	13,978	13,455	14,129	129	14,377	13,931	14,667	14,118	14,826	129	14,279	13,836	14,566	14,022	14,725	129
FPD85	12,892	12,492	13,151	12,660	13,294	121	13,178	12,769	13,443	12,940	13,589	121	13,827	13,398	14,106	13,578	14,259	121	13,733	13,306	14,009	13,485	14,162	121

FPDxx setting	P40S 27K						P40S 30K						P40S 40K						P40S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	15,649	14,746	15,484	14,937	16,071	140	15,996	15,073	15,827	15,268	16,427	140	16,785	15,816	16,608	16,021	17,237	140	16,670	15,707	16,494	15,911	17,119	140
FPD95	15,046	14,178	14,887	14,361	15,452	133	15,380	14,492	15,217	14,680	15,794	133	16,138	15,207	15,968	15,404	16,573	133	16,028	15,102	15,858	15,298	16,459	133
FPD90	14,422	13,590	14,270	13,766	14,811	125	14,742	13,891	14,586	14,071	15,139	125	15,469	14,576	15,306	14,765	15,886	125	15,363	14,476	15,201	14,664	15,777	125
FPD85	13,871	13,071	13,725	13,240	14,246	119	14,179	13,361	14,029	13,534	14,561	119	14,878	14,019	14,722	14,201	15,279	119	14,776	13,923	14,620	14,104	15,174	119

FPDxx setting	P50S 27K						P50S 30K						P50S 40K						P50S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	18,715	17,634	18,517	17,863	19,219	174	19,130	18,025	18,928	18,259	19,645	174	20,073	18,914	19,861	19,160	20,614	174	19,935	18,784	19,725	19,028	20,472	174
FPD95	18,100	17,055	17,909	17,276	18,588	165	18,501	17,433	18,306	17,659	19,000	165	19,413	18,293	19,208	18,530	19,937	165	19,280	18,167	19,077	18,403	19,799	165
FPD90	17,433	16,426	17,248	16,639	17,902	155	17,819	16,790	17,631	17,008	18,299	155	18,698	17,618	18,500	17,847	19,202	155	18,569	17,497	18,373	17,724	19,069	155
FPD85	16,743	15,776	16,566	15,981	17,194	147	17,115	16,126	16,934	16,336	17,576	147	17,958	16,922	17,769	17,142	18,442	147	17,835	16,805	17,647	17,024	18,315	147
FPD80	16,002	15,078	15,833	15,274	16,433	138	16,357	15,412	16,184	15,612	16,797	138	17,163	16,172	16,982	16,383	17,626	138	17,045	16,061	16,866	16,270	17,504	138

FPDxx setting	P60S 27K						P60S 30K						P60S 40K						P60S 50K					
	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts	TG 3	BG 3	BG 5	SG 3	SG 5	Watts
Standard	22,997	21,670	22,755	21,951	23,617	242	23,508	22,150	23,259	22,438	24,141	242	24,667	23,244	24,409	23,545	25,331	242	24,497	23,083	24,239	23,383	25,157	242
FPD95	22,498	21,200	22,261	21,475	23,105	228	22,998	21,669	22,754	21,951	23,617	228	24,132	22,740	23,879	23,034	24,781	228	23,966	22,582	23,713	22,876	24,611	228
FPD90	21,917	20,652	21,686	20,920	22,508	215	22,404	21,110	22,166	21,384	23,007	215	23,508	22,152	23,262	22,439	24,141	215	23,346	21,999	23,100	22,285	23,975	215
FPD85	21,255	20,029	21,032	20,289	21,828	203	21,728	20,472	21,497	20,739	22,313	203	22,799	21,484	22,560	21,762	23,413	203	22,642	21,335	22,403	21,612	23,252	203
FPD80	20,516	19,333	20,301	19,583	21,070	189	20,972	19,761	20,750	20,018	21,537	189	22,006	20,737	21,776	21,005	22,599	189	21,855	20,593	21,624	20,861	22,443	189
FPD75	19,703	18,566	19,495	18,806	20,234	176	20,140	18,977	19,927	19,224	20,683	176	21,133	19,914	20,912	20,172	21,702	176	20,988	19,776	20,767	20,033	21,553	176

ORDER #:
TYPE:
DRAWN: RAF
DATE: 8/10/2017
DWG NO: LUM_ESL2

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DECORATIVE OUTDOOR

Esplanade®
Utility Tear Drop LED 2

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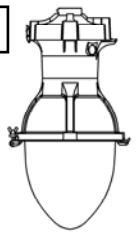
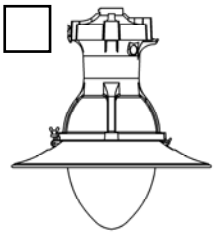
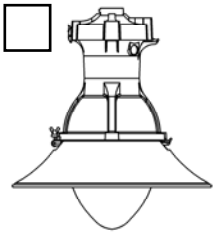
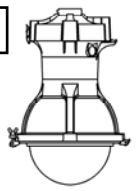
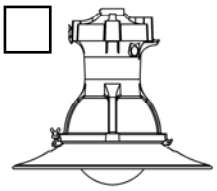
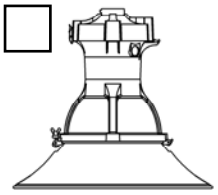
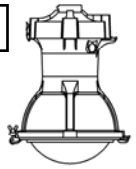
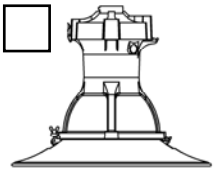
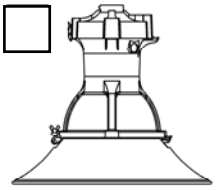
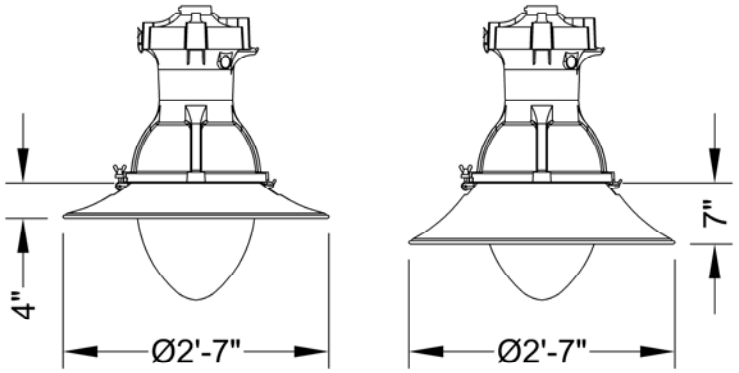
Mark Appropriate Box for Trim Option

	Standard	Shallow Skirt	Deep Skirt
Teardrop Glass (Asymmetric)	☐ 	☐ 	☐ 
Bowl Glass (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 
Sag Glass (Asymmetric) (Symmetric)	☐ 	☐ 	☐ 

Skirt Dimensions

(For Teardrop, Bowl, and Sag glass)



Specifications

DESCRIPTION

The Esplanade luminaire is styled to replicate the “teardrop” luminaires that lighted boulevards in the first half of the 1900s. Designed for light control and ease of installation and maintenance, the Esplanade has a precision optical system for true street lighting performance.

WIRING CHAMBER

The wiring chamber has either a 1.50 inch NPT with a stainless steel set screw or a welded stem. The stem (Quick Lock Stem Mounting option) aids installation speed. A (3) station terminal block that accepts #14 through #2 wires and has a quick disconnect harness with removable electrical module is provided.

ELECTRICAL / REFLECTOR ASSEMBLY

The electrical / reflector assembly hinges down from the wiring chamber for ease in wiring and to facilitate the removal of the electrical module. The assembly is secured in place by a stainless steel latch. The unitized electrical module consists of the electronic driver and components mounted to an aluminum plate that is easily removed by loosening two screws in the base of the housing. The disconnect plug connects the ballast to the terminal block in the wiring chamber.

REFRACTOR / DOOR ASSEMBLY

The cast aluminum door supports a teardrop, bowl or sag shaped, thermal resistant borosilicate glass refractor that controls the light to provide an I.E.S. asymmetric (teardrop, bowl and sag glass) and symmetric (bowl and sag glass) distribution. I.E.S. asymmetric cut off distribution is available on the bowl glass with the decorative deep skirt option and the sag glass with either the decorative shallow or deep skirt option. The refractor assembly and decorative skirt (when applicable) assembly hinges from the electrical / reflector assembly and is latched by a tamper-resistant, color matched bracket and with nut assembly.

DRIVER

LED programmable dimmable driver located in the upper electrical housing.

FINISH / MATERIAL

The luminaire is finished with polyester powder paint to insure maximum durability. All castings utilize low copper aluminum for maximum corrosion resistance and all exposed hardware is stainless steel.

CERTIFICATION

CSA listing suitable for wet location up to 40°C. Consult factory for details.

Esplanade®

Utility Tear Drop LED 2

DECORATIVE OUTDOOR

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS
An AcuityBrandsCompany

THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUPPLIED, BUT ONLY AFTER APPROVAL BY THE CUSTOMER IN WRITING. ON POLE ORDERS AN ANCHOR BOLT TEMPLATE PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED. THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON EXPRESS CONDITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

ORDER #:	
TYPE:	
DRAWN:	RAF
DATE:	8/10/2017
DWG NO:	LUM_ESL2

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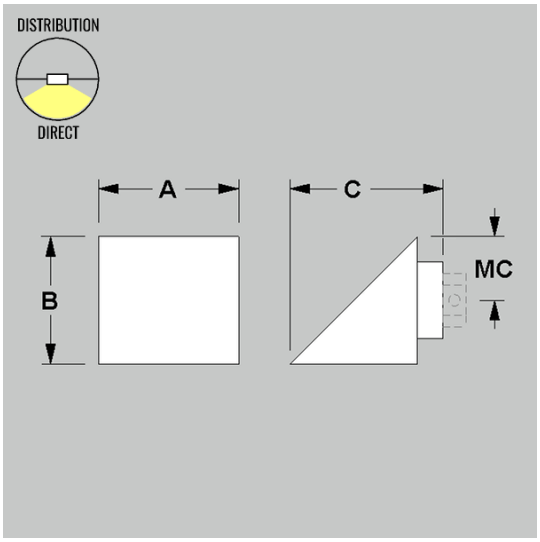
Fixture #	
Style	
Project	
Qty	

OW650 | Angle

- Metal Body
- White Acrylic Bottom Lens
- Wet Location



Dimensions and Lamping:

-8: 8" A x 7" B x 8.5" C x 3.5" MC: 3 lbs.
-LN LED: Nominal 20W, 1000 Delivered Lumens

-11: 11" A x 10" B x 12" C x 5" MC: 3 lbs.
-LN LED: Nominal 20W, 1200 Delivered Lumens

LED Color Temperature:

-35K 3500K **-30K** 3000K **-40K** 4000K

LED Control Options :

-CLV Integral Power Supply, 0-10V Dimming to 1%

Voltage Options:

-1 120V **-2** 277V **-MV** Multi-Volt

Diffusers:

-WA Gloss White Acrylic (WA)

Standard Finishes:

-PAL Aluminum (PAL)
-PNL Nickel (PNL)
-PBR Bronze (PBR)
-PLB Light Bronze (PLB)
-PMB Medium Bronze (PMB)
-PDB Dark Bronze (PDB)
-PRB Oil Rubbed Bronze (PRB)
-PMW Matte White (PMW)
-PWW White Wrinkle (PWW)
-PSB Satin Black (PSB)
-PBW Black Wrinkle (PBW)
-PBB Brushed Brass (PBB)
-PAB Antique Brass (PAB)
-PHB Hammered Bronze (PHB)
-PHC Hammered Copper (PHC)
-PHS Hammered Silver (PHS)
-PSG Satin Gold (PSG)
-PPA Patina (PPA)
-PRD Traffic Red (RAL 3020) (PRD)
-POR Pure Orange (RAL 2004) (POR)
-PYL Traffic Yellow (RAL 1023) (PYL)
-PGR Emerald Green (RAL 6001) (PGR)
-PBL Signal Blue (RAL 5005) (PBL)
-STBD To Be Determined

Premium Finishes:

-BA Brushed Aluminum (BA)
-SN Satin Nickel (SN)
-PC Polished Chrome (PC)
-BB Brushed Brass (BB)
-PB Polished Brass (PB)
-AB Antique Brass (AB)
-PTBD To Be Determined

Other Options:

-REM Remote Emergency Power Supply

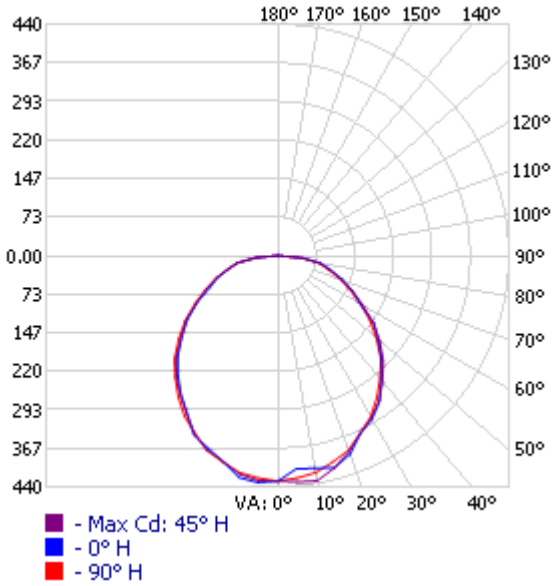
Custom sizes and finishes available upon request.
Fluorescent and/or incandescent lamps not included.
Camman reserves the right to make design changes without prior notice.
Unless otherwise specified, mounting is to a 4 inch octagonal junction box.
Structural mounting is required for fixtures over 50 pounds. Please contact the factory for specific mounting instructions.
Photometric information available at cammanlighting.com

OUTDOOR PHOTOMETRIC REPORT
CATALOG: OW650-11-LN

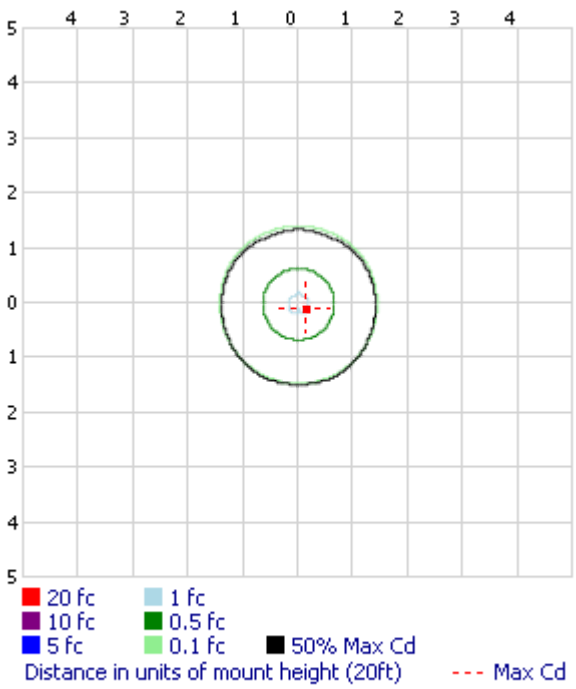
MANUFACTURER:	CAMMAN LIGHTING, INC.
TEST #:	PHOTOPIA 2016.0.2.7311
TEST LAB:	PHOTOMETRIC REPORT
CATALOG:	OW650-11-LN
DESCRIPTION:	WALL MOUNT
LAMP:	LED, 3500K
LAMP OUTPUT:	TOTAL LUMINAIRE LUMENS: 1241.6, ABSOLUTE PHOTOMETRY *
BALLAST / DRIVER:	120/277V POWER SUPPLY
INPUT WATTAGE:	18.82
LUMINOUS OPENING:	RECTANGLE W/LUMINOUS SIDES (L: 12", W: 11", H: 10")
MAX CD:	434.7 AT HORIZONTAL: 45°, VERTICAL: 10°
ROADWAY CLASS:	TYPE VS

No Photo Available

Polar Candela Distribution



Isofootcandle Plot



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.
*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

VISUAL PHOTOMETRIC TOOL 1.2.46 COPYRIGHT 2018, ACUITY BRANDS LIGHTING.
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PHOTOPIA 2016.0.2.7311
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: OW650-11-LN

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	327.8	26.4%
0-40	533.5	43%
0-60	938.0	75.5%
60-90	303.4	24.4%
70-100	152.3	12.3%
90-120	0.2	0%
0-90	1,241.4	100%
90-180	0.2	0%
0-180	1,241.6	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	40.5	3.3%	90-100	0.2	0%
10-20	115.0	9.3%	100-110	0.000	0%
20-30	172.4	13.9%	110-120	0.000	0%
30-40	205.6	16.6%	120-130	0.000	0%
40-50	212.5	17.1%	130-140	0.000	0%
50-60	192.0	15.5%	140-150	0.000	0%
60-70	151.2	12.2%	150-160	0.000	0%
70-80	106.5	8.6%	160-170	0.000	0%
80-90	45.7	3.7%	170-180	0.000	0%

ROADWAY SUMMARY

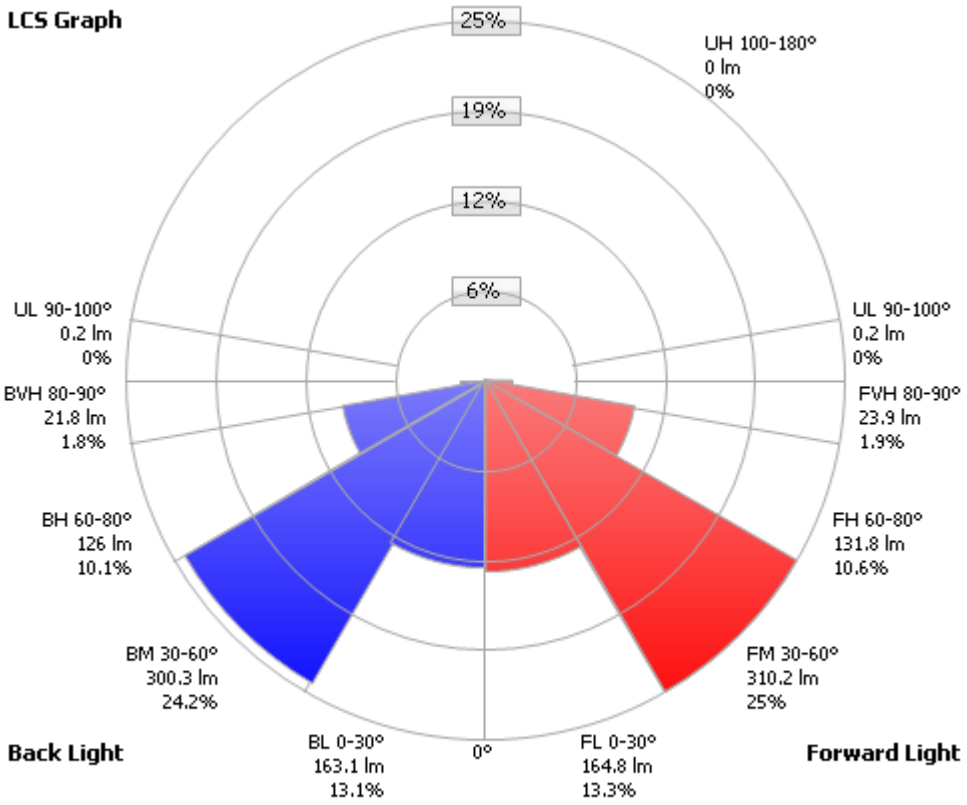
DISTRIBUTION:		TYPE VS
MAX CD, 90 DEG VERT:		1.1
MAX CD, 80 TO <90 DEG:		85.9
	LUMENS	% LAMP
DOWNWARD STREET SIDE:	630.7	50.8%
DOWNWARD HOUSE SIDE:	611.2	49.2%
DOWNWARD TOTAL:	1,241.9	100%
UPWARD STREET SIDE:	0.1	0%
UPWARD HOUSE SIDE:	0.1	0%
UPWARD TOTAL:	0.2	0%
TOTAL LUMENS:	1,242.1	100%

LCS TABLE

BUG RATING	**B1 - U1 - G1**	
FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	164.8	13.3%
MEDIUM(30-60):	310.2	25%
HIGH(60-80):	131.8	10.6%
VERY HIGH(80-90):	23.9	1.9%
BACK LIGHT		
LOW(0-30):	163.1	13.1%
MEDIUM(30-60):	300.3	24.2%
HIGH(60-80):	126.0	10.1%
VERY HIGH(80-90):	21.8	1.8%
UPLIGHT		
LOW(90-100):	0.2	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.000	0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: OW650-11-LN

LCS Graph



Scale = Max LCS %

Trapped Light: 0lm, 0%

PHOTOPIA 2016.0.2.7311
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: OW650-11-LN

CANDELA TABLE - TYPE C

	0	22.5	45	67.5	90	112.5	135	157.5	180
0	429	429	429	429	429	429	429	429	429
5	407	418	432	425	424	429	429	429	433
10	410	425	**435**	420	419	425	421	406	428
15	417	402	418	412	406	406	404	404	404
20	402	401	396	391	394	392	393	379	389
25	373	381	372	375	372	375	374	376	376
30	359	360	356	352	354	354	346	348	345
35	338	337	337	328	329	327	323	324	321
40	308	308	310	301	303	301	300	298	295
45	280	286	284	278	278	275	273	266	268
50	250	252	253	246	245	243	238	238	238
55	223	226	222	216	214	214	213	205	209
60	181	190	186	186	181	181	178	181	176
65	156	157	157	154	151	148	149	149	142
70	130	130	126	127	125	123	123	119	122
75	104	102	102	101	97	98	97	96	98
80	84	86	81	80	80	76	77	76	77
85	49	47	47	45	44	43	41	40	40
90	1	0.74	0.98	0.91	1.07	0.71	0.6	0.36	0.28
95	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0

McGraw-Edison

DESCRIPTION

The TopTier™ parking garage, canopy and low-bay luminaire is an innovative solution that delivers an unparalleled combination of performance and visual comfort. The patented WaveStream™ optical technology blocks the line of sight from the LED light sources to the observer, while extracting the maximum amount of light on task. This approach results in a high level of uniformity and vertical footcandles that enhances safety in the application environment. The TopTier luminaire is UL/cUL listed for wet locations, IP66 and 3G vibration rated.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

SPECIFICATION FEATURES

Construction
One-piece, low copper die-cast aluminum housing provides a clean and symmetric housing. Formed aluminum top is sloped to prevent bird nesting. Metal electrical tray allows for easy electrical access for field servicing.

Optics
Unique optical distributions are accomplished using various combinations of reflective backing plates and WaveStream optical technology. The optical Waveguide is manufactured using precision injection molded acrylic. The optics contain features that form a repeatable and redundant pattern to direct light in a precisely prescribed distribution. The drive lane distribution is specifically designed for locations with one direction of travel to optimally direct light in the same direction of travel for maximum glare control. For additional glare control and visual comfort with the Wide distribution, specify the SG option which adds a Solite® glass lens that works in combination with the Waveguide lens and reflective backing plate.

Offered standard in 4000K (+/- 275K) CCT, optional 3000K, 5000K and 6000K. Minimum 70 CRI. Optional uplight feature provides a dedicated light engine (17W) to maintain consistent output across fixtures and reduces cave effect. Nominal uplight output is 800 lumens and ranges from 10%-30% total light output depending on the lumen package.

Electrical
LED driver(s) are mounted to metal electrical tray for optimal thermal performance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming driver(s), specify 5LTD for Fifth Light DALI driver(s). Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. Greater than 90% lumen maintenance expected at 60,000 hours, based off LM-80 test data and TM-21. Suitable for ambient temperature applications from -40°C (-40°F) to 40°C (104°F). For 50°C (122°F) applications, specify the HA high ambient option. IP66 rated against the ingress of dust and water.

Mounting
Standard fixture mounts to a square or octagonal 4" surface or recessed j-box via heavy-gauge quick mount bracket. Optional mounting methods include trunnion mount and wall mount. With the addition of a field supplied wet location j-box, the luminaire can be pendant mounted using the factory supplied decorative pendant mount kit or a suitable field supplied pendant.

Finish
Housing finished in white super durable TGIC polyester powder coat paint with 2.5 mil nominal thickness for superior protection against fade and wear. Optional colors include black, bronze, grey, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
Five-year warranty.

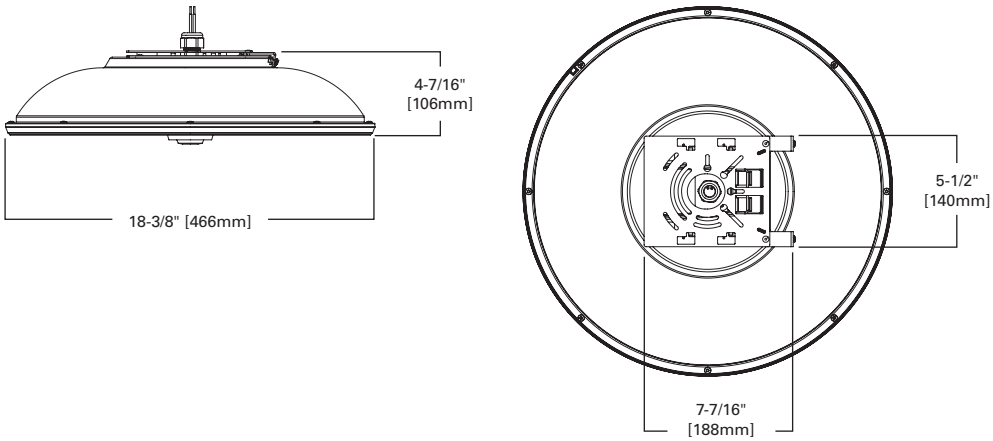
TT TOPTIER LED

Solid State LED

PARKING GARAGE/ CANOPY/ LOW-BAY LUMINAIRE

DIMENSIONS

SURFACE OR PENDANT MOUNT



powered by fifthlight technology

CERTIFICATION DATA

UL/cUL Wet Location Listed
3G Vibration Rated
LM79 / LM80 Compliant
IP66 Rated
ISO 9001
DesignLights Consortium™ Qualified*

ENERGY DATA

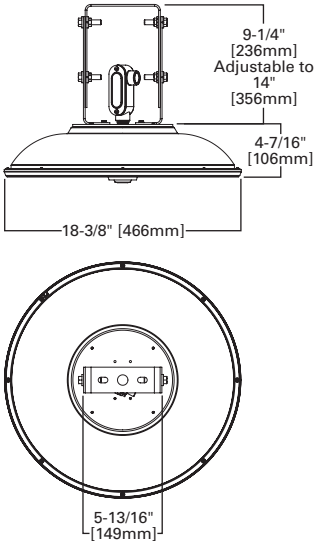
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

SHIPPING DATA

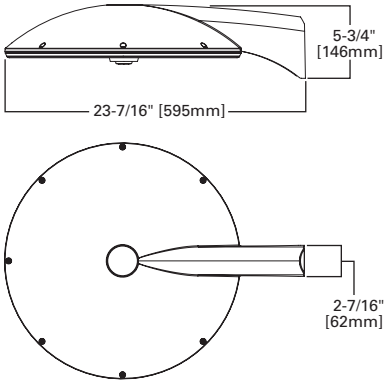
Approximate Net Weight:
16 lbs. (7.2 kgs.)

ADDITIONAL MOUNTING OPTIONS

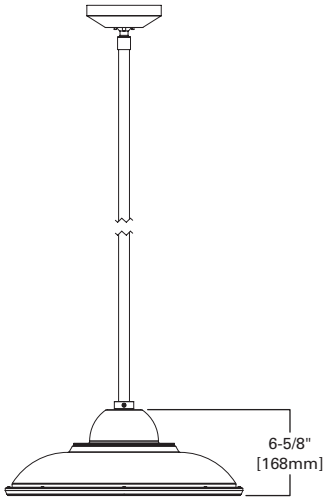
TRUNNION MOUNT



WALL MOUNT

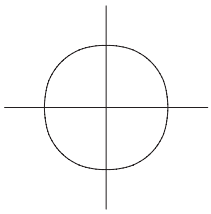


DECORATIVE PENDANT MOUNT

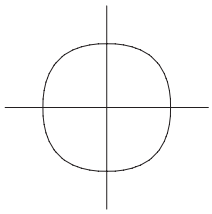


OPTICAL DISTRIBUTIONS

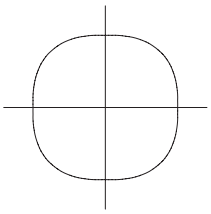
CQ (Concentrated)



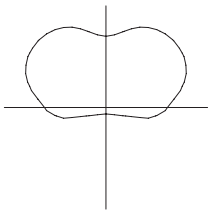
MQ (Medium)



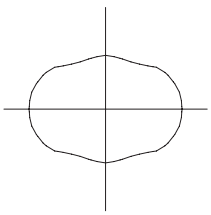
WQ (Wide)



DL (Drive Lane)



RW (Rectangular Wide)



LUMEN MAINTENANCE

Ambient Temperature	Lumen Maintenance				
	25,000 Hours	50,000 Hours	60,000 Hours TM-21 Rating	100,000 Hours	Theoretical L70 (Hours) Per TM-21 Data
C1 Lumen Package					
25°C	> 96%	> 95%	> 95%	> 93%	> 500,000
40°C	> 96%	> 94%	> 94%	> 93%	> 500,000
50°C	> 95%	> 94%	> 93%	> 93%	> 400,000
C2 Lumen Package					
25°C	> 96%	> 95%	> 95%	> 93%	> 500,000
40°C	> 95%	> 94%	> 93%	> 91%	> 500,000
50°C	> 95%	> 93%	> 92%	> 90%	> 400,000
C3 Lumen Package					
25°C	> 96%	> 93%	> 93%	> 89%	> 300,000
40°C	> 95%	> 91%	> 90%	> 85%	> 240,000
50°C	> 95%	> 90%	> 89%	> 83%	> 200,000
C4 Lumen Package					
25°C	> 96%	> 95%	> 95%	> 93%	> 500,000
40°C	> 95%	> 92%	> 92%	> 88%	> 300,000
50°C	> 94%	> 91%	> 90%	> 85%	> 250,000
C5 Lumen Package					
25°C	> 96%	> 93%	> 92%	> 88%	> 300,000
40°C	> 94%	> 90%	> 89%	> 83%	> 200,000
C6 Lumen Package					
25°C	> 95%	> 92%	> 90%	> 86%	> 250,000
40°C	> 95%	> 92%	> 91%	> 86%	> 250,000

POWER AND LUMENS

Lumen Package			**C1**	**C2**	**C3**	**C4**	**C5**	**C6**
Power (Wattage)			28	34	45	58	77	108
Current @ 120V (A)			0.26	0.31	0.41	0.52	0.69	0.95
Current @ 277V (A)			0.13	0.14	0.19	0.24	0.30	0.41
3000K CCT	Lumens	CQ Concentrated	3,293	3,997	5,256	5,486	7,107	9,084
	Lumens per Watt		118	118	117	95	92	84
	BUG Rating		B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1
	Lumens	MQ Medium	3,357	4,074	5,357	5,591	7,243	9,259
	Lumens per Watt		120	120	119	96	94	86
	BUG Rating		B2-U0-G1	B2-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2
	Lumens	WQ Wide	3,101	3,764	4,949	5,165	6,691	8,554
	Lumens per Watt		111	111	110	89	87	79
	BUG Rating		B2-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3
	Lumens	RW Rectangular Wide	2,726	3,308	4,350	4,540	5,882	7,519
	Lumens per Watt		97	97	97	78	76	70
	BUG Rating		B2-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3
	Lumens	DL Drive Lane / Type 4	2,440	2,938	4,152	--	--	--
	Lumens per Watt		73	71	62	--	--	--
	BUG Rating		B1-U0-G2	B1-U0-G2	B2-U0-G3	--	--	--
4000K CCT	Lumens	CQ Concentrated	3,848	4,670	6,141	7,273	9,423	12,046
	Lumens per Watt		137	137	136	126	123	111
	BUG Rating		B2-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2
	Lumens	MQ Medium	3,922	4,760	6,259	7,413	9,604	12,277
	Lumens per Watt		140	140	139	128	125	114
	BUG Rating		B2-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3
	Lumens	WQ Wide	3,623	4,397	5,782	6,848	8,872	11,342
	Lumens per Watt		129	129	128	118	115	105
	BUG Rating		B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3
	Lumens	RW Rectangular Wide	3,185	3,865	5,082	6,019	7,799	9,969
	Lumens per Watt		114	114	113	104	101	92
	BUG Rating		B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3
	Lumens	DL Drive Lane / Type 4	3,235	3,895	5,506	--	--	--
	Lumens per Watt		98	95	83	--	--	--
	BUG Rating		B1-U0-G2	B1-U0-G2	B2-U0-G3	--	--	--
5000K CCT	Lumens	CQ Concentrated	3,645	4,424	5,817	7,204	9,334	11,932
	Lumens per Watt		130	130	130	124	121	110
	BUG Rating		B1-U0-G1	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G2
	Lumens	MQ Medium	3,716	4,509	5,929	7,343	9,513	12,161
	Lumens per Watt		133	133	132	127	124	113
	BUG Rating		B2-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3
	Lumens	WQ Wide	3,433	4,166	5,478	6,783	8,788	11,235
	Lumens per Watt		123	123	122	117	114	104
	BUG Rating		B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3
	Lumens	RW Rectangular Wide	3,017	3,662	4,815	5,962	7,725	9,875
	Lumens per Watt		108	108	107	103	100	91
	BUG Rating		B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3
	Lumens	DL Drive Lane / Type 4	3,205	3,858	5,454	--	--	--
	Lumens per Watt		96	93	82	--	--	--
	BUG Rating		B1-U0-G2	B1-U0-G2	B2-U0-G3	--	--	--

NOTE: Nominal data with 70 CRI for 4000K and 5000K, 80 CRI for 3000K. Wattage values not valid for drive lane optic. For configurations that include the drive lane optic, glass, uplight or occupancy sensor options refer to the specific IES files for wattage, BUG rating and lumen output data.

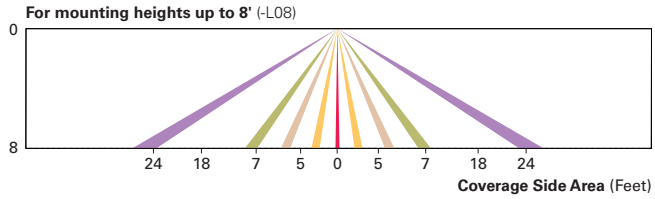
CONTROL OPTIONS

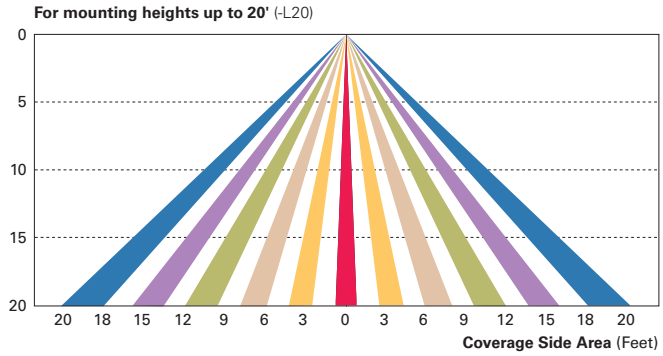
0-10V
This fixture is offered standard with 0-10V dimming driver(s). External 0-10V dimming wire leads are provided for use with a lighting control panel or other control methods except when PER7, 5LTD, MS/DIM or LWR is specified.

Dimming Occupancy Sensor (MS/DIM-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes.

These occupancy sensors include an integral photocell that can be activated with the FSIR-100 accessory for “dusk-to-dawn” control or daylight harvesting. The factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters.

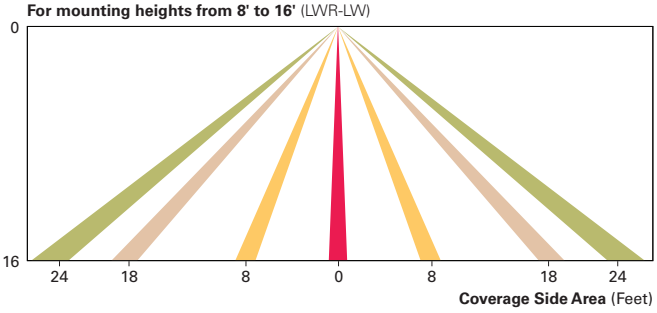
A variety of sensor lenses are available to optimize the coverage pattern for mounting heights from 8’-40’.

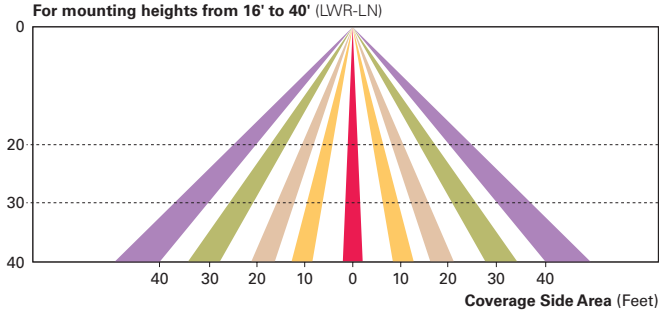




LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The LumaWatt Pro system is a peer-to-peer wireless network of luminaire-integral sensors for any sized project. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication. The end-user can securely create and manage sensor profiles with browser-based management software. The software will automatically broadcast to the sensors via wireless gateways for zone-based and individual luminaire control. The LumaWatt Pro software provides smart building solutions by utilizing the sensor to provide easy-to-use dashboard and analytic capabilities such as improved energy savings, traffic flow analysis, building management software integration and more.

For additional details, refer to the LumaWatt Pro product guides.





ORDERING INFORMATION

Sample Number: TT-C2-LED-E1-WQ-AP

Product Family	Lumen Package	Lamp Type	Voltage	Distribution	Mounting	Color
TT=TopTier [1]	**C1**=Nominal 3,500 Lumens **C2**=Nominal 4,500 Lumens **C3**=Nominal 6,000 Lumens **C4**=Nominal 7,500 Lumens **C5**=Nominal 9,500 Lumens **C6**=Nominal 12,000 Lumens	**LED**=Solid State Light Emitting Diodes	**E1**=Electrical (120-277V) **347**=347V **480**=480V [2]	**CQ**=Concentrated **MQ**=Medium **WQ**=Wide **RW**=Rectangular Wide **DL**=Drive Lane / Type 4 [3]	**[BLANK]**=Surface or Pendant Mount **TMB**=Trunnion Mount with Connection Box **WM**=Wall Mount **DPM**=Decorative Pendant Mount [4]	**[BLANK]**=White **AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic

Options (Add as Suffix)	**Accessories** (Order Separately)
8030=80 CRI / 3000K **7060**=70 CRI / 6000K **7050**=70 CRI / 5000K **UPL**=Uplight [5, 6] **30L**=30" Wire Leads [7] **HA**=50°C High Ambient [8] **CG**=Clear Glass [9] **SG**=Solite® Glass [10] **TR**=Tamper Resistant Hardware **X**=Driver Surge Protection Only **5LTD**=Fifth Light DALI Drivers [7, 11] **IBP**=Integral Battery Pack [12] **ICP**=Integral Cold Weather Battery Pack [12] **MS/DIM-L08**=Dimming Occupancy Sensor (<9' Mounting) [13, 14] **MS/DIM-L20**=Dimming Occupancy Sensor (9' - 20' Mounting) [13, 14] **LWR-LW**=LumaWatt Wireless Sensor, Wide Lens 8' - 16' Mounting Height [14, 15] **LWR-LN**=LumaWatt Wireless Sensor, Narrow Lens 16' - 40' Mounting Height [14, 15]	**FSIR-100**=Wireless Configuration Tool for Occupancy Sensor **MA1252**= Replacement 10kV Circuit Module **TT/WG**=Wire Guard **TT/BG-XX**=Bird Guard [16, 17] **DPMS36-XX**=36" Pendant Mount Stem [16] **DPMS48-XX**=48" Pendant Mount Stem [16] **DPMS96-XX**=96" Pendant Mount Stem [16]

NOTES:
1. DesignLights Consortium™ Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
3. C1-C3 lumen packages only.
4. Order stem kit accessory.
5. Extended lead times apply.
6. Additional 17W. Provides 800 nominal lumens. Available in 3000K and 4000K with the C1-C4 lumen packages at a 25°C maximum ambient temperature. Not available with 347, 480, TMB, WM, HA, 5LTD, IBP or ICP.
7. Not available with TMB or DPM mounting.
8. HA not available with C5 and C6 lumen packages or 5LTD, IBP and ICP options.
9. Not available with CQ.
10. Standard with CQ, option available with WQ only.
11. Replace E1 with specific voltage (120, 208, 240, 277V available). Not available with C6 lumen package, HA, IBP, ICP or sensor options. Multiply published IES file by .95 when used with the C5 lumen package.
12. Replace E1 with specific voltage (120V and 277V available). 0°C minimum with IBP, -20°C minimum with ICP, 25°C maximum ambient temperature. Not available with WM, DPM, 5LTD or HA.
13. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information.
14. Includes integral photocell.
15. LumaWatt wireless sensors are factory installed only requiring network components in appropriate quantities. See www.eaton.com/lighting for LumaWatt application information.
16. Specify color in place of XX.
17. Designed for use with pendant mounting only.

Surface washers · asymmetrical light distribution

Post construction: One piece extruded aluminum, 1/8" wall thickness internally welded to a die-cast base plate cover.

Enclosure: One piece die-cast aluminum housing connected to the post/pole by a two piece, die-cast aluminum knuckle. The knuckle has infinite adjustability from 0° to 90° and is secured by one stainless steel fastener. Fully gasketed using a one piece molded high temperature silicone gasket and provided with a pure anodized matte aluminum reflector. Molded 1/4" thick etched tempered glass secured by a one piece die-cast aluminum frame secured to the housing with four stainless steel captive fasteners. Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

Electrical: 15.6W LED luminaire, 18 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.

Anchor base: Pole Mount; Mounts to #79818 anchorage kit (supplied).

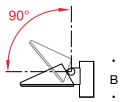
Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

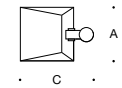
CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP65

Weight: 35.5 lbs.

Luminaire Lumens: 1754

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:





Pole mounted · asymetrical

	Lamp	A	B	C	Anchorage
99868	15.6W LED	10 1/4	98 1/2	12 1/2	**79818**

BEGA 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 566-9474 www.bega-us.com
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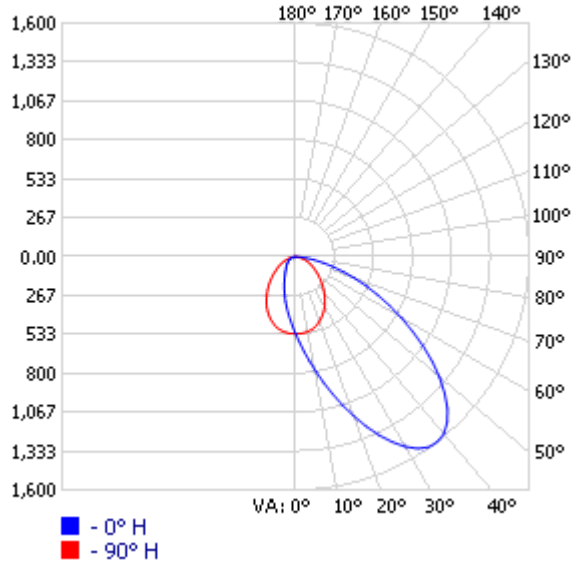
OUTDOOR PHOTOMETRIC REPORT
CATALOG: 99 868 K3

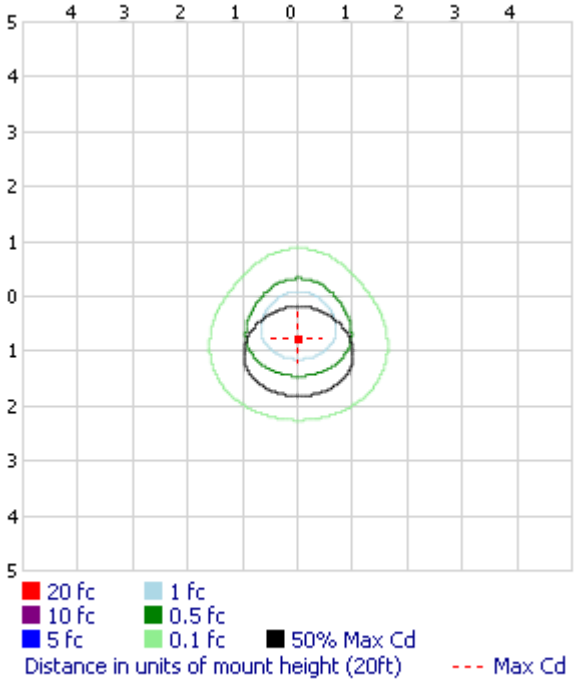
MANUFACTURER:	BEGA CONVERTED BY LUMCAT V 29.11.2017 / H.R.
DESCRIPTION:	99 868 K3
LAMP CATALOG:	LED 15,6W 2025 LM, 18 W
LAMP:	LED 15,6W
LAMP OUTPUT:	TOTAL LUMINAIRE LUMENS: 2025.5, ABSOLUTE PHOTOMETRY *
INPUT WATTAGE:	18
LUMINOUS OPENING:	RECTANGLE (L: 8.07", W: 6.69")
MAX CD:	1,598.5 AT HORIZONTAL: 0°, VERTICAL: 37.5°
ROADWAY CLASS:	VERY SHORT, TYPE III

No Photo Available

Polar Candela Distribution



Isofootcandle Plot



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.
*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

VISUAL PHOTOMETRIC TOOL 1.2.46 COPYRIGHT 2018, ACUITY BRANDS LIGHTING.
THIS PHOTOMETRIC REPORT HAS BEEN GENERATED USING METHODS RECOMMENDED BY THE IESNA. CALCULATIONS ARE BASED ON PHOTOMETRIC DATA PROVIDED BY THE MANUFACTURER, AND THE ACCURACY OF THIS PHOTOMETRIC REPORT IS DEPENDENT ON THE ACCURACY OF THE DATA PROVIDED. END-USER ENVIRONMENT AND APPLICATION (INCLUDING, BUT NOT LIMITED TO, VOLTAGE VARIATION AND DIRT ACCUMULATION) CAN CAUSE ACTUAL PHOTOMETRIC PERFORMANCE TO DIFFER FROM THE PERFORMANCE CALCULATED USING THE DATA PROVIDED BY THE MANUFACTURER. THIS REPORT IS PROVIDED WITHOUT WARRANTY AS TO ACCURACY, COMPLETENESS, RELIABILITY OR OTHERWISE. IN NO EVENT WILL ACUITY BRANDS LIGHTING BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF THIS REPORT.

VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: 99 868 K3

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	495.1	24.4%
0-40	879.5	43.4%
0-60	1,652.3	81.6%
60-90	373.2	18.4%
70-100	135.4	6.7%
90-120	0.000	0%
0-90	2,025.5	100%
90-180	0.000	0%
0-180	2,025.5	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	51.5	2.5%	90-100	0.000	0%
10-20	161.8	8.0%	100-110	0.000	0%
20-30	281.8	13.9%	110-120	0.000	0%
30-40	384.4	19.0%	120-130	0.000	0%
40-50	417.1	20.6%	130-140	0.000	0%
50-60	355.7	17.6%	140-150	0.000	0%
60-70	237.8	11.7%	150-160	0.000	0%
70-80	113.8	5.6%	160-170	0.000	0%
80-90	21.6	1.1%	170-180	0.000	0%

ROADWAY SUMMARY

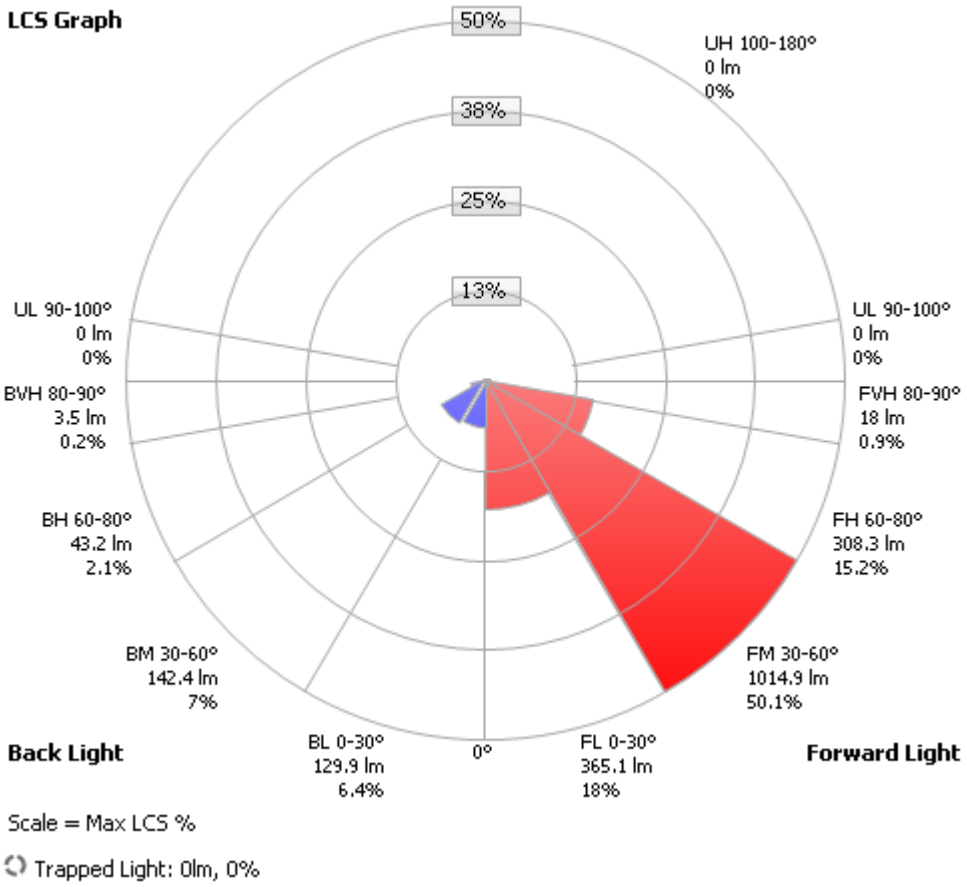
DISTRIBUTION:	TYPE III, VERY SHORT
MAX CD, 90 DEG VERT:	0.000
MAX CD, 80 TO <90 DEG:	132.7

	LUMENS	% LAMP
DOWNWARD STREET SIDE:	1,706.4	84.2%
DOWNWARD HOUSE SIDE:	319.1	15.8%
DOWNWARD TOTAL:	2,025.5	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	2,025.5	100%

LCS TABLE

BUG RATING	**B1 - U0 - G1**	
FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	365.1	18%
MEDIUM(30-60):	1,014.9	50.1%
HIGH(60-80):	308.3	15.2%
VERY HIGH(80-90):	18.0	0.9%
BACK LIGHT		
LOW(0-30):	129.9	6.4%
MEDIUM(30-60):	142.4	7%
HIGH(60-80):	43.2	2.1%
VERY HIGH(80-90):	3.5	0.2%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.000	0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: 99 868 K3



OUTDOOR PHOTOMETRIC REPORT
CATALOG: 99 868 K3

CANDELA TABLE - TYPE C

	0	30	60	90	120	150	180	210	240	270	300	330	360
0	529	529	529	529	529	529	529	529	529	529	529	529	529
5	650	633	585	526	477	444	432	444	477	526	585	633	650
10	799	756	644	518	425	371	352	371	425	518	644	756	799
15	973	896	700	502	374	307	286	307	374	502	700	896	973
20	1161	1044	749	474	325	252	230	252	325	474	749	1044	1161
25	1349	1187	782	438	278	204	182	204	278	438	782	1187	1349
30	1504	1307	796	397	231	163	147	163	231	397	796	1307	1504
35	1593	1380	789	349	188	133	121	133	188	349	789	1380	1593
40	1582	1385	759	300	154	112	103	112	154	300	759	1385	1582
45	1472	1309	701	252	125	95	89	95	125	252	701	1309	1472
50	1288	1162	623	208	103	82	77	82	103	208	623	1162	1288
55	1066	974	528	168	85	70	66	70	85	168	528	974	1066
60	837	770	422	134	69	58	56	58	69	134	422	770	837
65	621	576	318	103	55	47	45	47	55	103	318	576	621
70	431	401	223	75	42	36	35	36	42	75	223	401	431
75	268	250	139	49	29	24	24	24	29	49	139	250	268
80	133	125	70	25	16	14	14	14	16	25	70	125	133
85	36	36	19	8	6	5	5	5	6	8	19	36	36
90	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0

HALO

DESCRIPTION

The Halo Surface Mount LED Downlight (SMD) is an ultra-low profile surface mounting luminaire with a modern look and high performance. SMD6-DM (6" with spring clips) is designed for new installation into drywall, without any additional housing or junction box needed. Suitable for residential or commercial installations. Ideal for general areas, closets, storage areas, attics and basements. Compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5).

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

HOUSING
- Non-electrically conductive polycarbonate frame.
- High impact diffuse polystyrene lens provides shielding to the light guide with no pixilation
- Stamped aluminum housing provides thermal cooling achieving L70 at 50,000 hours in IC and non-IC applications

GASKETS
- Closed cell gasket achieves restrictive airflow and wet location requirements without additional caulking

OPTICS
- Precision acrylic light guide organizes source flux into wide distribution with 1.2 – 1.4 spacing criteria useful for general area illumination

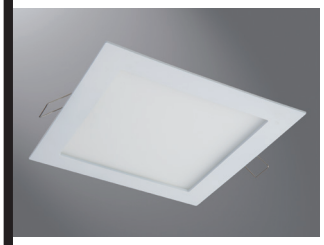
LED
- Mid power led array provide a uniform source with high efficiency and long life.
- Available in 90 CRI minimum, R9 greater than 50 and color accuracy within 3 SDCM provide color accuracy and uniformity

DRIVER
- Integral 120V 50/60Hz constant current driver provides noise free operation.
- Continuous, flicker-free dimming from 100% to 5% with select leading or trailing edge 120V phase cut dimmers.
- Dimming to 5% is best assured using dimmers with low end trim adjustment. Consult dimmer manufacturer for compatibility and conditions of use. (Note some dimmers require a neutral in the wallbox.)
- Inline electrical quick connect (provided) provides mains connections.

MOUNTING/RETENTION
- The SMD-DM with Spring Clips requires no housing or junction box.
- The integral enclosure may be used in direct contact with insulation including spray foam insulation.
- Installer must cut template out of drywall, and install into the aperture with the clips compressed.
- When released, the spring clips will rest on to the back side of the drywall.
- Installer must ensure secure fit and wiring. This includes all applicable national and local electrical and building codes

COMPLIANCE
- cULus listed / certified for use with Halo housings, classified for use with other's housings, see instruction sheet for conditions of acceptability.
- Wet and Damp Location listed, airtight per ASTM-E283
- Suitable for use in closets, compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5)
- EMI/RFI emissions per FCC 47CFR Part 15B
- Contains no mercury or lead and RoHS compliant.
- Photometric testing in accordance with IES LM-79-08
- Lumen maintenance projections in accordance with IES LM-80-08 and TM-21-11.
- Can be used for State of California Title 24 high efficacy luminaire compliance, reference the California Energy Commission Title 20 Appliance Efficiency Database for current listings.
- Can be used for International Energy Conservation Coe (IECC) and Washington State Energy Code high efficiency luminaire compliance

WARRANTY
- Five year limited warranty, consult website for details. www.eaton.com/lighting/legal



SMD6-DM Series

6 Inch Round and Square Direct Mount

SMD6R-DM
SMD6S-DM

6" Surface Mount Downlight

Direct Mount into non-accessable ceiling

ORDERING INFORMATION

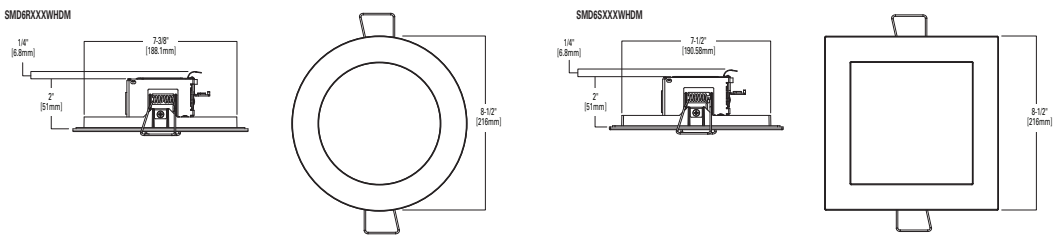
SAMPLE NUMBER: SMD6R6930WHDM=6" Round Surface Mount Downlight, 90CRI, 3000K, Direct Mount

Models	Lumens	CRI / CCT	Finish	Mouting
SMD6R= 6" Round Surface Mount Downlight, 120V **SMD6S**= 6" Square Surface Mount Downlight, 120V	**6**=600 lumen series	**927**=90CRI, 2700K **930**=90CRI, 3000K **935**=90CRI, 3500K **940**=90CRI, 4000K **950**=90CRI, 5000K	**WH**=White	**DM**=Direct Mount

ENERGY DATA

	Round	Square
Lumens (5000K models)	788	815
Input Power	9.62 W	9.9 W
Input Current	0.0811 A	0.085 A
Efficiency	82 lm/W	82 lm/W
THD	13.9	14.7
Input Voltage	120V	
Frequency	50/60 Hz	
CRI	90 CRI	
Power Factor	0.99	
T Ambient	-30 - +40°C	
Sound Rating	Class A	

DIMENSIONS



90 CRI nominal CCT 2700K 3000K 3500K 4000K 5000K

ENERGY STAR

Can be used for IECC International Energy Conservation Code High Efficacy Compliance

Efficiency Standards T24 California Title 24 Residential and Non-Residential Compliant

RoHS

Shderlight

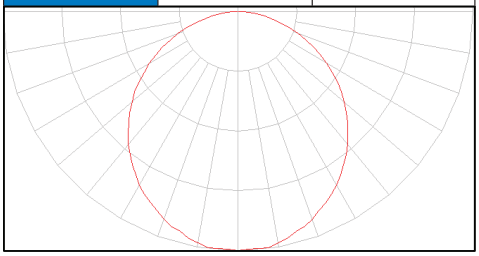
airlite

Refer to ENERGY STAR® Qualified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
Certified to California Appliance Efficiency Database under JA8.

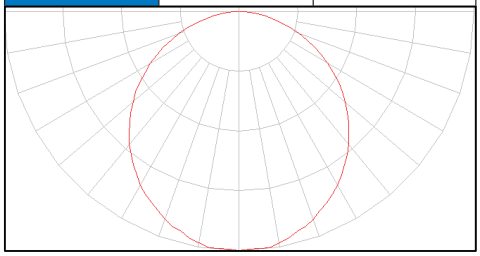
EATON
Powering Business Worldwide

PHOTOMETRIC DATA

SMD6R6927WHDM		
Luminaire lumens		750
Input watts		9.4
LER (LPW)		80
Spacing Criteria	0-180	1.26
	90-270	1.26
	Diagonal	1.38
Beam angle (degrees)		112
Field angle (degrees)		162
Max. Candela		264
Zonal lumen	Lumens	% Lumens
0-30	204	27.2%
0-40	334	44.5%
0-60	590	78.6%
0-90	750	100.00%



SMD6S6927WHDM		
Luminaire lumens		750
Input watts		10.0
LER (LPW)		75
Spacing Criteria	0-180	1.24
	90-270	1.24
	Diagonal	1.36
Beam angle (degrees)		112
Field angle (degrees)		162
Max. Candela		271
Zonal lumen	Lumens	% Lumens
0-30	207	27.6%
0-40	337	44.9%
0-60	590	78.6%
0-90	750	100.00%

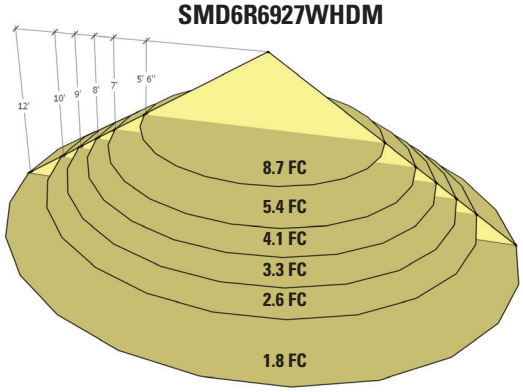


Cat. No.	CRI	CCT	Lumens	Power (W)	LPW
SMD6R6927WHDM	93	2700	754	9.6	78.5
SMD6R6930WHDM	92	3000	758	9.6	78.7
SMD6R6935WHDM	95	3500	740	9.6	77.0
SMD6R6940WHDM	94	4000	792	9.8	80.5
SMD6R6950WHDM	92	5000	788	9.6	81.9
SMD6S6927WHDM	92	2700	750	10.0	75.0
SMD6S6930WHDM	92	3000	790	9.9	79.8
SMD6S6935WHDM	93	3500	740	10.0	74.0
SMD6S6940WHDM	92	4000	760	10.3	73.8
SMD6S6950WHDM	90	5000	815	9.9	82.3

Foot-candle Values at Nadir 0 degree Aiming Angle			
DD (FT)	SMD6R6927WHDM (FC)	SMD6S6927WHDM (FC)	DIA (FT)
5.5	8.7	9.0	16.3
7	5.4	5.5	20.9
8	4.1	4.2	23.8
9	3.3	3.3	26.8
10	2.6	2.7	29.7
12	1.8	1.9	35.7

DD = distance down to illuminated work plane
FC = initial foot-candles at nadir
DIA = diameter

SMD6R6927WHDM



Multiplier Table					
CCT Option	2700K	3000K	3500K	4000K	5000K
CCT Multipiler	1.00	1.014	1.042	1.083	1.083

Powering Business Worldwide

Eaton
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.

McGraw-Edison

DESCRIPTION

The Impact Elite family of wall luminaires is the ideal complement to site design. Incorporating modular LightSquares technology, the Impact Elite luminaire provides outstanding uniformity and energy-conscious illumination. Combined with a rugged construction, the Impact Elite luminaire is the ideal facade and security luminaire for zones surrounding schools, office complexes, apartments and recreational facilities. UL/cUL listed for wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Heavy-wall, die-cast aluminum housing and removable hinged door frame for precise tolerance control and repeatability. Hinged door inset for clean mating with housing surface and secured via two captive fasteners. Optional tamper-resistant Torx™ head fasteners offer vandal resistant access to the electrical chamber.

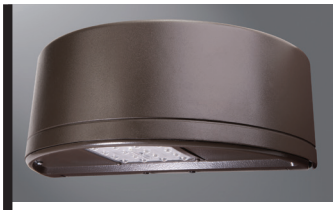
Optics
Choice of 10 patented, high-efficiency AccuLED Optics™ distributions. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optics technology creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K, 5000K and 5700K CCT.

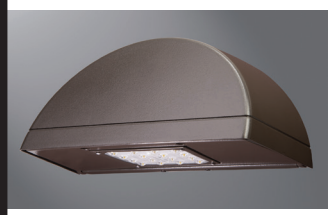
Electrical
LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation, greater than 0.9 power factor, less than 20% harmonic distortion, and are suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightSquares feature an IP66 enclosure rating and maintain greater than 90% lumen maintenance at 60,000 hours per IESNA TM-21. Emergency egress options for -20°C ambient environments and occupancy sensor available.

Mounting
Gasketed and zinc plated rigid steel mounting attachment fits directly to 4" j-box or wall with the Impact Elite "Hook-N-Lock" mechanism for quick installation. Secured with two captive corrosion resistant black oxide coated allen head set screws concealed but accessible from bottom of fixture.

Finish
Cast components finished in a five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
Five-year warranty.





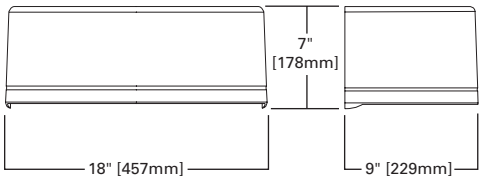
ISC/ISS/IST/ISW
IMPACT ELITE LED

1 LightSquare
Solid State LED

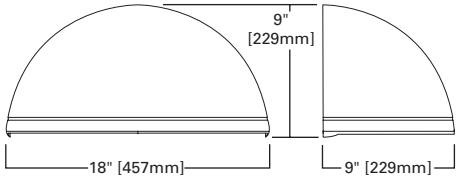
WALL MOUNT LUMINAIRE

DIMENSIONS

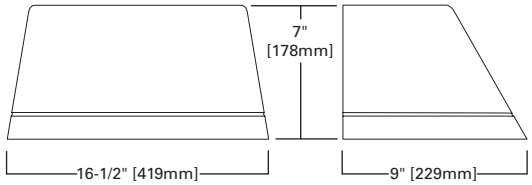
Cylinder



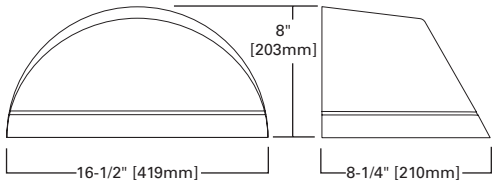
Quarter Sphere



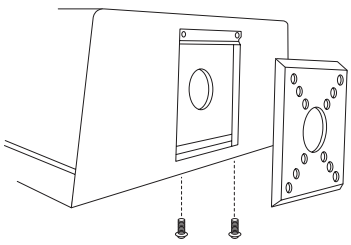
Trapezoid



Wedge



HOOK-N-LOCK MOUNTING



CERTIFICATION DATA
UL/cUL Listed
LM79 / LM80 Compliant
IP66 LightSquare
DesignLights Consortium® Qualified*
ISO 9001

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating

SHIPPING DATA
Approximate Net Weight:
18 lbs. (8 kgs.)

*www.designlights.org

Powering Business Worldwide

POWER AND LUMENS

1 LightSquare (AF)		**Cylinder (ISC) and Quarter Sphere (ISS)**						**Trapezoid (IST) and Wedge (ISW)**					
Drive Current (mA)		350	450	600	800	1000	1200	350	450	600	800	1000	1200
Power (Watts)	120-277V	20.3	25.5	33.4	43.9	55.1	66.2	20.3	25.5	33.4	43.9	55.1	66.2
Current (A)	120V	0.17	0.22	0.29	0.38	0.48	0.56	0.17	0.22	0.29	0.38	0.48	0.56
	277V	0.09	0.10	0.13	0.17	0.21	0.25	0.09	0.10	0.13	0.17	0.21	0.25
Power (Watts)	347V or 480V	23.3	28.7	36.6	49.5	60.7	70.1	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)	347V	0.07	0.08	0.11	0.15	0.18	0.21	0.07	0.08	0.11	0.15	0.18	0.21
	480V	0.05	0.06	0.08	0.11	0.13	0.16	0.05	0.06	0.08	0.11	0.13	0.16
Optics													
T2	Lumens	2,336	2,934	3,827	4,791	5,663	6,444	2,498	3,136	4,091	5,122	6,054	6,889
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
T3	Lumens	2,385	2,994	3,906	4,889	5,779	6,577	2,504	3,144	4,101	5,133	6,068	6,905
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
T4FT	Lumens	2,360	2,963	3,866	4,839	5,720	6,509	2,530	3,177	4,145	5,188	6,133	6,979
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
T4W	Lumens	2,386	2,996	3,908	4,892	5,783	6,581	2,500	3,139	4,095	5,126	6,059	6,895
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
SL2	Lumens	2,257	2,834	3,697	4,628	5,470	6,225	2,413	3,030	3,953	4,948	5,849	6,656
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
SL3	Lumens	2,220	2,787	3,636	4,552	5,380	6,122	2,365	2,970	3,874	4,849	5,732	6,523
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
SL4	Lumens	2,110	2,649	3,456	4,326	5,113	5,818	2,234	2,805	3,660	4,581	5,415	6,162
	BUG Rating	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
SLL/SLR	Lumens	1,990	2,498	3,259	4,080	4,823	5,488	2,154	2,705	3,529	4,418	5,222	5,942
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2	B1-U1-G2
RW	Lumens	2,380	2,988	3,898	4,880	5,768	6,564	2,465	3,095	4,037	5,054	5,974	6,798
	BUG Rating	B2-U0-G0	B2-U0-G0	B2-U0-G0	B2-U0-G0	B2-U0-G0	B2-U0-G0	B3-U1-G1	B3-U1-G1	B3-U1-G1	B3-U1-G1	B3-U1-G1	B3-U1-G1

LUMEN MAINTENANCE

Current	**Ambient Temperature**	**25000 Hours***	**50000 Hours***	**60000 Hours***	**100000 Hours***	**Theoretical L70 (Hours)***
Up to 1.2A	Up to 40°C	>95%	>91%	>90%	>83%	20,4000

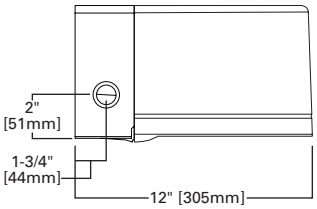
*Data calculated based on TM-21 calculator.

LUMEN MULTIPLIER

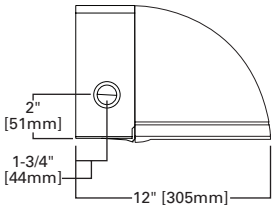
Ambient Temperature	**Lumen Multiplier**
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.99

THRUWAY BACK BOX

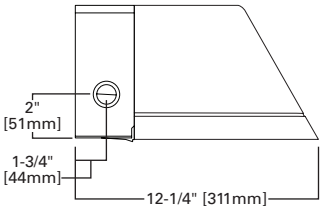
Cylinder



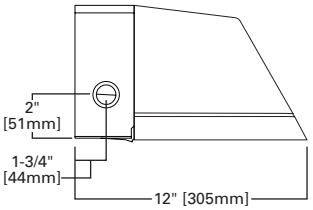
Quarter Sphere



Trapezoid



Wedge



ORDERING INFORMATION

Sample Number: ISC-AF-1200-LED-E1-T3-BZ

Product Family [1]	Light Engine	Drive Current	Lamp Type	Voltage	Distribution	Color
ISC=Impact Elite LED Small Cylinder **ISS**=Impact Elite LED Small Quarter Sphere **IST**=Impact Elite LED Small Trapezoid **ISW**=Impact Elite LED Small Wedge	**AF**=(1) LightSquare	**350**=Drive Current Factory Set to 350mA **450**=Drive Current Factory Set to 450mA **600**=Drive Current Factory Set to 600mA **800**=Drive Current Factory Set to 800mA **1000**=Drive Current Factory Set to 1000mA **1200**=Drive Current Factory Set to 1200mA [2]	**LED**=Solid State Light Emitting Diodes	**E1**=Electronic (120-277V) **347**=347V [2] **480**=480V [2, 3]	**T2**=Type II **T3**=Type III **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)	**Accessories** (Order Separately) [17]
7030=70 CRI / 3000K CCT [4] **7050**=70 CRI / 5000K CCT [4] ~~**7060**=70 CRI / 5700K CCT [4]~~ **8030**=80 CRI / 3000K CCT [4] **PER7**=NEMA 7-PIN Twistlock Photocontrol Receptacle [2, 5, 6] **P**=Button Type Photocontrol (Available in 120, 208, 240 or 277V. Must Specify Voltage) [2, 6] **HA**=50°C High Ambient [7] **AHD145**=After Hours Dim, 5 Hours, 50% [8] **AHD245**=After Hours Dim, 6 Hours, 50% [8] **AHD255**=After Hours Dim, 7 Hours, 50% [8] **AHD355**=After Hours Dim, 8 Hours, 50% [8] **MS/DIM-LXX**=Motion Sensor for Dimming Operation [9, 10, 11] **LWR-LW**=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [6, 11, 12] **LWR-LN**=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [6, 11, 12] **BBB**=Battery Pack with Back Box (Specify 120V or 277V) [13] **CWB**=Cold Weather Battery Pack with Back Box (Specify 120V or 277V) [14] **LCF**=LightSquare Trim Plate Matches Housing Finish **HSS**=Factory Installed House Side Shield [15] **ULG**=Uplight Glow [5, 6] **TR**=Tamper Resistant Hardware **X**=Driver Surge Protection (6kV) Only [16]	**MA1253**=10kV Circuit Module Replacement **MA1254-XX**=Thruway Back Box - Impact Elite Trapezoid **MA1255-XX**=Thruway Back Box - Impact Elite Cylinder **MA1256-XX**=Thruway Back Box - Impact Elite Quarter Sphere **MA1257-XX**=Thruway Back Box - Impact Elite Wedge **FSIR-100**=Wireless Configuration Tool for Occupancy Sensor

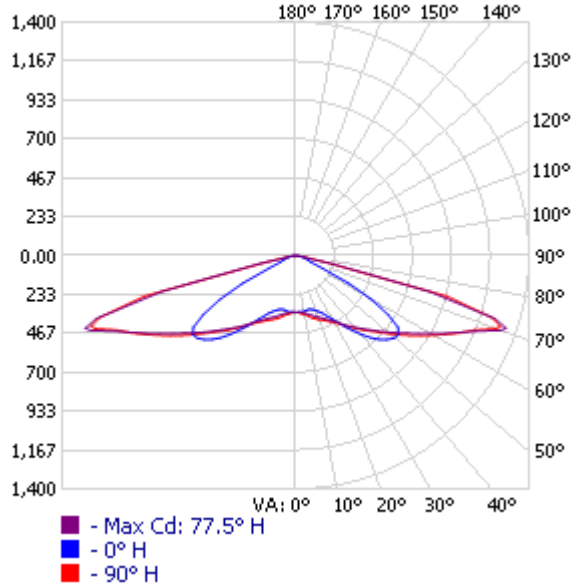
NOTES:
1. Standard 4000K CCT and greater than 70 CRI.
2. Not available with ULG option.
3. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
4. Exentended lead times apply.
5. Not available with ISS or ISW.
6. Not available with LWR-XX or MS/DIM-LXX.
7. Suitable for 50°C provided no options other than motion sensor are included and driver output set to 1.A or less.
8. Requires the use of P photocontrol or the PER7 photocontrol receptacle with photocontrol accessory. Not available with 350mA drive current. See After Hours Dim supplemental guide for additional information.
9. Specify lens in place of XX. Round to next highest option based on mounting height. Available options are 08, 20 and 40W.
10. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information.
11. Includes integral photocell.
12. LumaWatt Pro wireless sensors are factory installed and requiring network components in appropriate quantities. See www.eaton.com/lighting for LumaWatt Pro application information.
13. LED standard integral battery pack is rated for minimum operating temperature 32°F (0°C). Operates downlight for 90-minutes.
14. LED cold weather integral battery pack is rated for minimum operating temperature -4°F (-20°C). Operates downlight for 90-minutes.
15. Only for use with SL2, SL3 and SL4 distributions. The LightSquare trim plate is painted black when the HSS option is selected.
16. Removes additional surge module.
17. Specify color in place of XX.

OUTDOOR PHOTOMETRIC REPORT
CATALOG: ISC-AF-450-LED-E1-RW-7050

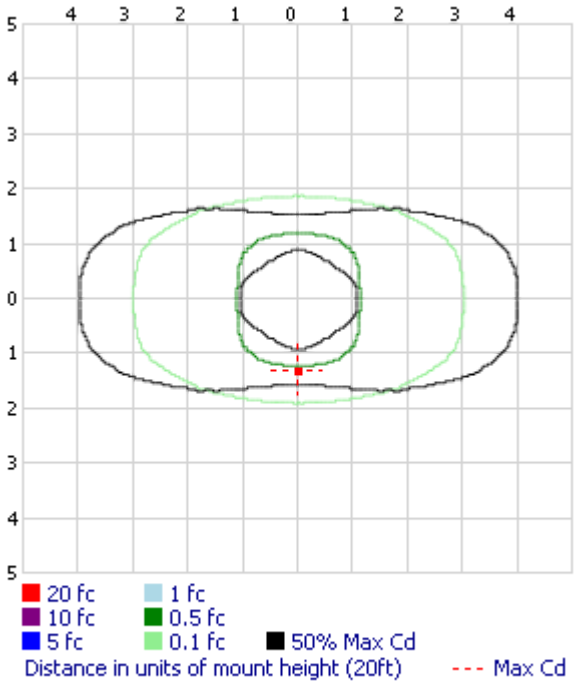
MANUFACTURER:	EATON - MCGRAW-EDISON (FORMER COOPER LIGHTING)
TEST #:	P228818 TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29765)
TEST LAB:	INNOVATION CENTER-P2
CATALOG:	ISC-AF-450-LED-E1-RW-7050
DESCRIPTION:	IMPACT ELITE LED CYLINDER LUMINAIRE LIGHT SQUARE WITH ACCULED OPTICS-RECTANGULAR WIDE TYPE I
LAMP:	(16) 5000K CCT, 70 CRI LEDS ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING LAB LUMEN STANDARDS IN GONIOPHOTOMETER
LAMP OUTPUT:	TOTAL LUMINAIRE LUMENS: 2988.4, ABSOLUTE PHOTOMETRY *
INPUT WATTAGE:	25.31
LUMINOUS OPENING:	RECTANGLE (L: 6", W: 6")
MAX CD:	1,334.2 AT HORIZONTAL: 77.5°, VERTICAL: 71°
ROADWAY CLASS:	MEDIUM, TYPE II

No Photo Available

Polar Candela Distribution



Isofootcandle Plot



*TEST BASED ON ABSOLUTE PHOTOMETRY WHERE LAMP LUMENS=LUMENS TOTAL.
*CUTOFF CLASSIFICATION AND EFFICIENCY CANNOT BE PROPERLY CALCULATED FOR ABSOLUTE PHOTOMETRY.

VISUAL PHOTOMETRIC TOOL 1.2.46 COPYRIGHT 2018, ACUITY BRANDS LIGHTING.
THIS PHOTOMETRIC REPORT HAS BEEN GENERATED USING METHODS RECOMMENDED BY THE IESNA. CALCULATIONS ARE BASED ON PHOTOMETRIC DATA PROVIDED BY THE MANUFACTURER, AND THE ACCURACY OF THIS PHOTOMETRIC REPORT IS DEPENDENT ON THE ACCURACY OF THE DATA PROVIDED. END-USER ENVIRONMENT AND APPLICATION (INCLUDING, BUT NOT LIMITED TO, VOLTAGE VARIATION AND DIRT ACCUMULATION) CAN CAUSE ACTUAL PHOTOMETRIC PERFORMANCE TO DIFFER FROM THE PERFORMANCE CALCULATED USING THE DATA PROVIDED BY THE MANUFACTURER. THIS REPORT IS PROVIDED WITHOUT WARRANTY AS TO ACCURACY, COMPLETENESS, RELIABILITY OR OTHERWISE. IN NO EVENT WILL ACUITY BRANDS LIGHTING BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF THIS REPORT.

P228818 TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29765)
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: ISC-AF-450-LED-E1-RW-7050

ZONAL LUMEN SUMMARY

ZONE	LUMENS	% LUMINAIRE
0-30	327.9	11%
0-40	662.7	22.2%
0-60	1,962.2	65.7%
60-90	1,026.2	34.3%
70-100	312.2	10.4%
90-120	0.000	0%
0-90	2,988.4	100%
90-180	0.000	0%
0-180	2,988.4	100%

LUMENS PER ZONE

ZONE	LUMENS	% TOTAL	ZONE	LUMENS	% TOTAL
0-10	32.9	1.1%	90-100	0.000	0%
10-20	102.8	3.4%	100-110	0.000	0%
20-30	192.3	6.4%	110-120	0.000	0%
30-40	334.8	11.2%	120-130	0.000	0%
40-50	546.1	18.3%	130-140	0.000	0%
50-60	753.4	25.2%	140-150	0.000	0%
60-70	714.0	23.9%	150-160	0.000	0%
70-80	294.4	9.9%	160-170	0.000	0%
80-90	17.8	0.6%	170-180	0.000	0%

ROADWAY SUMMARY

DISTRIBUTION:	TYPE II, MEDIUM
MAX CD, 90 DEG VERT:	0.000
MAX CD, 80 TO <90 DEG:	64.3

	LUMENS	% LAMP
DOWNWARD STREET SIDE:	1,493.9	50%
DOWNWARD HOUSE SIDE:	1,493.9	50%
DOWNWARD TOTAL:	2,987.7	100%
UPWARD STREET SIDE:	0.000	0%
UPWARD HOUSE SIDE:	0.000	0%
UPWARD TOTAL:	0.000	0%
TOTAL LUMENS:	2,987.7	100%

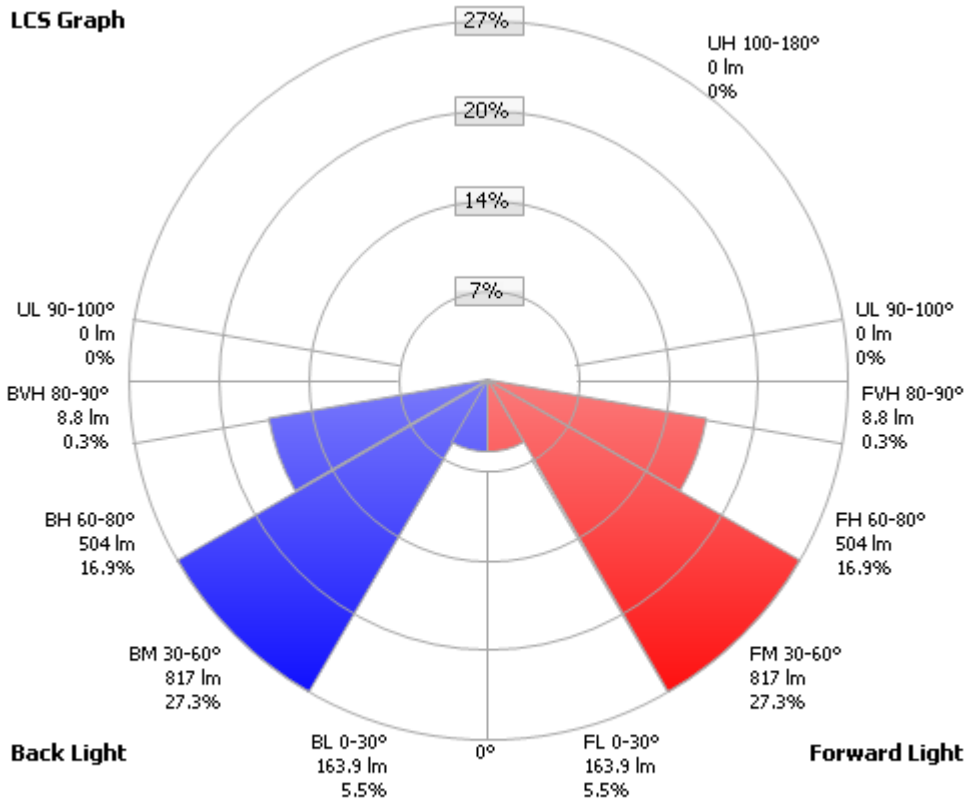
LCS TABLE

BUG RATING	**B2 - U0 - G2**	
FORWARD LIGHT	LUMENS	LUMENS %
LOW(0-30):	163.9	5.5%
MEDIUM(30-60):	817.0	27.3%
HIGH(60-80):	504.0	16.9%
VERY HIGH(80-90):	8.8	0.3%
BACK LIGHT		
LOW(0-30):	163.9	5.5%
MEDIUM(30-60):	817.0	27.3%
HIGH(60-80):	504.0	16.9%
VERY HIGH(80-90):	8.8	0.3%
UPLIGHT		
LOW(90-100):	0.000	0%
HIGH(100-180):	0.000	0%
TRAPPED LIGHT:	0.7	0%

P228818 TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29765)
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: ISC-AF-450-LED-E1-RW-7050

LCS Graph



Scale = Max LCS %

Trapped Light: 0.7lm, 0%

P228818 TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29765)
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: ISC-AF-450-LED-E1-RW-7050

CANDELA TABLE - TYPE C

	0	5	15	25	35	40	45	50	55	60	65	70	75	80	85	90
0	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340
5	339	339	340	340	342	341	343	344	344	345	345	345	345	346	347	347
10	336	335	337	341	346	348	351	354	357	357	358	359	361	361	362	361
15	332	333	337	345	356	359	364	368	372	375	378	381	383	385	388	387
20	350	351	355	364	376	377	388	392	395	399	400	402	404	406	408	408
25	381	384	389	400	413	410	423	424	425	425	424	423	425	428	430	430
30	437	440	444	455	467	463	475	474	472	468	461	457	457	460	462	463
35	521	523	530	542	549	531	544	541	535	528	517	508	504	509	512	513
40	618	624	633	645	651	629	642	633	618	604	592	578	566	566	573	571
45	710	714	730	750	761	736	750	735	711	691	671	652	636	634	640	640
50	770	770	792	825	856	836	858	843	817	790	763	737	723	717	726	726
55	750	755	792	851	911	919	950	944	925	900	876	847	824	818	831	834
60	524	529	583	698	854	943	1013	1042	1038	1021	999	972	952	941	952	954
65	176	180	224	330	527	678	815	969	1107	1181	1178	1148	1112	1090	1093	1093
70	81	81	79	84	107	164	300	487	687	901	1122	1282	1315	1287	1277	1279
75	62	60	57	57	58	60	63	73	110	230	412	581	729	853	932	940
80	40	37	36	36	35	34	35	38	42	48	55	61	64	64	63	60
85	12	12	13	12	10	9	9	10	14	16	19	22	25	25	19	16
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

P228818 TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29765)
VISUAL PHOTOMETRIC TOOL

Date: November 17, 2014
Customer:
Project:
Location:
Glass Types:

Performance Data Comparison*

	ID#	Product Description	Notes	Thickness (in.) [f]	Transmittance (%)			Reflectance %			U-factor (U-value)		SC	SHGC	LSG
					Visible	Solar	UV	Visible (out)	Visible (in)	Solar (out)	Win.	Sum.			
Outboard:	5439	1/4" PPG Solarban® 70XL Low-E #2	a	0.946	64	25	6	12	13	52	0.24	0.21	0.31	0.27	2.37
Air Space:	9	1/2" Spacer, 90% Argon-Filled													
Inboard:	5012	1/4" Clear	a												
Outboard:	5284	1/4" PPG Solarban® 60 on Clear Low-E #2	a	0.946	70	34	18	11	12	28	0.24	0.22	0.44	0.39	1.79
Air Space:	9	1/2" Spacer, 90% Argon-Filled													
Inboard:	5012	1/4" Clear	a												

***Vertically Glazed Center Of Glass (COG) Results Calculated Using LBNL Window 6.3 Software.**

Notes: a) NFRC certified spectral data file
b) Data generated by Oldcastle BuildingEnvelope®
c) Average solar data
d) Simulated with LBNL Optics 6.0
e) Vendor supplied spectral data file
f) Please reference ASTM C1036 and C1172 for allowable glass thickness variations

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Manufacturing

Land Use Code (LUC) 140

68,588 sf

ITE Weekday Peak Parking Demand Rate = 1.02 vehicles per 1,000 sf

70 parked vehicles

Time	Weekday Suburban	
	Percent of Peak Period*	Parked Vehicles
12:00-4:00 AM	-	-
5:00 AM	-	-
6:00 AM	-	-
7:00 AM	0.55	39
8:00 AM	0.69	48
9:00 AM	0.74	52
10:00 AM	0.75	53
11:00 AM	0.75	53
12:00 PM	0.73	51
1:00 PM	0.97	68
2:00 PM	1.00	70
3:00 PM	0.95	67
4:00 PM	0.77	54
5:00 PM	0.62	43
6:00 PM	-	-
7:00 PM	-	-
8:00 PM	-	-
9:00 PM	-	-
10:00 PM	-	-
11:00 PM	-	-

*Time-of-day distribution is not available for LUC 140, so the distribution for LUC 130 - Industrial Park was used.

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Low/Mid-Rise Apartment

Land Use Code (LUC) 221

10 units

ITE Weekday Peak Parking Demand Rate = 1.23 vehicles per Unit

12 parked vehicles

Time	Weekday Suburban	
	Percent of Peak Period	Parked Vehicles
12:00-4:00 AM	1.00	12
5:00 AM	0.96	12
6:00 AM	0.92	11
7:00 AM	0.74	9
8:00 AM	0.64	8
9:00 AM*	0.44	5
10:00 AM*	0.44	5
11:00 AM*	0.44	5
12:00 PM*	0.44	5
1:00 PM*	0.44	5
2:00 PM*	0.44	5
3:00 PM*	0.44	5
4:00 PM	0.44	5
5:00 PM	0.59	7
6:00 PM	0.69	8
7:00 PM	0.66	8
8:00 PM	0.75	9
9:00 PM	0.77	9
10:00 PM	0.92	11
11:00 PM	0.94	11

*Assumed

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Hotel

Land Use Code (LUC) 310

105 Rooms

ITE Weekday Peak Parking Demand Rate = 0.89 vehicles per occupied room

93 parked vehicles

Time	Weekday Suburban	
	Percent of Peak Period	Parked Vehicles
12:00-4:00 AM	-	-
5:00 AM	-	-
6:00 AM	1.00	93
7:00 AM	0.96	89
8:00 AM	0.90	84
9:00 AM	0.87	81
10:00 AM	0.82	76
11:00 AM	0.77	72
12:00 PM	0.77	72
1:00 PM	0.75	70
2:00 PM	0.73	68
3:00 PM	0.70	65
4:00 PM	0.71	66
5:00 PM	0.70	65
6:00 PM	0.74	69
7:00 PM	0.75	70
8:00 PM	0.79	73
9:00 PM	0.85	79
10:00 PM	0.87	81
11:00 PM	0.97	90

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Office Building

Land Use Code (LUC) 701

107,171 sf

ITE Weekday Peak Parking Demand Rate = 2.84 vehicles per 1,000 sf

304 parked vehicles

Time	Weekday Suburban	
	Percent of Peak Period	Parked Vehicles
12:00-4:00 AM	-	-
5:00 AM	-	-
6:00 AM	-	-
7:00 AM	0.59	179
8:00 AM	0.79	240
9:00 AM	0.95	289
10:00 AM	1.00	304
11:00 AM	0.98	298
12:00 PM	0.90	274
1:00 PM	0.77	234
2:00 PM	0.84	255
3:00 PM	0.81	246
4:00 PM	0.72	219
5:00 PM	0.46	140
6:00 PM	0.25	76
7:00 PM	-	-
8:00 PM	-	-
9:00 PM	-	-
10:00 PM	-	-
11:00 PM	-	-

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Specialty Retail (First Floor)

Land Use Code (LUC) 814

2,700 sf

ITE Weekday Peak Parking Demand Rate = 2.55 vehicles per 1,000 sf

7 parked vehicles

Time	Non-December Non-Friday Weekday	
	Percent of Peak Period	Parked Vehicles
12:00-4:00 AM	-	-
5:00 AM	-	-
6:00 AM	-	-
7:00 AM	0.05	0
8:00 AM	0.18	1
9:00 AM	0.38	3
10:00 AM	0.68	5
11:00 AM	0.91	6
12:00 PM	1.00	7
1:00 PM	0.97	7
2:00 PM	0.95	7
3:00 PM	0.88	6
4:00 PM	0.78	5
5:00 PM	0.62	4
6:00 PM	0.64	4
7:00 PM	0.77	5
8:00 PM	0.70	5
9:00 PM	0.42	3
10:00 PM	-	-
11:00 PM	-	-

*Information not available for LUC 814. Parking generation and distribution was based on LUC 820 - Shopping Center.

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Specialty Retail (Second Floor)

Land Use Code (LUC) 814

1,098 sf

ITE Weekday Peak Parking Demand Rate = 2.55 vehicles per 1,000 sf

3 parked vehicles

Time	Non-December Non-Friday Weekday	
	Percent of Peak Period	Parked Vehicles
12:00-4:00 AM	-	-
5:00 AM	-	-
6:00 AM	-	-
7:00 AM	0.05	0
8:00 AM	0.18	1
9:00 AM	0.38	1
10:00 AM	0.68	2
11:00 AM	0.91	3
12:00 PM	1.00	3
1:00 PM	0.97	3
2:00 PM	0.95	3
3:00 PM	0.88	3
4:00 PM	0.78	2
5:00 PM	0.62	2
6:00 PM	0.64	2
7:00 PM	0.77	2
8:00 PM	0.70	2
9:00 PM	0.42	1
10:00 PM	-	-
11:00 PM	-	-

*Information not available for LUC 814. Parking generation and distribution was based on LUC 820 - Shopping Center.

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	6/20/2018	South Portland, Maine 04106

Drinking Place

Land Use Code (LUC) 936

2,500 sf

ITE Weekday Peak Parking Demand Rate = 10.60 vehicles per 1,000 sf

27 parked vehicles

Time	Non-December Non-Friday Weekday	
	Percent of Peak Period	Parked Vehicles
12:00-4:00 AM	-	-
5:00 AM	-	-
6:00 AM	-	-
7:00 AM	-	-
8:00 AM	-	-
9:00 AM	-	-
10:00 AM	-	-
11:00 AM	0.20	5
12:00 PM	0.51	14
1:00 PM	0.56	15
2:00 PM	0.40	11
3:00 PM	0.27	7
4:00 PM	0.27	7
5:00 PM	0.39	11
6:00 PM	0.71	19
7:00 PM	1.00	27
8:00 PM	0.97	26
9:00 PM	-	-
10:00 PM	-	-
11:00 PM	-	-

*Information not available for LUC 936. Parking generation and distribution was based on LUC 931 - Quality Restaurant

JN:	3184		Gorrill Palme
Project Description	Shipyard Redevelopment		707 Sable Oaks Drive
Project Location:	Portland, ME		Suite 30
Date:	6/20/2018		South Portland, Maine 0410

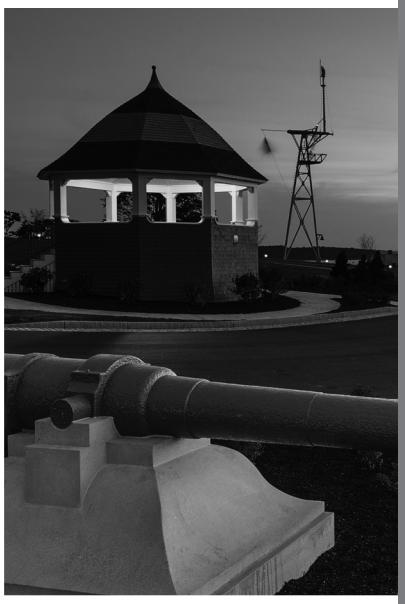
Garage Shared Parking Generation

Time	Manufacturing	Hotel	Office	First Floor Retail	Drinking Place	Total	Shared Use Reduction (6%)		Other Modes Reduction (10% for Hotel and 15% for Others)	
							Reduction	Subtotal	Reduction	Total
6:00 AM	-	93	-	-	-	93	6	87	9	78
7:00 AM	39	89	179	0	-	307	18	289	39	250
8:00 AM	48	84	240	1	-	373	22	351	49	302
9:00 AM	52	81	289	3	-	425	26	399	57	342
10:00 AM	53	76	304	5	-	438	26	412	58	354
11:00 AM	53	72	298	6	5	434	26	408	58	350
12:00 PM	51	72	274	7	14	418	25	393	56	337
1:00 PM	68	70	234	7	15	394	24	370	53	317
2:00 PM	70	68	255	7	11	411	25	386	54	332
3:00 PM	67	65	246	6	7	391	23	368	52	316
4:00 PM	54	66	219	5	7	351	21	330	46	284
5:00 PM	43	65	140	4	11	263	16	247	34	213
6:00 PM	-	69	76	4	19	168	10	158	20	138
7:00 PM	-	70	-	5	27	102	6	96	12	84
8:00 PM	-	73	-	5	26	104	6	98	11	87
9:00 PM	-	79	-	3	-	82	5	77	7	70
10:00 PM	-	81	-	-	-	81	5	76	8	68
11:00 PM	-	90	-	-	-	90	5	85	8	77

Note: Assumes all garage spaces are available to all garage users.

Residential Units have separate parking. Retail below residential units is assumed to park off-site

Relationships.
Responsiveness.
Results.



Traffic Permit Application Request for Scoping Meeting Shipyard Brewing Redevelopment Portland, Maine

PREPARED FOR:

86 Newbury Street, LLC
470 Fore Street
Portland, Maine 04101

June 2018

SUBMITTED BY:

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

June 11, 2018

Ms. Barbara Barhydt
City of Portland Planning Division
389 Congress Street, 4th Floor
Portland, Maine 04101

RE: Application for Traffic Movement Permit
Shipyard Brewing Redevelopment
Portland, Maine

Dear Barbara,

Gorrill Palmer (GP) has been retained by Bateman Partners, LLC to prepare this Traffic Movement Permit Application for the proposed redevelopment of the Shipyard Brewing site located on the block bounded by Fore Street, Hancock Street, Newbury Street, and Mountfort Street in Portland, Maine.

We have attached the following information in support of this application:

- Sections 1-6
- Signed application form
- Notice of intent to file
- List of abutters

The $1,500 application fee was submitted prior to the submission of this application.

Please contact our office with any questions regarding this application.

Sincerely,
Gorrill Palmer

Randy Dunton, PE, PTOE
Project Manager

Copy: David Bateman, Bateman Partners, LLC
Robert vanLuling, MaineDOT Region 1 Traffic Engineer

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-287-3775

FOR MDOT USE 12/99
ID#_____

Total Fees:_____
Date Received: _____

****

PERMIT APPLICATION – TRAFFIC
TRAFFIC MOVEMENT PERMIT, 23 M.R.S.A. §704-A

Please type or print:

This application is for (check all that apply): Traffic 100-200 PCE's ☐
Traffic 200 + PCE's ☒

Name of Applicant: 86 Newbury Street, LLC, Attn: Mr. David Bateman

Address: **470 Fore Street, Suite 400, Portland, ME 04101** Telephone: _____

Name of local contact or agent: **Randy Dunton – Gorrill Palmer**

Address: **707 Sable Oaks Drive, South Portland, ME 04106** Telephone: **(207) 772-2515**

Name and type of development: The development consists of a 68,588 sf of manufacturing (online-order pharmacy and fulfillment space and brewery), a 105 room hotel, 107,171 sf of office space, 3,798 sf of retail, a 2,500 sf tasting room, and 10 apartment units.

Location of development including road, street, or nearest route number: **The site is located on the block bounded by Fore Street, Hancock Street, Newbury Street, and Mountfort Street.**

City/~~Town~~/~~Plantation~~: **Portland** County: Cumberland Tax Maps: **F10NE, G10SE**

~~Lots:~~ **020 C009, 020 C002, 020 C005, 020 C015, 020 C001**

Do you want a consolidated review with DEP pursuant to 23 M.R.S.A. § 704-A (7)? **No**

Was this development started prior to obtaining a traffic permit? **No**

Is the project located in an area designated as a growth area (as defined in M.R.S.A. title 30-A, chapter 187)? Yes_____ No_____

Is this project located within a compact area of an urban compact municipality? Yes X No_____

Is this development or any portion of the site currently subject to state or municipal enforcement action? **None Known**

Existing DEP or MDOT permit number (if applicable): Delegated review is to the City

Name(s) DOT staff person(s) contacted concerning this application None

Name(s) of DOT staff person(s) present at the scoping meeting for 200+ applicants: _____

N/A

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-287-3775

FOR MDOT USE 12/99
ID#_____

Total Fees:_____
Date Received: _____

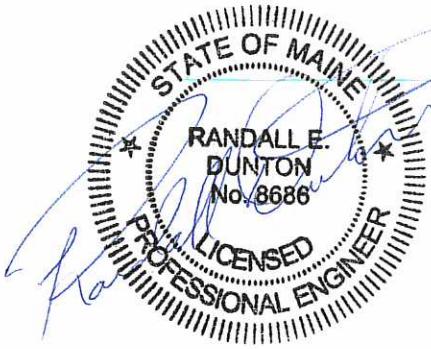
CERTIFICATION

This person responsible for preparing this application and/or attaching pertinent site and traffic information hereto, by signing below, certifies that the applicant for traffic approval is complete and accurate to the best of his/her knowledge.

Signature: Randall E. Dunton Re/Cert/Lic No.:_____

Name (print): **Randall E. Dunton** Engineer: **Maine PE # 8686**

Date: June 11, 2018 Other: _____



If the signature below is not the applicant's signature, attach letter of agent authorization signed by applicant.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Randall E. Dunton 4/18/18

Signature of applicant Date

FOR
86 NEWBURY STREET, LLC

Form C 7/97

NOTICE OF INTENT TO FILE

Please take notice that:

Bateman Partners, LLC
470 Fore Street, Suite 400
Portland, ME 04101

is intending to file a MaineDOT Traffic Pesrmit application with the City of Portland (Delegated Review Authority) pursuant to the provisions of 23 M.R.S.A. §704 – A on or about June 8, 2018.

This application is for:

The redevelopment of the Shipyard Brewing site in Portland, Maine. The proposed development is to include 68,588 sf of online-order pharmacy and fulfillment space, a 105 room hotel, 107,171 sf of office space, 3,798 sf of retail space, a 2,500 sf tasting room, a 9,590 sf brewery, and 10 apartment units. The proposed project also includes a multi-level parking garage with approximately 380 spaces. The project is forecast to generate 265 and 288 AM and PM weekday peak hour of the generator trip ends respectively. The project is expected to open in 2019.

At the following location:

The site is located at the existing Shipyard Brewing site, located on the block bounded by Fore Street, Hancock Street, Newbury Street, and Mountfort Street.

A request for a public hearing must be received by the City, in writing no later than 20 days after the application is found by the department to be complete and is accepted for processing. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Transportation's office in Scarborough (Region 1) during normal working hours. A copy of the application may also be seen at the municipal offices in Portland, Maine.

Written public comments may be sent to the following address: Attention Barbara Barhydt, Planning Division, 389 Congress Street, Portland, Maine 04101.

Randall Dunton, P.E., PTOE
Gorrill-Palmer Consulting Engineers, Inc.

June 11, 2018

Section 1
Site and Traffic Information

1.A. Site Description and Site Plan

The site is located on the block bounded by Fore Street, Newbury Street, Mountfort Street, and Hancock Street in Portland, Maine. The site is identified on City Tax Maps F10NE and G10SE, Lots 020 C009, 020 C002, 020 C005, 020 C015, and 020 C001. The proposed site plan is included in Attachment 1A.

1.B. Existing and Proposed Site Uses

The existing site has one full movement access on Hancock Street, one full movement access on Fore Street, one full movement access on Mountfort Street, and three full movement accesses on Newbury Street. The existing site has the following land uses:

- Manufacturing (brewing, bottling, storage, loading, and a mechanical/boiler room): 63,045 sf
- Office: 6,082 sf
- Apartment: 9 dwelling units
- Retail: 1,250 sf
- Tasting Room: 1,250 sf

The redevelopment is proposed to include a multi-level parking garage with approximately 380 spaces and the following land uses:

- Manufacturing (online-order pharmacy, brewery): 68,588 sf
- Hotel: 105 rooms
- Office: 107,171 sf
- Retail: 3,798 sf
- Tasting Room: 2,500 sf
- Apartments: 10 dwelling units

The site is proposed to be accessed via four site accesses, two less than the current site. The first floor of the proposed parking garage will be accessed through an existing access on Fore Street, and the upper levels of the garage are proposed to be accessed via one new full movement entrance on Hancock Street. The parking for the proposed residential units will be accessed using a new entrance-only access on Hancock Street to

the north of the proposed Hancock Street garage access, and a new exit-only access on Newbury Street.

1.C. Site and Vicinity Boundaries

The site is bordered by Newbury Street to the northwest, Mountfort Street to the northeast, Hancock Street to the southwest, Fore Street to the southeast, and the Residence Inn Marriott to the South. A site location map showing the development location is included in Attachment 1B.

1.D. Proposed Uses in the Vicinity of the Proposed Development

Approved projects that have been constructed but are not yet opened as well as projects for which applications have been filed are required to be included in the predevelopment traffic volumes for this project. Based on conversations with Portland City Staff, there are several projects in the vicinity of the site that should be considered. The trip generation for the following projects will need to be included in background traffic for this project:

- 167 Fore Street: Ocean Gateway Addition
- 158 Fore Street: AC Hotel
- 62 India Street: India Newbury Residential
- 20 Thames Street: Residential
- 50 India Street: cPort Credit Union
- 221 Congress Street: Residential
- 58 Fore Street: Mixed-Use
- 0 Hancock Street: WEX
- 203 Fore Street: Portland II Hotel
- 56 Hampshire Street: Verdante at Lincoln Park

The trip generation for these projects will be included in the Traffic Impact Study, to be completed after the scoping meeting is held.

1.E. Trip Generation

The trip generation for the site was calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, Seventh Edition. More recent editions of

ITE are available, however, the Seventh Edition is the most recent edition accepted by MaineDOT. The trip generation for the proposed site has been based on the following uses and sizes:

- Manufacturing (online-order pharmacy, mechanical/boiler room): 68,588 sf
- Hotel: 105 rooms
- Office: 107,171 sf
- Retail: 3,798 sf
- Tasting Room: 2,500 sf
- Apartments: 10 dwelling units

The following summarizes the ITE Land Use Codes (LUCs) used to calculate the trip generation for the proposed site:

- LUC 140 – Manufacturing
- LUC 220 – Apartment
- LUC 310 – Hotel
- LUC 710 – General Office Building
- LUC 814 – Specialty Retail
- LUC 936 – Drinking Place

The trip generation calculations are included in Attachment 1C. The following table summarizes the ITE trip generation for the proposed site:

ITE Trip Generation Summary

Building Use	Size	ITE Trip Generation				
		AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Office	107,171 sf	198	198	190	190	52
Specialty Retail	3,797 sf	3	26	10	19	25
Drinking Place	2,500 sf	---	---	28	39	41
Hotel	105 rooms	59	55	62	64	76
Manufacturing	68,588 sf	50	53	51	51	19
Apartment	10 Units	5	6	6	7	5
Site Total		**315**	**338**	**347**	**370**	**218**

As shown in the table, the site is forecast to generate 338 trip ends during the AM peak hour of the generator and 370 trip ends during the PM peak hour of the generator. A trip end is a trip into or out of the site, thus a round trip is equal to two trip ends.

Shared Use Reduction

Since the project is a mixed use development with complementary uses, a shared use reduction can be applied to the site trip generation. GP has used the National Cooperative Highway Research Program (NCHRP) 684 Internal Capture Estimation Tool to estimate the traffic that will visit more than one destination without leaving the site. The NCHRP 684 spreadsheet uses the ITE forecast trip generation for each type of land use (office, retail, restaurant, residential, hotel, and other) and estimates the trips that will travel between two uses without leaving the site. This yields an internal trip capture percentage, which is the percentage of trip ends that will travel between two uses. For the purpose of this evaluation, GP classified the tasting room (drinking place) as a restaurant. The following tables summarize the AM and PM peak hour internal trip capture percentages for the proposed site:

AM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	178	20	3%	5%	5	1	6
Retail	2	1	50%	0%	1	0	1
Restaurant	0	0	0%	0%	0	0	0
Residential	1	4	0%	0%	0	0	0
Hotel	35	24	0%	21%	0	5	5
Other	38	12	N/A	N/A	0	0	0
Total	**254**	**61**	**2%**	**10%**	**6**	**6**	**12**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

AM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	178	20	5%	20%	9	4	13
Retail	13	13	38%	31%	5	4	9
Restaurant	0	0	0%	0%	0	0	0
Residential	2	4	0%	0%	0	0	0
Hotel	30	25	0%	24%	0	6	6
Other	37	16	N/A	N/A	0	0	0
Total	**260**	**78**	**5%**	**18%**	**14**	**14**	**28**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	29	161	0%	0%	0	0	0
Retail	5	5	60%	40%	3	2	5
Restaurant	18	10	11%	50%	2	5	7
Residential	4	2	50%	0%	2	0	2
Hotel	34	28	3%	4%	1	1	2
Other	18	33	N/A	N/A	0	0	0
Total	**108**	**239**	**7%**	**3%**	**8**	**8**	**16**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	29	161	0%	1%	0	2	2
Retail	10	9	70%	56%	7	5	12
Restaurant	27	12	22%	58%	6	7	13
Residential	4	3	75%	67%	3	2	5
Hotel	38	26	3%	4%	1	1	2
Other	26	25	N/A	N/A	0	0	0
Total	**134**	**236**	**13%**	**7%**	**17**	**17**	**34**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

The NCHRP 684 spreadsheet does not have information for the Saturday peak hour of the generator. To estimate a reduction for a Saturday, the AM and PM trip capture percentages were averaged and applied to the Saturday peak hour of the generator. This resulted in a Saturday internal trip capture of approximately 6% of total trips which results in a reduction of 14 trip ends (7 entering and 7 exiting).

The following table summarizes the reduced trip generation for the proposed site due to shared use trips:

Reduced Trip Generation Summary

Building Use	Trip Generation				
	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
ITE Total	315	338	347	370	218
Shared Use Reduction	-12	-28	-16	-34	-14
Reduced Site Total	**303**	**310**	**331**	**336**	**204**

As shown in the table, the proposed site with the shared use reduction is forecast to generate 310 trip ends and 336 trip ends during the AM and PM peak hours of the generator respectively.

Other Modes of Transportation Reduction

Since the site is located in an urban environment, it is expected that a portion of site traffic will use alternative modes of transportation to get to and from the site. These other modes could include options such as transit, biking, or walking. A trip generation reduction due to other modes of transportation has been applied to the proposed site trip generation with the shared use reduction. The other modes reduction has been evaluated separately for the non-residential site uses and the proposed hotel.

Residential: The other modes reduction for residential land uses is based on information from the 2009-2013 American Community Survey (ACS) Five-Year Estimate by Census Tract for the City of Portland. Rick Harbison, Planner and GIS Specialist for the Greater Portland Council of Governments, used this data to create maps (attached) that show the estimated percentage of workers living in each Portland Census Tract that use each mode of transportation to travel to work. The site is located on the southeast corner of Census Tract 5, which is a predominantly commercial area. Census Tracts 2 and 3 border the site, so the reduction was calculated by dividing the estimated number of people walking, bicycling, and taking the bus to work in the three Census Tracts by the estimated total number of working people in the same three Census Tracts. This calculation yields a reduction of 35.8%. This methodology was approved by the City as part of the nearby 58 Fore Street redevelopment project.

Non-Residential: The other modes reduction for non-residential land uses was based on 2010 Consensus Transportation Planning Products (CTPP) means of transportation to work data for Census Tract 5, where the site is located. This data indicates that the ratio of cars to workers is 85% in the area (calculations attached), indicating that approximately 15% of employees use modes of transportation other than a car to commute to work. A reduction of 15% was applied to the non-residential uses. It should be noted that the methodology used to calculate this reduction was approved by the City of Portland as part of the nearby 58 Fore Street redevelopment project.

Hotel: There is limited data available for hotels, so a conservative reduction of 10% was used for the hotel trip generation. It should be noted that this hotel other modes reduction was approved by the City of Portland as part of the nearby 58 Fore Street redevelopment project.

The following table summarizes the other modes of transportation reduction for the site trip generation:

Other Modes of Transportation Reduction Summary

Trip Generation	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Site Trip Generation					
Residential Trip Gen	5	6	4	2	4
Non-Residential Trip Gen	244	255	267	272	129
Hotel Trip Gen	54	49	60	62	71
Subtotal	**303**	**310**	**331**	**336**	**204**
Other Modes Reduction					
Residential Reduction	2	2	1	1	1
Non-Residential Reduction	37	38	40	41	19
Hotel Reduction	5	5	6	6	7
Total Reduction	**44**	**45**	**47**	**48**	**27**
Reduced Trip Generation	**259**	**265**	**284**	**288**	**177**

As shown in the table, the forecast trip generation for the proposed site, including the shared use reduction and the other modes reduction, is 265 trip ends during the AM peak hour of the generator and 288 trip ends during the PM peak hour of the generator.

Trip Generation Credit

When determining the need for a MaineDOT Traffic Movement Permit (TMP), MaineDOT allows a trip generation credit to be taken for on-site uses that have been operational within the last 10 years. All of the existing land uses on the site are eligible for credit. The trip generation credit for the existing site has been calculated using ITE *Trip Generation*, Seventh Edition. The following LUCs were used to calculate the trip generation for the existing site:

- LUC 140 – Manufacturing
- LUC 220 – Apartment
- LUC 710 – General Office Building
- LUC 814 – Specialty Retail
- LUC 936 – Drinking Place

The following table summarizes the ITE trip generation for the existing site:

ITE Trip Generation Summary

Building Use	Size	ITE Trip Generation				
		AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Manufacturing	63,045 sf	46	49	47	47	18
Office	6,082 sf	20	20	19	19	5
Apartment	9 Units	5	5	6	6	5
Specialty Retail	1,250 sf	1	9	3	6	8
Drinking Place	1,250 sf	---	---	14	19	21
Site Total		**72**	**83**	**89**	**97**	**57**

As shown in the table, the existing site is estimated to generate 83 trip ends during the AM peak hour of the generator and 97 trip ends during the PM peak hour of the generator.

Shared Use Reduction – Existing Site

Consistent with the proposed trip generation calculations, the existing site is a mixed use development with complementary uses and therefore a shared use reduction can be applied to the overall site trip generation. The same NCHRP 684 spreadsheets as those used for the proposed site were used to calculate the shared use reduction for the existing site. The following tables summarize the AM and PM peak hour internal trip capture percentages for the existing site. Detailed calculations are attached.

AM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	18	2	0%	0%	0	0	0
Retail	1	0	0%	0%	0	0	0
Restaurant	0	0	0%	0%	0	0	0
Residential	1	4	0%	0%	0	0	0
Other	35	11	N/A	N/A	0	0	0
Total	**55**	**17**	**0%**	**0%**	**0**	**0**	**0**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

AM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	18	2	6%	50%	1	1	2
Retail	5	4	20%	25%	1	1	2
Restaurant	2	3	0%	0%	0	0	0
Residential	0	0	0%	0%	0	0	0
Other	34	15	N/A	N/A	0	0	0
Total	**59**	**24**	**3%**	**8%**	**2**	**2**	**4**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Adjacent Street NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	3	16	0%	0%	0	0	0
Retail	1	2	0%	50%	0	1	1
Restaurant	9	5	11%	20%	1	1	2
Residential	4	2	25%	0%	1	0	1
Other	16	31	N/A	N/A	0	0	0
Total	**33**	**56**	**6%**	**4%**	**2**	**2**	**4**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

PM Peak Hour Generator NCHRP 684 Internal Trip Capture

Land Use	ITE Trip Generation		Internal Capture %		Internal Capture Trip Ends		
	Enter	Exit	Enter	Exit	Enter	Exit	Total
Office	3	16	0%	0%	0	0	0
Retail	3	3	33%	67%	1	2	3
Restaurant	13	6	8%	33%	1	2	3
Residential	4	2	50%	0%	2	0	2
Other	24	23	N/A	N/A	0	0	0
Total	**47**	**50**	**9%**	**8%**	**4**	**4**	**8**

*These values are taken directly from the NCHRP spreadsheets (Attachment 1C), which may not match exact calculations due to rounding in the spreadsheet.

The NCHRP 684 spreadsheet does not have information for the Saturday peak hour of the generator. To estimate a reduction for a Saturday, the AM and PM trip capture percentages were averaged and applied to the Saturday peak hour of the generator. This resulted in a Saturday internal trip capture of approximately 4% of total trips which results in a reduction of 2 trip ends (1 entering and 1 exiting).

The following table summarizes the reduced trip generation for the existing site:

Reduced Trip Generation Summary

Building Use	Trip Generation				
	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
ITE Total	**72**	**83**	**89**	**97**	**57**
Shared Use Reduction	0	-4	-4	-8	-2
Site Total	**72**	**79**	**85**	**89**	**55**

As shown in the table, the existing site is estimated to generate 79 trip ends during the AM peak hour of the generator and 89 trip ends during the PM peak hour of the generator including the shared use reduction.

Other Modes of Transportation Reduction – Existing Site

Since the site is located in an urban environment, it is expected that a portion of site traffic will use alternative modes of transportation. Consistent with the proposed site trip generation calculations, a trip generation reduction due to other modes of transportation has been applied to existing site trip generation (including the shared use reduction). The other modes reduction has been calculated for residential and non-residential uses.

Residential: The same 35.8% reduction that was applied to residential land uses for the proposed site was used.

Non-Residential: The same 15% reduction that was applied to non-residential land uses for the proposed site was used.

The following table summarizes the other modes of transportation reduction for the site:

Other Modes of Transportation Reduction Summary

Trip Generation	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Site Trip Generation					
Residential	5	5	5	4	5
Non-Residential	67	74	80	85	50
Site Total	**72**	**79**	**85**	**89**	**55**
Other Modes Reduction					
Residential Reduction	2	2	2	1	2
Non-residential Reduction	10	11	12	13	7
Total Reduction	**12**	**13**	**14**	**14**	**9**
Reduced Trip Generation	**60**	**66**	**71**	**75**	**46**

As shown in the table, the existing site is estimated to generate 66 trip ends and 75 trip ends during the AM and PM peak hours of the generator respectively. This trip generation represents the trip generation credit for the site.

Net Site Trip Generation

The net site trip generation is calculated by subtracting the credit for the existing site from the trip generation for the proposed site. The following table summarizes the net trip generation for the site:

Net Site Trip Generation Summary

Trip Generation	AM Adj St	AM Gen	PM Adj St	PM Gen	Sat Gen
Proposed	259	265	284	288	177
Existing	-60	-66	-71	-75	-46
Net Trip Generation	**199**	**199**	**213**	**213**	**131**

As shown in the table, the site is forecast to generate a net increase of 199 trip ends during the AM peak hour of the generator and 213 trip ends during the PM peak hour of the generator. A trip end is defined as a trip into or out of the site, thus a round trip is equal to two trip ends. The site is forecast to generate over 99 trip ends during a peak hour, so a MaineDOT Traffic Movement Permit is required. Additionally, since the site is forecast to generate greater than 199 trip ends during a peak hour, Section 7 (Traffic Impact Study) is required. A Traffic Impact Study will be completed and submitted after the Scoping Meeting is held.

1.F. Trip Distribution

Based on ITE's *Trip Generation*, the NCHRP 684 Internal Capture, and the other modes of transportation reduction, the following trip distribution is anticipated for the site:

- AM Peak Hour Adjacent Street: 165 in / 34 out
- AM Peak Hour Generator: 162 in / 37 out
- PM Peak Hour Adjacent Street: 59 in / 154 out
- PM Peak Hour Generator: 66 in / 147 out
- Saturday Peak Hour Generator: 69 in / 62 out

1.G. Trip Composition and Assignment

It is assumed that all trips are primary in nature and made for the sole purpose of going to and from the site. This is likely a conservative assumption, since specialty retail and drinking places typically generate pass-by trips, where someone visits the site on their way to or from another destination.

The trip assignment has been based on the location of the site driveways, existing traffic patterns identified from a combination of AADT values provided in MaineDOT's MapViewer tool and turning movement counts completed at the intersections of Fore Street with Hancock Street and Fore Street with Mountfort Street. To refine the trip assignment for the TMP application and the Traffic Impact Study, it is recommended that turning movement counts are collected at the intersections of Hancock Street with Middle Street, Hancock Street with Newbury Street, and Mountfort Street with Newbury Street.

The preliminary AM and PM Trip Assignment is shown on the Figure 2 in Attachment 1B.

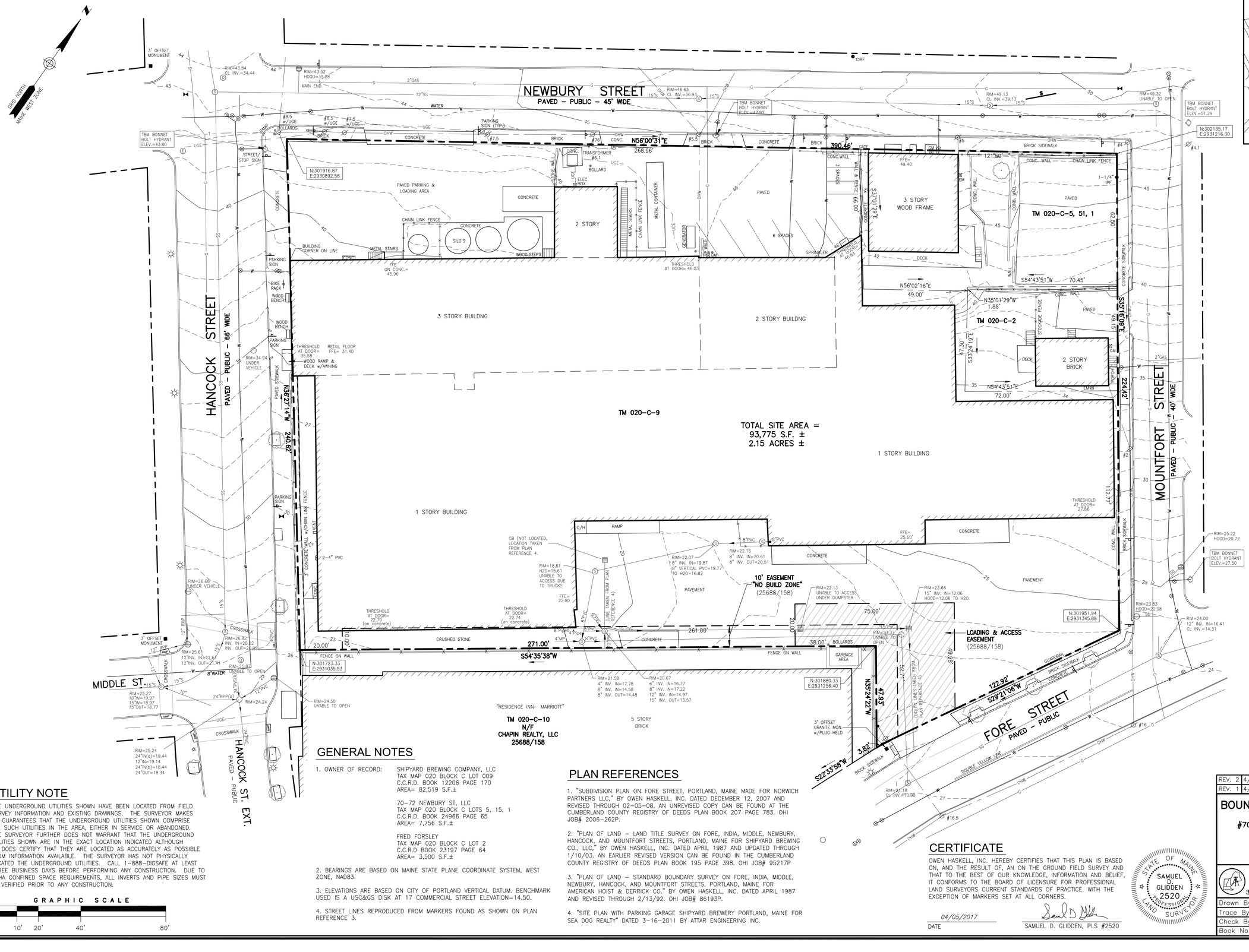
1.H. Attachments

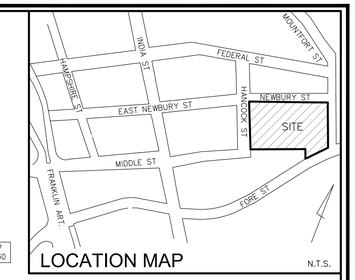
Attachment 1A – Site Survey, Proposed Site Plan
Attachment 1B – Site Location Map, Trip Assignment Diagrams
Attachment 1C – Trip Generation Calculations

Attachment 1A

Site Survey

Proposed Site Plan





LOCATION MAP N.T.S.

LEGEND

●	IRON PIPE OR ROD FOUND
■	MONUMENT FOUND
⌀	UTILITY POLE
○	MANHOLE
⊠ EM/GM	ELECTRIC/GAS METER
	SIGN
	CATCH BASIN
	GAS VALVE
	HYDRANT
	WATER VALVE OR SHUTOFF
	LIGHT POLE
	BOLLARD
	DECIDUOUS TREE
	GUARDRAIL
	FENCE
	CURB
OHW	OVERHEAD WIRES
UGE	UNDERGROUND ELECTRIC
W	WATER LINE
G	GAS LINE
SD	STORM DRAIN
SS	SANITARY SEWER
35	1' CONTOUR
IPF/IRF	IRON PIPE OR ROD FOUND
INV.	INVERT
FFE	FINISHED FLOOR ELEVATION
CONC.	CONCRETE
N/F	NOW OR FORMERLY
000/000	DEED BOOK AND PAGE

CITY CONTROL

CITY CONTROL POINTS USED:

3022 – 3'O/S MONUMENT
AT HANCOCK/THAMES

N:301388.62
E:2931424.18

3000 – 3' O/S MONUMENT
AT HANCOCK/FORE

N:301536.15
E:2931222.69

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

GRAPHIC SCALE
0 10' 20' 40' 80'

GENERAL NOTES

1. OWNER OF RECORD: SHIPYARD BREWING COMPANY, LLC
TAX MAP 020 BLOCK C LOT 009
C.C.R.D. BOOK 12206 PAGE 170
AREA= 82,519 S.F.±

70-72 NEWBURY ST, LLC
TAX MAP 020 BLOCK C LOTS 5, 15, 1
C.C.R.D. BOOK 24966 PAGE 65
AREA= 7,756 S.F.±

FRED FORSLEY
TAX MAP 020 BLOCK C LOT 2
C.C.R.D BOOK 23197 PAGE 64
AREA= 3,500 S.F.±

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD83.

3. ELEVATIONS ARE BASED ON CITY OF PORTLAND VERTICAL DATUM. BENCHMARK USED IS A USC&GS DISK AT 17 COMMERCIAL STREET ELEVATION=14.50.

4. STREET LINES REPRODUCED FROM MARKERS FOUND AS SHOWN ON PLAN REFERENCE 3.

PLAN REFERENCES

1. "SUBDIVISION PLAN ON FORE STREET, PORTLAND, MAINE MADE FOR NORWICH PARTNERS LLC," BY OWEN HASKELL, INC. DATED DECEMBER 12, 2007 AND REVISED THROUGH 02-05-08. AN UNREVISED COPY CAN BE FOUND AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 207 PAGE 783. OHI JOB# 2006-262P.

2. "PLAN OF LAND – LAND TITLE SURVEY ON FORE, INDIA, MIDDLE, NEWBURY, HANCOCK, AND MOUNTFORT STREETS, PORTLAND, MAINE FOR SHIPYARD BREWING CO., LLC," BY OWEN HASKELL, INC. DATED APRIL 1987 AND UPDATED THROUGH 1/10/03. AN EARLIER REVISED VERSION CAN BE FOUND IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS PLAN BOOK 195 PAGE 398. OHI JOB# 95217P

3. "PLAN OF LAND – STANDARD BOUNDARY SURVEY ON FORE, INDIA, MIDDLE, NEWBURY, HANCOCK, AND MOUNTFORT STREETS, PORTLAND, MAINE FOR AMERICAN HOIST & DERRICK CO." BY OWEN HASKELL, INC. DATED APRIL 1987 AND REVISED THROUGH 2/13/92. OHI JOB# 86193P.

4. "SITE PLAN WITH PARKING GARAGE SHIPYARD BREWERY PORTLAND, MAINE FOR SEA DOG REALTY" DATED 3-16-2011 BY ATTAR ENGINEERING INC.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE. WITH THE EXCEPTION OF MARKERS SET AT ALL CORNERS.

04/05/2017
DATE

SAMUEL D. GLIDDEN, PLS #2520

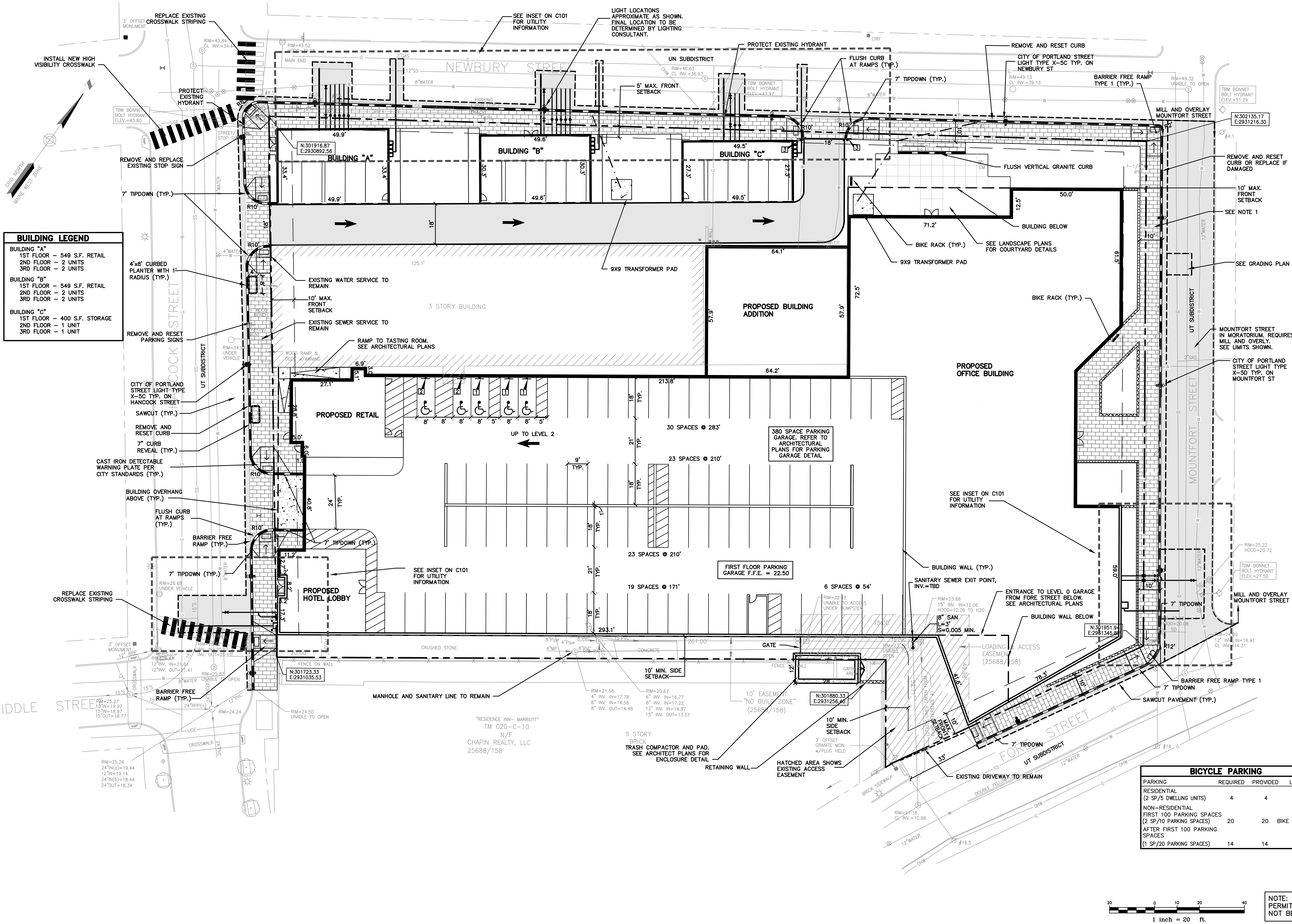
STATE OF MAINE · SAMUEL D GLIDDEN · 2520 · PROFESSIONAL LAND SURVEYOR

REV.		
REV. 2	4/5/17	FLOOR ELEVATIONS, UPDATE BENCHMARK
REV. 1	4/3/17	MISC. PLAN REVISIONS

BOUNDARY & TOPOGRAPHIC SURVEY
AT
#70–72 NEWBURY STREET, PORTLAND, MAINE
MADE FOR
BATEMAN PARTNERS, LLC
470 FORE STREET, PORTLAND, MAINE

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. ROUTE ONE, FALMOUTH, ME 04105 (207) 774-0424

Drawn By SDG	Date	Job No.
Trace By JLW	FEBRUARY 14, 2017	2017-010P
Check By JWS	Scale	Drwg. No.
Book No. 1155	1" = 20'	1



BUILDING LEGEND

BUILDING "A"
- 1ST FLOOR – 549 S.F. RETAIL
- 2ND FLOOR – 2 UNITS
- 3RD FLOOR – 2 UNITS

BUILDING "B"
- 1ST FLOOR – 549 S.F. RETAIL
- 2ND FLOOR – 2 UNITS
- 3RD FLOOR – 2 UNITS

BUILDING "C"
- 1ST FLOOR – 400 S.F. STORAGE
- 2ND FLOOR – 1 UNIT
- 3RD FLOOR – 1 UNIT

SITE DATA

ZONE: INDIA STREET FORM BASED CODE

SITE AREA 93,775 S.F. = 2.15 ACRES

BUILDING AREA:	
RETAIL 1	549 S.F.
RETAIL 2	549 S.F.
RETAIL 3	2,700 S.F.
TASTING	2,500 S.F.
BREWERY	9,590 S.F.
OFFICE	107,171 S.F.
PHARMACY	24,190 S.F.
TECH. FULLFILLMENT	34,808 S.F.
HOTEL (105 ROOM)	72,797 S.F.
RESIDENTIAL (10 UNITS)	9,060 S.F.

PARKING	REQUIRED	PROVIDED
HOTEL (1 SP/4 GUEST ROOMS)	27	27
OFFICE (1 SP/400 SF)	268	271
PHARMACY (1 SP/1000 SF)	25	25
TECH. FULLFILLMENT (1 SP/1000 SF)	35	35
BREWERY (1 SP/1000 SF)	10	10
TASTING ROOM (1 SP/200 SF 2,000 SF EXEMPT)	3	12
RETAIL 1 (1 SP/200 SF 2,000 SF EXEMPT)	0	0
RETAIL 2 (1 SP/200 SF 2,000 SF EXEMPT)	0	0
RETAIL 3 (1 SP/200 SF 2,000 SF EXEMPT)	4	0
TOTAL GARAGE PARKING	372	380
BARRIER FREE	8	13
RESIDENTIAL (1 SP/UNIT AFTER 3 UNITS)	7	12 BELOW UNITS

SPACE AND BULK STANDARDS

ZONE: INDIA STREET FORM BASED CODE –UN –NEWBURY STREET	REQUIRED	PROVIDED
BUILDING SETBACKS		
FRONT (MAX.)	5 FT.	>5 FT.
SIDE (MIN.)	5 FT.	>5 FT.
REAR (MIN.)	10 FT.	>10 FT.
MIN. BUILDING HEIGHT	25 FT. (2 STORIES)	45 FT.
MAX. BUILDING HEIGHT	45 FT. (4 STORIES)	45 FT.
MAX. LOT COVERAGE	90%.	<90%

SPACE AND BULK STANDARDS

ZONE: INDIA STREET FORM BASED CODE– UT –HANCOCK, FORE & MOUNTFORT STREETS	REQUIRED	PROVIDED
BUILDING SETBACKS		
FRONT (MAX.)	10 FT.	10 FT.
SIDE (MIN.)	10 FT.	>10 FT.
REAR (MIN.)	10 FT.	>10 FT.
STEPBACK (ADJACENT TO UN ZONE)	35 FT. MIN. AFTER 45' HEIGHT	35 FT.
MIN. BUILDING HEIGHT	3 STORIES	65 FT.
MAX. BUILDING HEIGHT	65 FT. (6 STORIES)	65 FT.
MAX. LOT COVERAGE	90%.	<90%.

PAVEMENT/LANDSCAPE LEGEND

- BITUMINOUS CONCRETE
- PORTLAND CEMENT CONCRETE
- BRICK

SEE LANDSCAPE PLAN FOR PLANTING DETAIL

CURBING LEGEND

- VERTICAL GRANITE CURB

STRIPING LEGEND

SIGNAGE, STRIPING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGARDING SIZE, INSTALLATION, LOCATION & REFLECTIVITY.

12"SL – 12" WIDTH STOP LINE

SIGN LEGEND

RESERVED PARKING	RESERVED PARKING VAN ACCESSIBLE	DO NOT ENTER
R7–8 12"x 18"	R7–8 12"x 18"	R5–1 30"x 30"
1	2	3

NOTES:
1. EXISTING BRICK SIDEWALK SHALL BE RESTORED TO NEW CONDITION WHERE DISTURBED BY CONSTRUCTION.

BICYCLE PARKING

PARKING	REQUIRED	PROVIDED	LOCATION
RESIDENTIAL (2 SP/5 DWELLING UNITS)	4	4	GARAGE
NON–RESIDENTIAL FIRST 100 PARKING SPACES (2 SP/10 PARKING SPACES)	20	20	BIKE STORAGE ROOM
AFTER FIRST 100 PARKING SPACES (1 SP/20 PARKING SPACES)	14	14	ON SITE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE LUCAS S. ANTHONY 15250 LICENSED PROFESSIONAL ENGINEER 6/8/18

Rev.	Date	Revision
2	5/30/18	REVISED PER CITY STAFF COMMENTS
1	5/14/18	REVISED PER UPDATED ARCHITECTURAL PLANS

Issued For	Date	By
SITE PLAN AND SUBDIVISION	4/10/18	LSA

Design: CEH	Draft: CG	Date: APR 2018	
Checked: LSA	Scale: 1"=20'	Job No.: 3184	
File Name: 3184-SP_L1.dwg			

This plan shall not be modified without written permission from Gorrill Palmer (GP). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GP.

GORRILL PALMER
Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

Drawing Name: SITE AND UTILITY PLAN– FIRST FLOOR
Project: Shipyard Redevelopment, Newbury Street, Portland, ME
Client: 86 Newbury Street, LLC, 470 Fore Street, Portland, ME 04101

Drawing No. C100

U:\3184_Shipyard Brewing\Z – CAD\DWG\3184-SP_L1.dwg 6/8/2018 2:50 PM

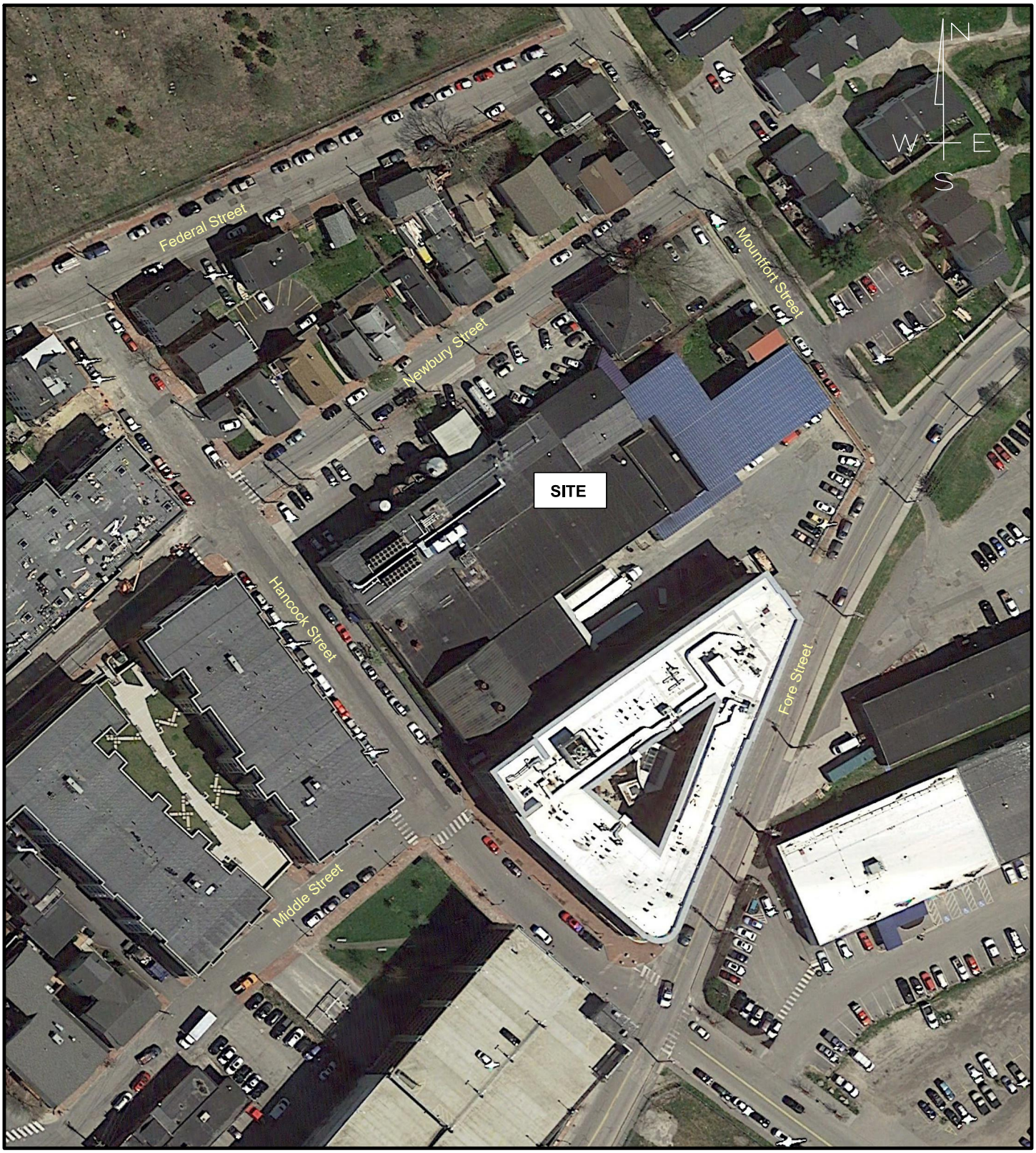
Attachment 1B

Site Location Map

Trip Assignment Diagram

Location Map

F□□r□ N□□ 1



SHIPYARD REDEVELOPMENT
PORTLAND, MAINE

D□□□□□□ JP
Dr□□□
□□□□□□d□ ET

S□□□□□ NONE
D□□□□ JUNE □□□8
F□□ N□□ □□□184□TR□FF□d□□

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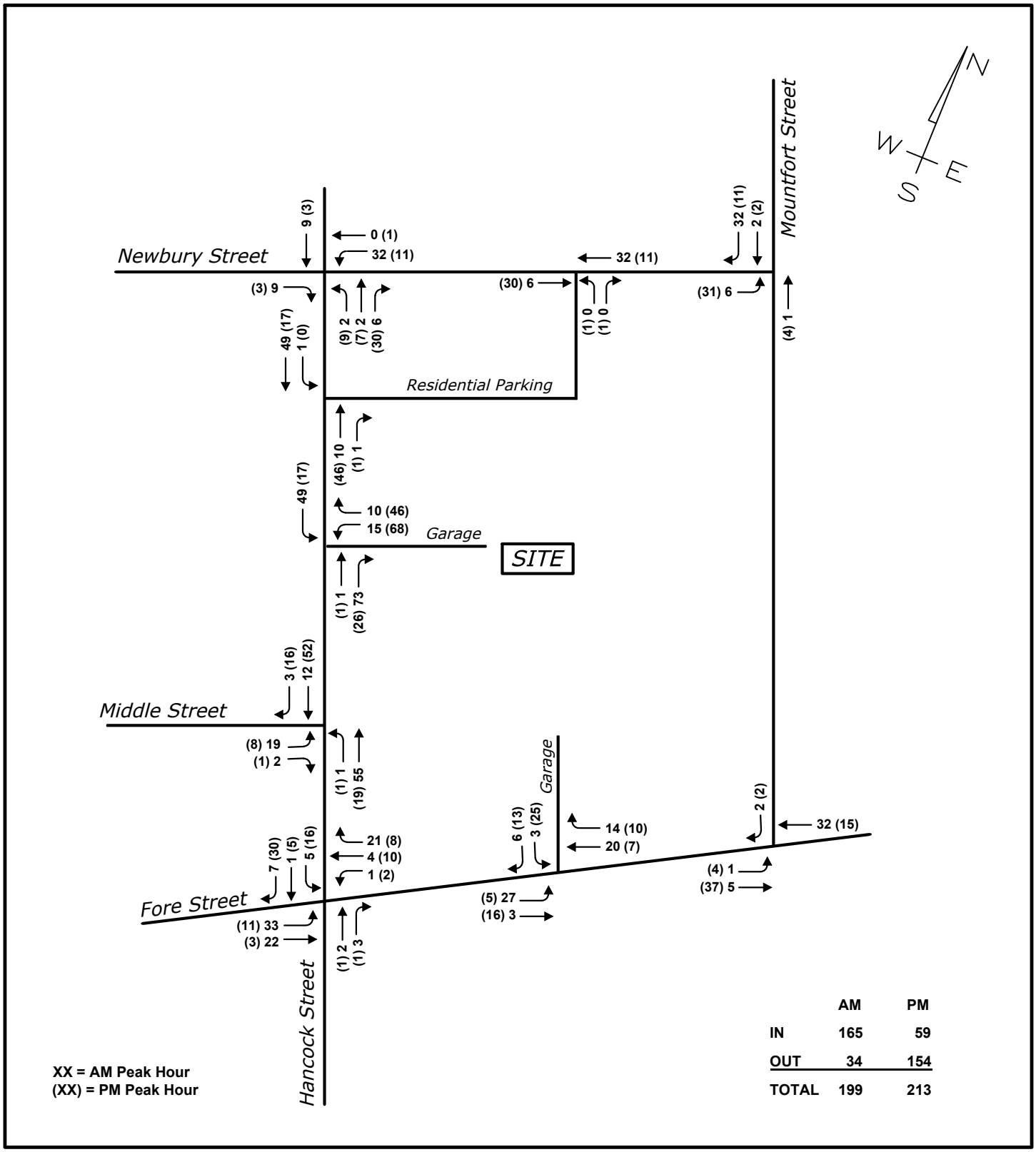
Trip Assignment

F□□r□N□□ 2



	AM	PM
IN	165	59
OUT	34	154
TOTAL	199	213

XX = AM Peak Hour
(XX) = PM Peak Hour

SHIPYARD REDEVELOPMENT
PORTLAND, MAINE

D□□□□□□ JP S□□□□□ NONE
Dr□□□ D□□□□ JUNE □□□8
□□□□□□d□ ET F□□ N□□ □□□184□TR□FF□d□□

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Attachment 1C

Trip Generation Calculations

NCHRP 684 Spreadsheets

Other Modes Reduction Calculations

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Existing) Manufacturing
Land Use Code (LUC) 140

Gross Floor Area 63,045

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split *		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	T = 3.82 (X)	241	62		50%	50%	121	120
AM Peak Adjacent Street	T = 0.73 (X)	46	50		75%	25%	35	11
PM Peak Adjacent Street	T = 0.74 (X)	47	54		35%	65%	16	31
AM Peak Hour of Generator	T = 0.78 (X)	49	50		70%	30%	34	15
PM Peak Hour of Generator	T = 0.75 (X)	47	50		50%	50%	24	23
Saturday	T = 1.49 (X)	94	2		50%	50%	47	47
Saturday Peak Hour of Gen.	T = 0.28 (X)	18	2	**	50%	50%	9	9

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Existing) General Office Building
Land Use Code (LUC) 710

Square Feet 6,082

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution		R^2
				IN	OUT	IN	OUT	
Weekday	Ln (T) = 0.77 Ln (X) + 3.65	154	78	50%	50%	77	77	0.80
AM Peak Hour	**Ln (T) = 0.80 Ln (X) + 1.55**	**20**	**217**	**90%**	**10%**	**18**	**2**	**0.83**
PM Peak Hour	T = 1.12 (X) + 78.81	86	235	15%	85%	13	73	0.82
Saturday	T = 2.14 (X) + 18.47	31	17	50%	50%	16	15	0.66
Peak Hour of Generator	Ln (T) = 0.81 Ln (X) - 0.12	4	10	55%	45%	2	2	0.59

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution		R^2
				IN	OUT	IN	OUT	
Weekday	T = 11.01 (X)	67	78	50%	50%	34	33	---
AM Peak Hour	T = 1.55 (X)	9	217	90%	10%	8	1	---
PM Peak Hour	T = 1.49 (X)	9	235	15%	85%	1	8	---
Saturday	T = 2.37 (X)	14	17	50%	50%	7	7	---
Saturday Peak Hour of Gen.	T = 0.41 (X)	2	10	50%	50%	1	1	---

* Percentages rounded to nearest 5%

PM Peak Hour:	**T = 1.49/1.55 (AM Peak)**	**19**	**15%**	**85%**	**3**	**16**	**---**
SAT Peak Hour:	**T = 0.41/1.55 (AM Peak)**	**5**	**50%**	**50%**	**3**	**2**	**---**

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Existing) Apartment
Land Use Code (LUC) 220

Dwelling Units: 9

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Sample Size		Directional Split *		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	T = 6.72 (X)	60	86		50%	50%	30	30
AM Peak Hour of Adj. Street Traffic	T = 0.51 (X)	5	78		20%	80%	1	4
PM Peak Hour of Adj. Street Traffic	T = 0.62 (X)	6	90		65%	35%	4	2
AM Peak Hour of Generator	T = 0.55 (X)	5	81		30%	70%	2	3
PM Peak Hour of Generator	T = 0.67 (X)	6	83		60%	40%	4	2
Saturday	T = 6.39 (X)	58	15		50%	50%	29	29
Saturday Peak Hour of Gen.	T = 0.52 (X)	5	14	**	50%	50%	3	2

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Existing) Specialty Retail Center
Land Use Code (LUC) 814

Gross Floor Area (ft^2): 1,250

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution	
				IN	OUT	IN	OUT
Weekday	T = 44.32 (X)	55	4	50%	50%	28	27
Peak Hour of Adjacent Street Traffic 7-9 AM**	T = 0.74 (X)	1	N/A	60%	40%	1	0
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	3	5	45%	55%	1	2
AM Peak Hour of Generator	T = 6.84 (X)	9	4	50%	50%	5	4
PM Peak Hour of Generator	T = 5.02 (X)	6	3	55%	45%	3	3
Saturday	T = 42.04 (X)	53	3	50%	50%	27	26
Saturday Peak Hour of Gen.***	T = 6.63 (X)	8	3	50%	50%	4	4

**Based on ratio of AM/PM traffic for LUC 820, Shopping Center and applied to 814 PM rate.

***Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center

* Percentages rounded to nearest 5%

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Existing) Drinking Place
Land Use Code (LUC) 936

Square Feet 1,250

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split **		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	---	---	---		---	---	---	---
PM Peak Hour of Adj. St.	T = 11.34 (X)	14	12		65%	35%	9	5
PM Peak Hour of Gen.	T = 15.49 (X)	19	8		70%	30%	13	6
Saturday	---	---	---		---	---	---	---
Sat. Peak Hour of Generator	T = 16.48 (X)*	21	---	***	65%	35%	14	7

*Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 932 - High-Turnover (Sit-Down) Restaurant

** Percentages rounded to nearest 5%

***Directional split for this peak hour assumed based on other peak hours for this land use and the directional split for LUC 932 - High-Turnover (Sit-Down) Restaurant during Saturday Peak Hour of the Generator

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Existing Site Trip Generation

Time Period	Manufacturing	General Office Building	Apartment	Specialty Retail	Drinking Place	**Total Site Trip Ends**	Manufacturing IN	Manufacturing OUT	General Office Building IN	General Office Building OUT	Apartment IN	Apartment OUT	Specialty Retail IN	Specialty Retail OUT	Drinking Place IN	Drinking Place OUT	**Total Site IN**	**Total Site OUT**
AM Peak Adjacent Street	46	20	5	1	---	**72**	35	11	18	2	1	4	1	0	---	---	55	17
PM Peak Adjacent Street	47	19	6	3	14	**89**	16	31	3	16	4	2	1	2	9	5	33	56
AM Peak Hour of Generator	49	20	5	9	---	**83**	34	15	18	2	2	3	5	4	---	---	59	24
PM Peak Hour of Generator	47	19	6	6	19	**97**	24	23	3	16	4	2	3	3	13	6	47	50
Saturday Peak Hour of Gen.	18	5	5	8	21	**57**	9	9	3	2	3	2	4	4	14	7	33	24

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/2/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	107,171	sf	198	178	20
Retail	814	2,700	sf	3	2	1
Restaurant	936	2,500	sf	0		
Cinema/Entertainment				0		
Residential	220	10	units	5	1	4
Hotel	310	105	rooms	59	35	24
All Other Land Uses[2]	140	68,588	sf	50	38	12
Total				315	254	61

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	5	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	315	254	61
Internal Capture Percentage	4%	2%	10%
External Vehicle-Trips[3]	303	248	55
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	5%
Retail	50%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	0%	21%

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	178	178	1.00	20	20
Retail	1.00	2	2	1.00	1	1
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	1	1	1.00	4	4
Hotel	1.00	35	35	1.00	24	24

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	13	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	18	3	2	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	7		0	0	0	0
Restaurant	25	0		0	0	1
Cinema/Entertainment	0	0	0		0	0
Residential	5	0	0	0		0
Hotel	5	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	5	173	178	173	0	0
Retail	1	1	2	1	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	1	0	0
Hotel	0	35	35	35	0	0
All Other Land Uses[3]	0	38	38	38	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	19	20	19	0	0
Retail	0	1	1	1	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	4	4	4	0	0
Hotel	5	19	24	19	0	0
All Other Land Uses[3]	0	12	12	12	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/2/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	107,171	sf	190	29	161
Retail	814	3,798	sf	10	5	5
Restaurant	936	2,500	sf	28	18	10
Cinema/Entertainment				0	0	0
Residential	220	10	units	6	4	2
Hotel	310	105	rooms	62	34	28
All Other Land Uses[2]	140	68,588	sf	51	18	33
Total				347	108	239

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	1	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	347	108	239
Internal Capture Percentage	5%	7%	3%
External Vehicle-Trips[3]	331	100	231
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	60%	40%
Restaurant	11%	50%
Cinema/Entertainment	N/A	N/A
Residential	50%	0%
Hotel	3%	4%

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	29	29	1.00	161	161
Retail	1.00	5	5	1.00	5	5
Restaurant	1.00	18	18	1.00	10	10
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	4	4	1.00	2	2
Hotel	1.00	34	34	1.00	28	28

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		32	6	0	3	0
Retail	0		1	0	1	0
Restaurant	0	4		1	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	4	19	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	9		5	0	2	6
Restaurant	9	3		0	1	24
Cinema/Entertainment	2	0	1		0	0
Residential	17	1	3	0		4
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	29	29	29	0	0
Retail	3	2	5	2	0	0
Restaurant	2	16	18	16	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	2	4	2	0	0
Hotel	1	33	34	33	0	0
All Other Land Uses[3]	0	18	18	18	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	161	161	161	0	0
Retail	2	3	5	3	0	0
Restaurant	5	5	10	5	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	1	27	28	27	0	0
All Other Land Uses[3]	0	33	33	33	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/2/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed AM Generator Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	107,171	sf	198	178	20
Retail	814	2,700	sf	26	13	13
Restaurant	936	2,500	sf	0	0	0
Cinema/Entertainment				0	0	0
Residential	220	10	units	6	2	4
Hotel	310	105	rooms	55	30	25
All Other Land Uses[2]	140	68,588	sf	53	37	16
Total				338	260	78

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	0	0
Retail	4		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	5	1	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	338	260	78
Internal Capture Percentage	8%	5%	18%
External Vehicle-Trips[3]	310	246	64
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	5%	20%
Retail	38%	31%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	0%	24%

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	178	178	1.00	20	20
Retail	1.00	13	13	1.00	13	13
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	2	2	1.00	4	4
Hotel	1.00	30	30	1.00	25	25

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	13	0	0	0
Retail	4		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	19	4	2	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	0	0
Retail	7		0	0	0	0
Restaurant	25	1		0	0	1
Cinema/Entertainment	0	0	0		0	0
Residential	5	2	0	0		0
Hotel	5	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	9	169	178	169	0	0
Retail	5	8	13	8	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	30	30	30	0	0
All Other Land Uses[3]	0	37	37	37	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	16	20	16	0	0
Retail	4	9	13	9	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	4	4	4	0	0
Hotel	6	19	25	19	0	0
All Other Land Uses[3]	0	16	16	16	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Portland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	4/2/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Proposed PM Generator Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	107,171	sf	190	29	161
Retail	814	2,700	sf	19	10	9
Restaurant	936	2,500	sf	39	27	12
Cinema/Entertainment				0	0	0
Residential	220	10	units	7	4	3
Hotel	310	105	rooms	64	38	26
All Other Land Uses[2]	140	68,588	sf	51	26	25
Total				370	134	236

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	0		3	0	2	0
Restaurant	0	5		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	1	0		0
Hotel	0	0	1	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	370	134	236
Internal Capture Percentage	9%	13%	7%
External Vehicle-Trips[3]	336	117	219
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	1%
Retail	70%	56%
Restaurant	22%	58%
Cinema/Entertainment	N/A	N/A
Residential	75%	67%
Hotel	3%	4%

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	29	29	1.00	161	161
Retail	1.00	10	10	1.00	9	9
Restaurant	1.00	27	27	1.00	12	12
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	4	4	1.00	3	3
Hotel	1.00	38	38	1.00	26	26

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		32	6	0	3	0
Retail	0		3	0	2	0
Restaurant	0	5		1	2	1
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	1	0		0
Hotel	0	4	18	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	9		8	0	2	6
Restaurant	9	5		0	1	27
Cinema/Entertainment	2	0	1		0	0
Residential	17	1	4	0		5
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	29	29	29	0	0
Retail	7	3	10	3	0	0
Restaurant	6	21	27	21	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	1	4	1	0	0
Hotel	1	37	38	37	0	0
All Other Land Uses[3]	0	26	26	26	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	2	159	161	159	0	0
Retail	5	4	9	4	0	0
Restaurant	7	5	12	5	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	1	3	1	0	0
Hotel	1	25	26	25	0	0
All Other Land Uses[3]	0	25	25	25	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

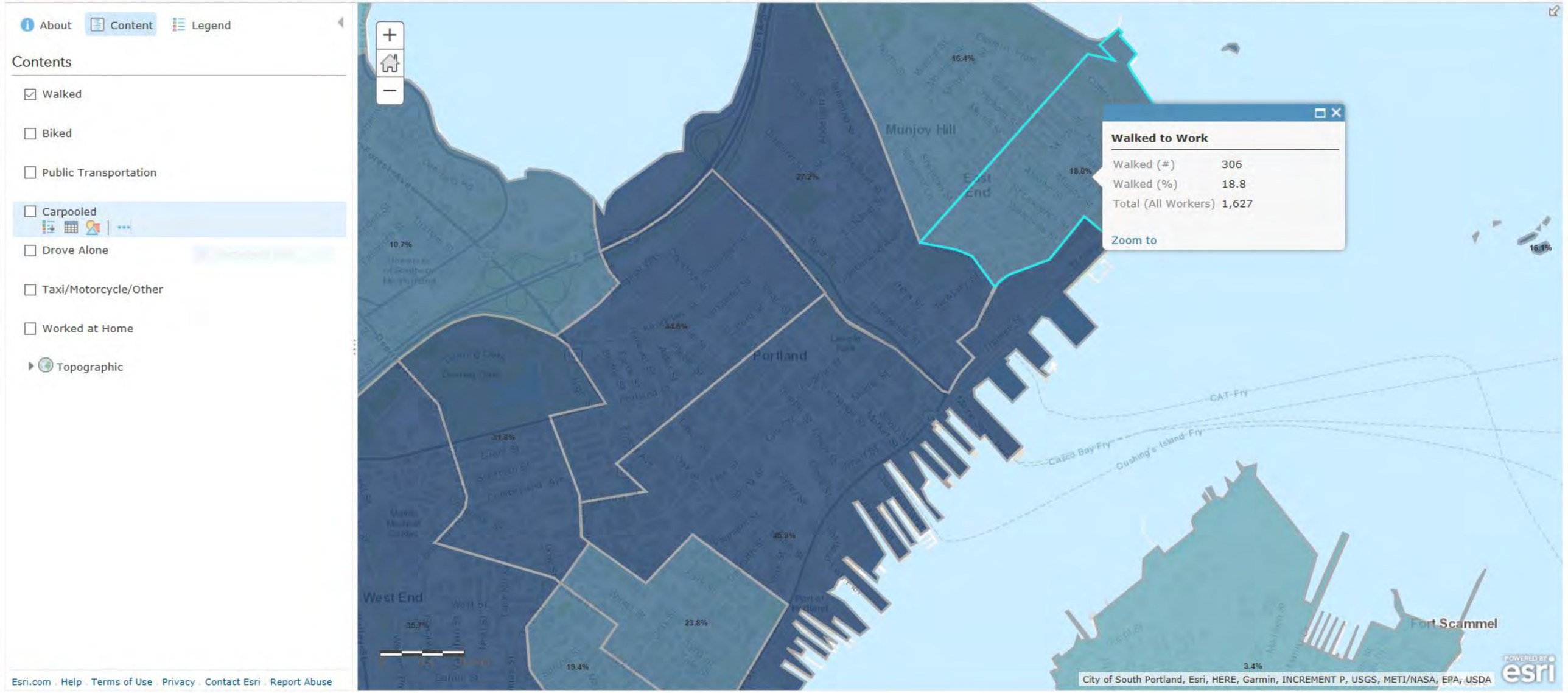
JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Existing Site Trip Generation After Shared Use Reduction

Time Period	Manufacturing	General Office Building	Apartment	Specialty Retail	Drinking Place	**Total Site Trip Ends**	Manufacturing		General Office Building		Apartment		Specialty Retail		Drinking Place		**Total Site**	
							IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	**IN**	**OUT**
AM Peak Adjacent Street	46	20	5	1	---	**72**	35	11	18	2	1	4	1	0	---	---	**55**	**17**
PM Peak Adjacent Street	47	19	5	2	12	**85**	16	31	3	16	3	2	1	1	8	4	**31**	**54**
AM Peak Hour of Generator	49	18	5	7	---	**79**	34	15	17	1	2	3	4	3	---	---	**57**	**22**
PM Peak Hour of Generator	47	19	4	3	16	**89**	24	23	3	16	2	2	2	1	12	4	**43**	**46**
*Saturday Peak Hour of Gen.	18	5	5	7	20	**55**	9	9	3	2	3	2	3	4	14	6	**32**	**23**

* - NCHRP does not provide shared use reduction information for the Saturday Peak Hour of the Gen. so the average reduction of the other peak hours (4%) was used.



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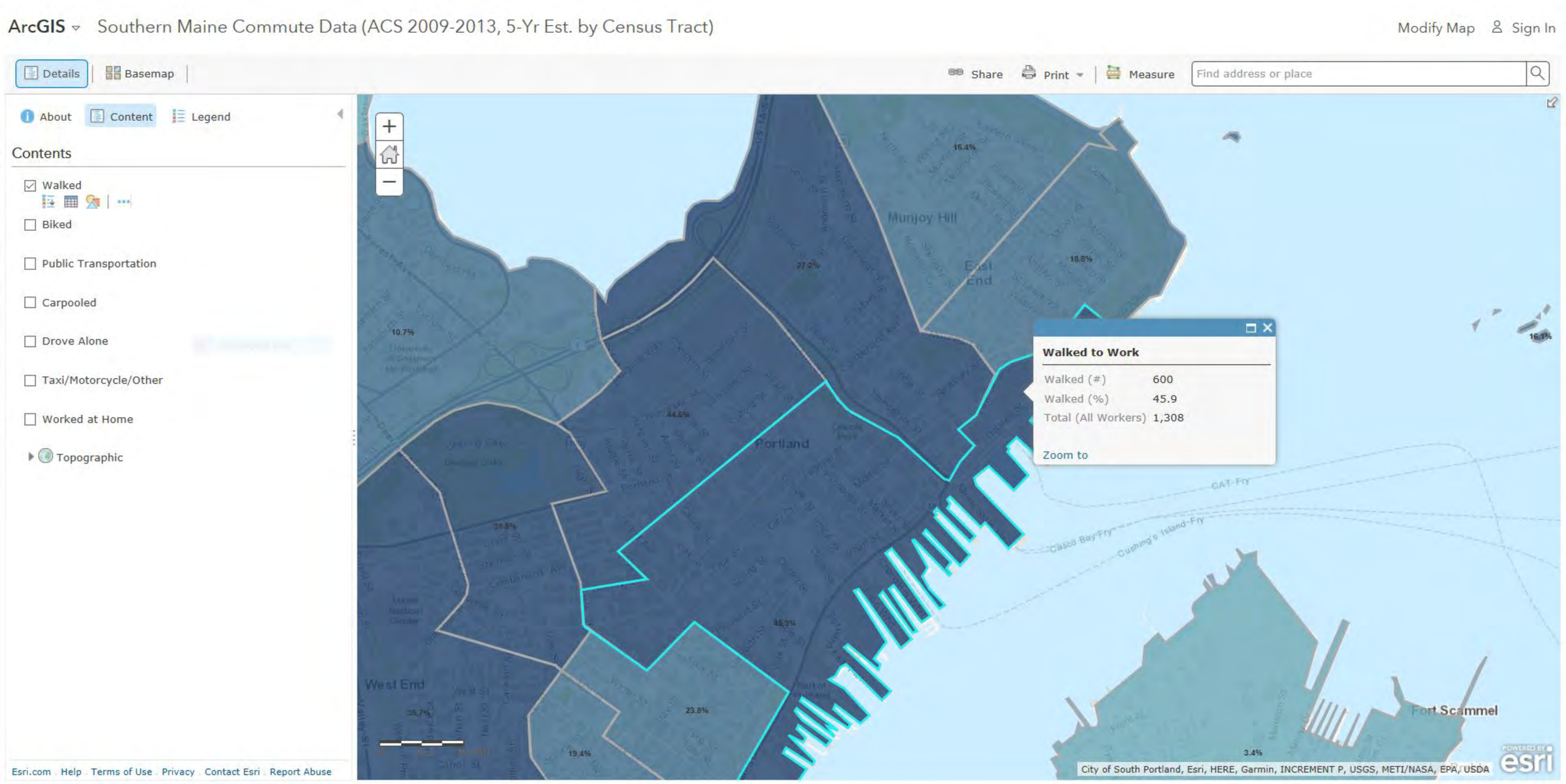
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19.4%
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Walked (%) 45.9
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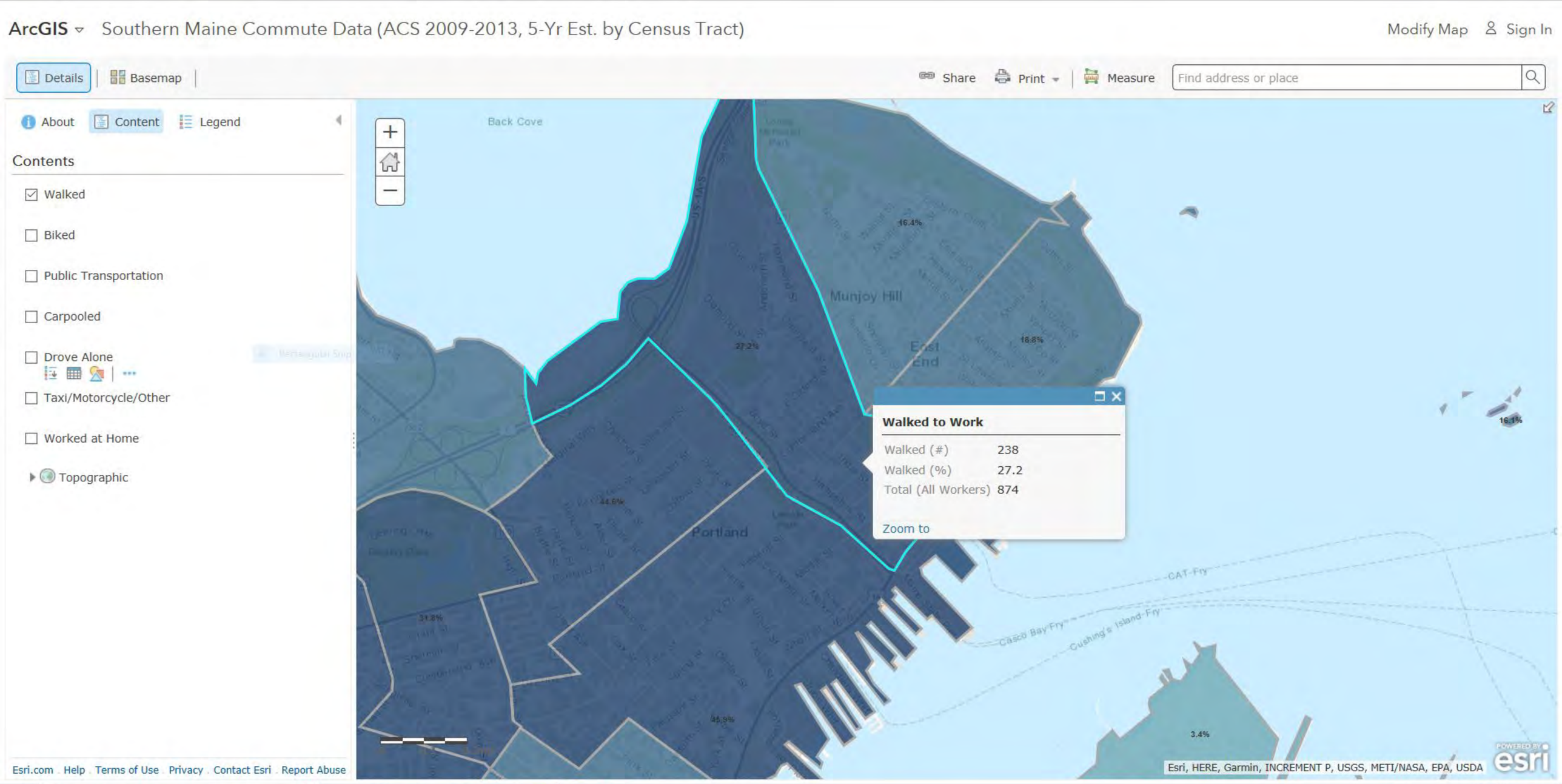
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Taxi/Motorcycle/Other
Worked at Home
Topographic
Back Cove
Munjoy Hill
East End
Portland
16.4%
18.8%
27.2%
44.6%
31.8%
46.9%
16.1%
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Walked to Work
Walked (#) 238
Walked (%) 27.2
Total (All Workers) 874
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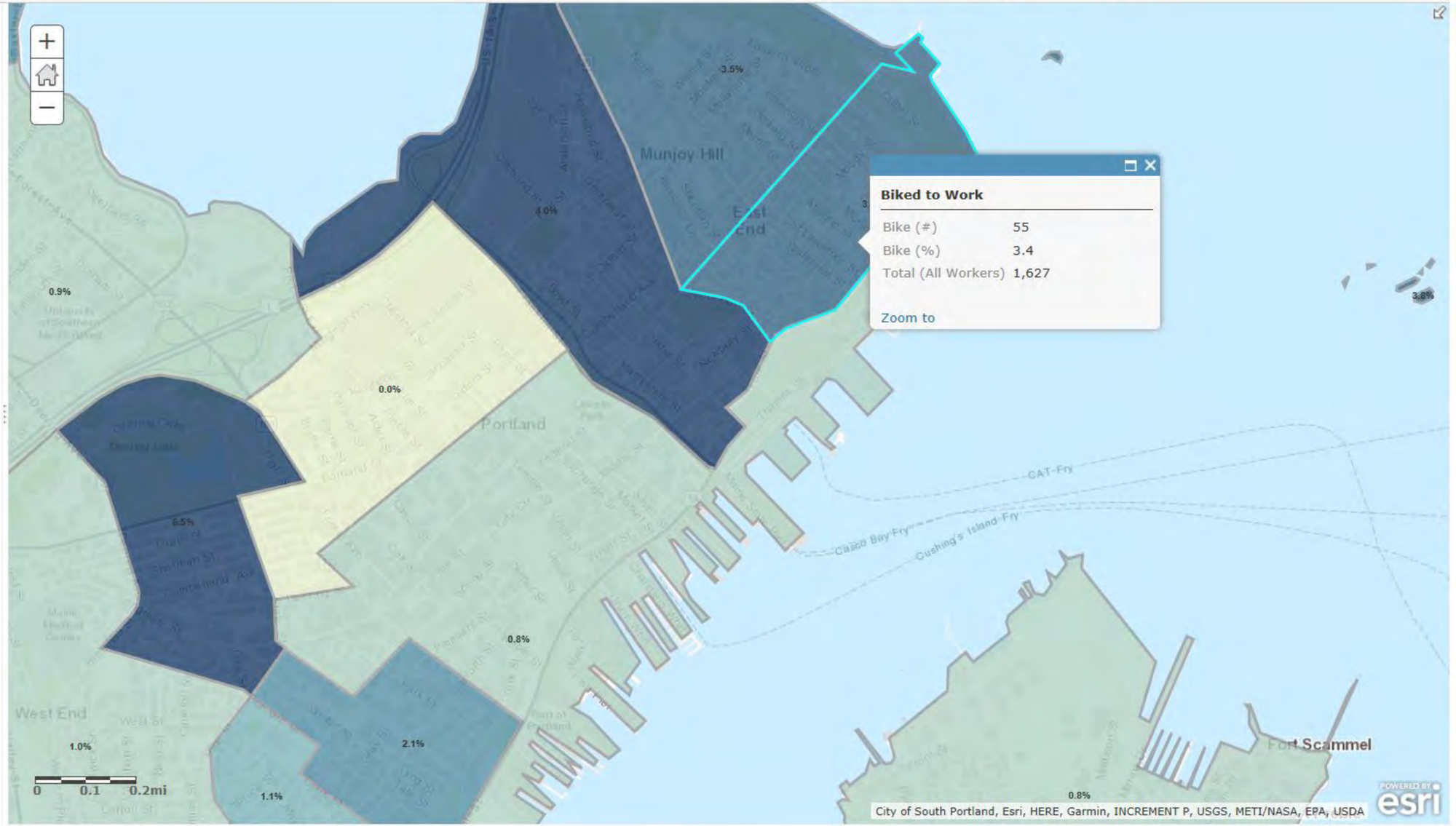

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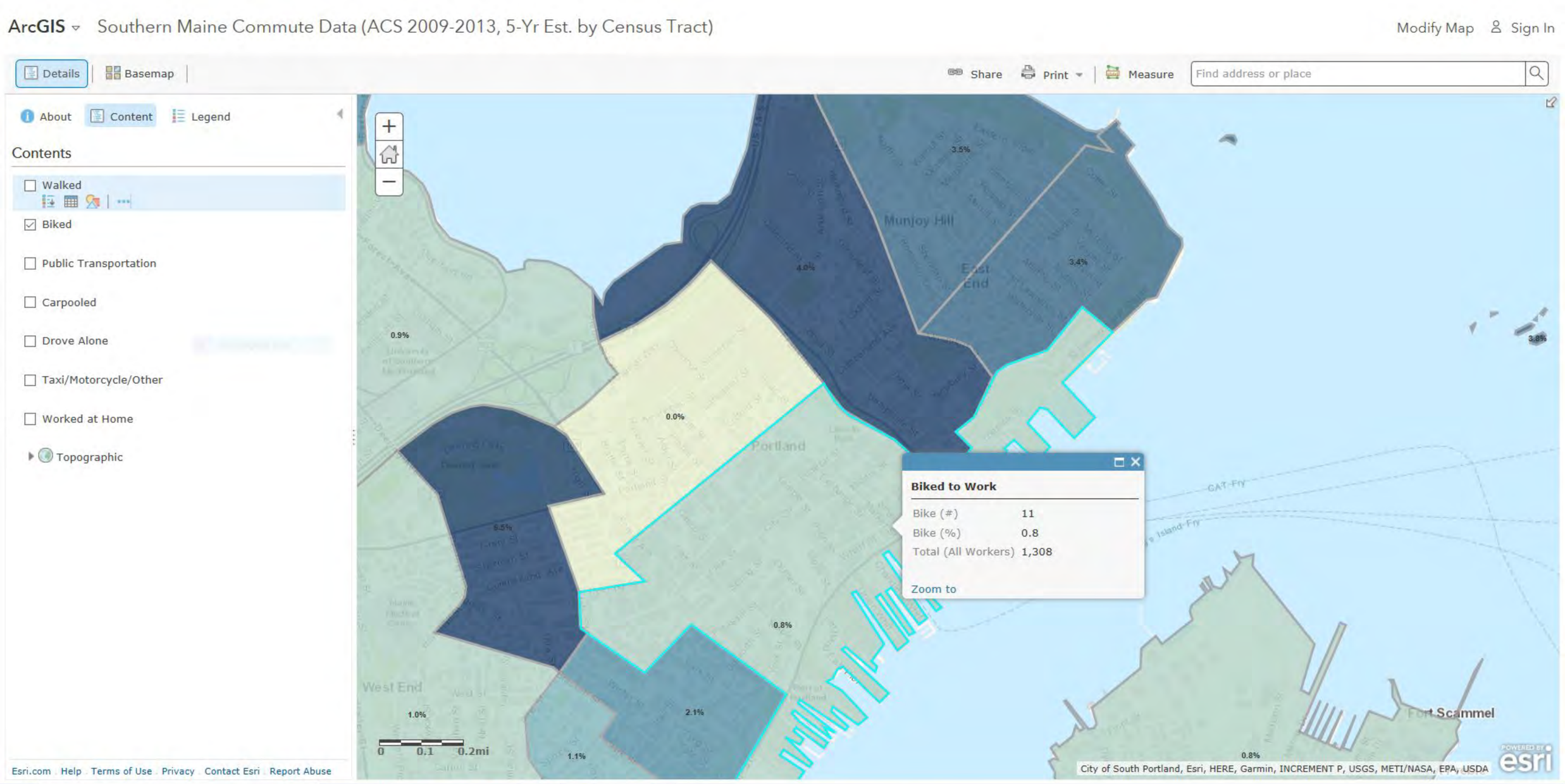
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Munjoy Hill
East End
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Biked to Work
Bike (#) 11
Bike (%) 0.8
Total (All Workers) 1,308
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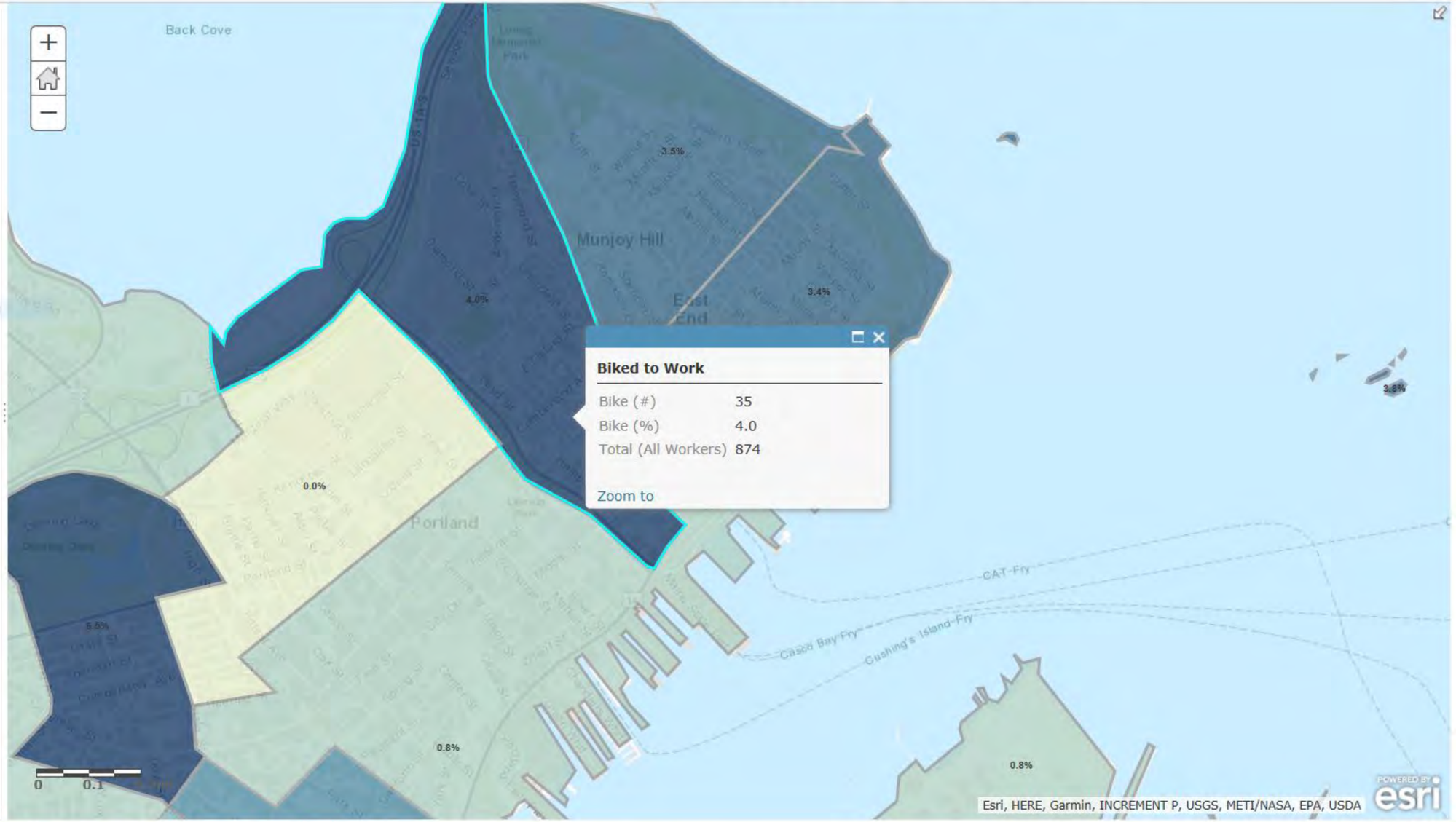

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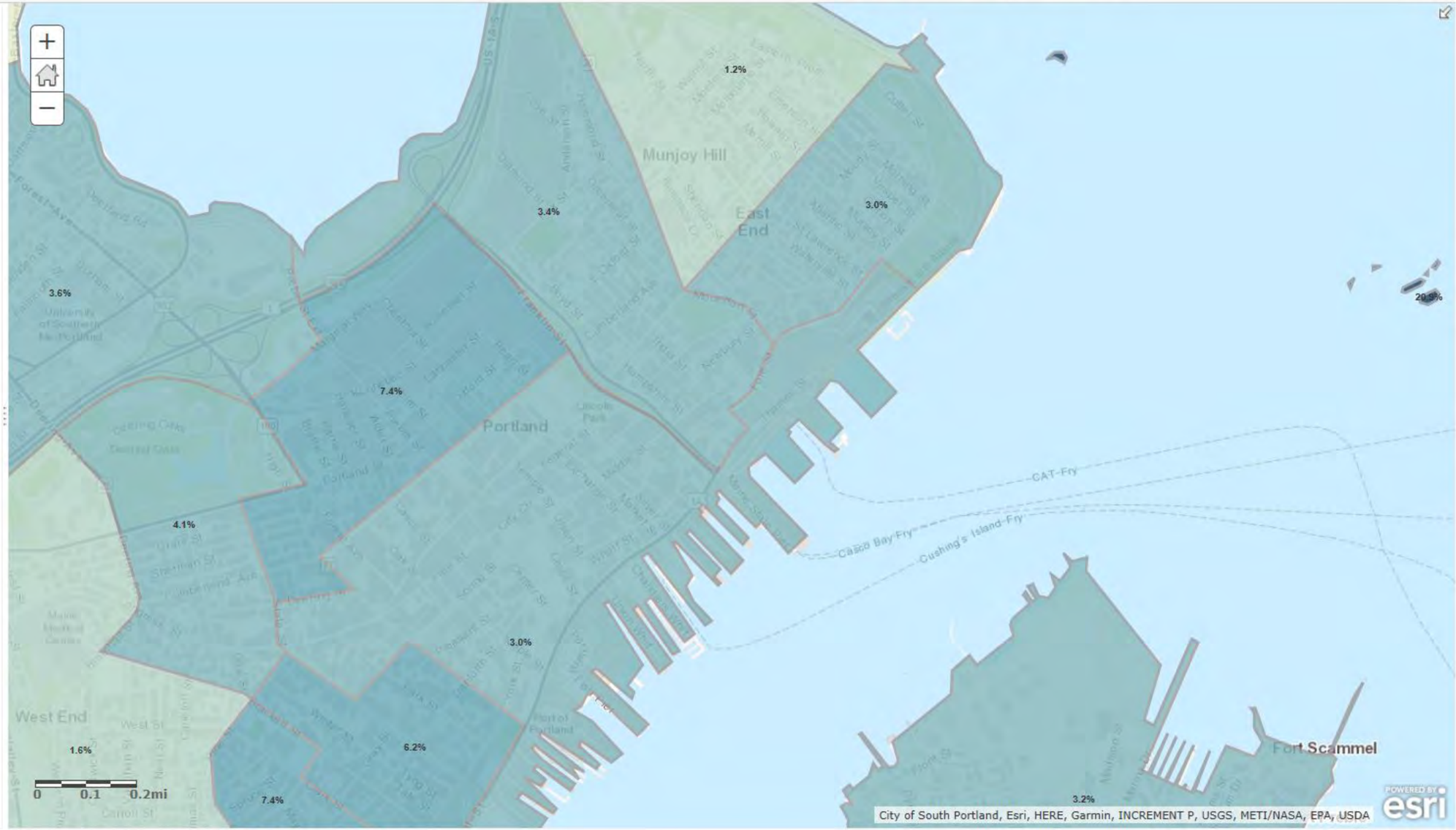

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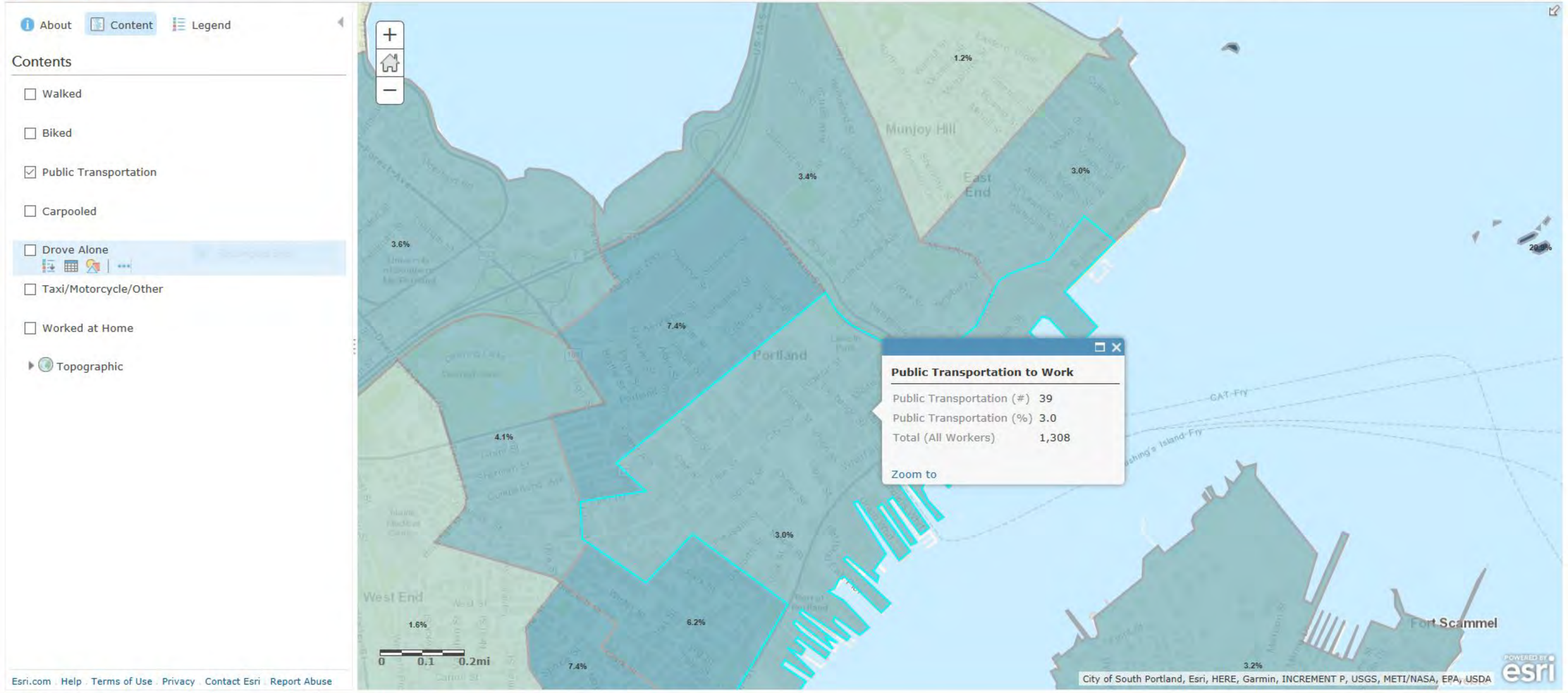

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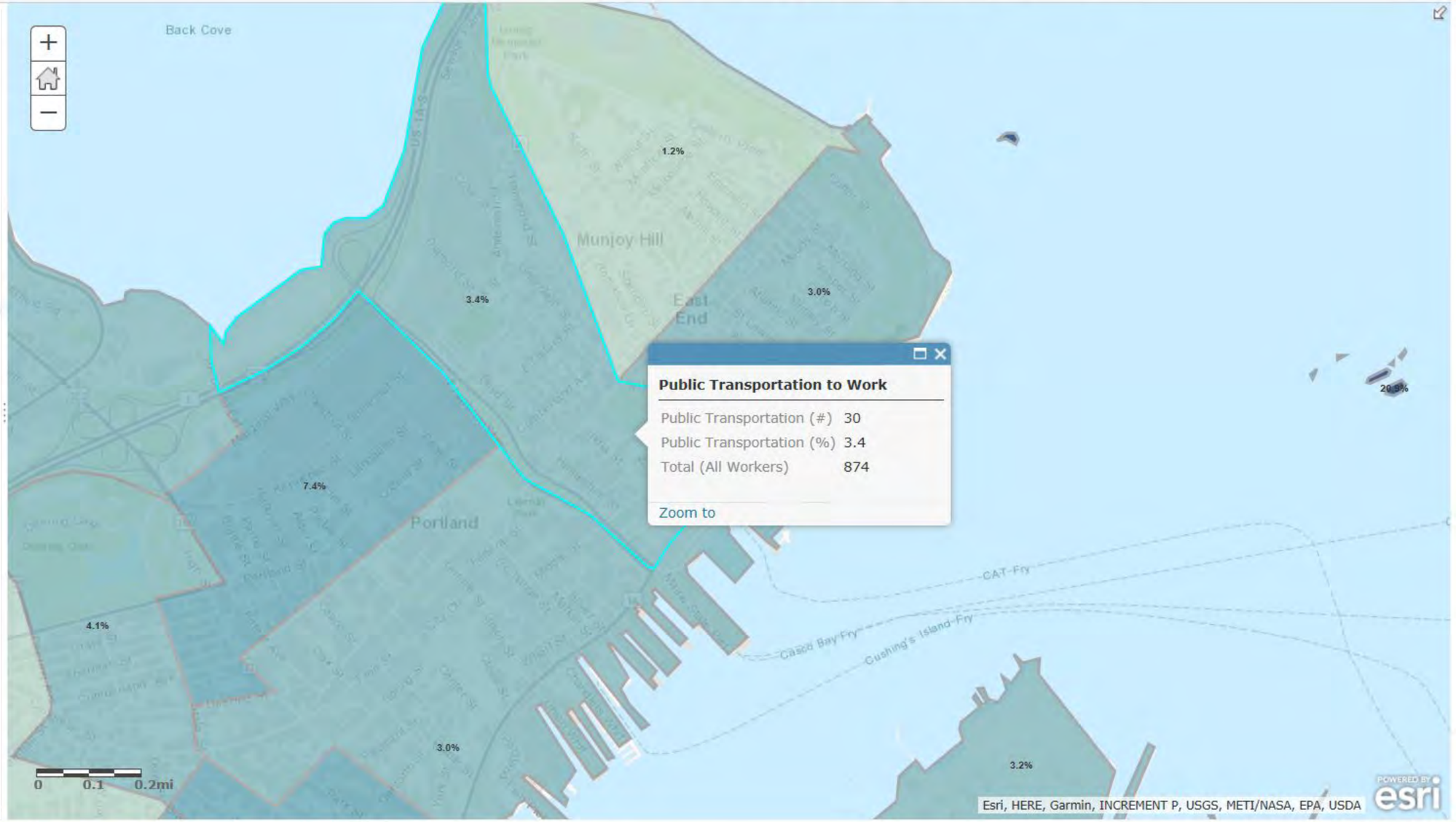
- [ ] Worked at Home
- [ ] Topographic



Public Transportation to Work

Public Transportation (#)	30
Public Transportation (%)	3.4
Total (All Workers)	874

Zoom to

Type here to search 12:19 PM 3/7/2018

Emily Tynes

From: Christine Grimando <cdg@portlandmaine.gov> on behalf of Christine Grimando
Sent: Thursday, December 1, 2016 2:44 PM
To: Randy Dunton
Cc: Tom Errico; Jeremiah Bartlett; David Senus; Mary McCrann; Emily Tynes; Bruce Hyman; Kevin Costello; Jeff Levine; Stuart O'Brien
Subject: Re: Trip Distribution - 58 Fore Street Project

Randy,

In the course of reviewing the TMP application materials for the other modes reductions, we've concluded that the 35.8% reduction discussed at the scoping meetings is appropriate to account for residential uses, and 10% for hotel use, but that trips for other, non-residential uses warrant a separate approach. For those work and non-work trips to the site, we propose an assumption of an 18% reduction based on 2010 CTPP data (http://ctpp.transportation.org/Pages/5-Year-Data.aspx) for Tract 3, which includes the eastern waterfront and downtown, and shows a drive to work alone rate of 78% and a total ratio of cars to workers of 82% when carpooling is accounted for.

If you have another way to calculate these reductions, we are open to discussing alternatives, as well. However, we would like to make sure the work and non-work trips reflect the fact that those workers and other visitors will be coming from a broad commuter/market area and therefore these trips are likely to have a lower reduction than home-based trips.

As Tom Errico's prior comments reflect, we expect to see these reductions linked to and supported by the robustness of the TDM plan.

Christine

Christine Grimando, AICP
Senior Planner
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

A202105 - Means of Transportation (18) (Workers 16 years and over)

Current date: 4/4/2018 10:13:02 AM (Eastern Daylight Time)

Measures: Workers 16 and Over

WORKPLACE		Census Tract 3, Cumberland County, Maine
Means of Transportation 18	Output	
Total, means of transportation	Estimate	17,470
	Margin of Error	783
Car, truck, or van -- Drove alone	Estimate	13,640
	Margin of Error	788
Car, truck, or van -- In a 2-person carpool	Estimate	1,245
	Margin of Error	233
Car, truck, or van -- In a 3-person carpool	Estimate	80
	Margin of Error	59
Car, truck, or van -- In a 4-person carpool	Estimate	60
	Margin of Error	51
Car, truck, or van -- In a 5-or-6-person carpool	Estimate	15
	Margin of Error	19
Car, truck, or van -- In a 7-or-more-person carpool	Estimate	30
	Margin of Error	37
Bus or trolley bus	Estimate	280
	Margin of Error	99
Streetcar or trolley car	Estimate	0
	Margin of Error	119
Subway or elevated	Estimate	0
	Margin of Error	119
Railroad	Estimate	4
	Margin of Error	2
Ferryboat	Estimate	60
	Margin of Error	36
Bicycle	Estimate	280
	Margin of Error	119
Walked	Estimate	1,570
	Margin of Error	260
Taxicab	Estimate	15
	Margin of Error	20
Motorcycle	Estimate	15
	Margin of Error	22

A202105 - Means of Transportation (18) (Workers 16 years and over)

Current date: 4/4/2018 10:13:02 AM (Eastern Daylight Time)

Measures: Workers 16 and Over

WORKPLACE		Census Tract 5, Cumberland County, Maine
Means of Transportation 18	Output	
Total, means of transportation	Estimate	2,195
	Margin of Error	331
Car, truck, or van -- Drove alone	Estimate	1,800
	Margin of Error	284
Car, truck, or van -- In a 2-person carpool	Estimate	125
	Margin of Error	55
Car, truck, or van -- In a 3-person carpool	Estimate	0
	Margin of Error	119
Car, truck, or van -- In a 4-person carpool	Estimate	10
	Margin of Error	14
Car, truck, or van -- In a 5-or-6-person carpool	Estimate	10
	Margin of Error	18
Car, truck, or van -- In a 7-or-more-person carpool	Estimate	0
	Margin of Error	119
Bus or trolley bus	Estimate	25
	Margin of Error	44
Streetcar or trolley car	Estimate	0
	Margin of Error	119
Subway or elevated	Estimate	0
	Margin of Error	119
Railroad	Estimate	0
	Margin of Error	119
Ferryboat	Estimate	15
	Margin of Error	21
Bicycle	Estimate	4
	Margin of Error	18
Walked	Estimate	135
	Margin of Error	91
Taxicab	Estimate	0
	Margin of Error	119
Motorcycle	Estimate	0
	Margin of Error	119

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Non-Residential	15.0%
Residential	35.8%

Total Existing Site Trip Generation After Shared Use Reduction and Multimodal Reductior

Time Period	Manufacturing	General Office Building	Apartment	Specialty Retail	Drinking Place	**Total Site Trip Ends**	Manufacturing IN	Manufacturing OUT	General Office Building IN	General Office Building OUT	Apartment IN	Apartment OUT	Specialty Retail IN	Specialty Retail OUT	Drinking Place IN	Drinking Place OUT	**Total Site IN**	**Total Site OUT**
AM Peak Adjacent Street	39	17	3	1	---	**60**	30	9	15	2	1	2	1	0	---	---	**47**	**13**
PM Peak Adjacent Street	40	16	3	2	10	**71**	14	26	3	13	2	1	1	1	7	3	**27**	**44**
AM Peak Hour of Generator	42	15	3	6	---	**66**	29	13	14	1	1	2	3	3	---	---	**47**	**19**
PM Peak Hour of Generator	40	16	3	3	12	**75**	20	20	3	13	1	2	1	2	10	2	**35**	**40**
Saturday Peak Hour of Gen.	15	4	3	6	17	**46**	8	7	3	1	2	1	3	3	12	5	**28**	**18**

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Proposed) Apartment
Land Use Code (LUC) 220

Dwelling Units: 10

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Sample Size		Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT
Weekday	T = 6.72 (X)	67	86		50%	50%	34	33
AM Peak Hour of Adj. Street Traffic	T = 0.51 (X)	5	78		20%	80%	1	4
PM Peak Hour of Adj. Street Traffic	T = 0.62 (X)	6	90		65%	35%	4	2
AM Peak Hour of Generator	T = 0.55 (X)	6	81		30%	70%	2	4
PM Peak Hour of Generator	T = 0.67 (X)	7	83		60%	40%	4	3
Saturday	T = 6.39 (X)	64	15		50%	50%	32	32
Saturday Peak Hour of Gen.	T = 0.52 (X)	5	14	**	50%	50%	3	2

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Proposed) Hotel
Land Use Code (LUC) 310

Rooms: 105

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distribution	
				IN	OUT	IN	OUT
Weekday	T = 8.17 (X)	858	10	50%	50%	429	429
AM Peak Hour of Adj. Street Traffic	T = 0.56 (X)	59	20	60%	40%	35	24
PM Peak Hour of Adj. Street Traffic	T = 0.59 (X)	62	25	55%	45%	34	28
AM Peak Hour of Generator	T = 0.52 (X)	55	32	55%	45%	30	25
PM Peak Hour of Generator	T = 0.61 (X)	64	35	60%	40%	38	26
Saturday	T = 8.19 (X)	860	8	50%	50%	430	430
Saturday Peak Hour of Gen.	T = 0.72 (X)	76	9	55%	45%	42	34

* Percentages rounded to nearest 5%

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Proposed) General Office Building
Land Use Code (LUC) 710

Square Feet 107,171

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	Ln (T) = 0.77 Ln (X) + 3.65	1407	78	50%	50%	704	703	0.80
AM Peak Hour	**Ln (T) = 0.80 Ln (X) + 1.55**	**198**	**217**	**90%**	**10%**	**178**	**20**	**0.83**
PM Peak Hour	T = 1.12 (X) + 78.81	199	235	15%	85%	30	169	0.82
Saturday	T = 2.14 (X) + 18.47	248	17	50%	50%	124	124	0.66
Peak Hour of Generator	Ln (T) = 0.81 Ln (X) - 0.12	39	10	55%	45%	21	18	0.59

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 11.01 (X)	1180	78	50%	50%	590	590	---
AM Peak Hour	T = 1.55 (X)	166	217	90%	10%	149	17	---
PM Peak Hour	T = 1.49 (X)	160	235	15%	85%	24	136	---
Saturday	T = 2.37 (X)	254	17	50%	50%	127	127	---
Saturday Peak Hour of Gen.	T = 0.41 (X)	44	10	50%	50%	22	22	---

* Percentages rounded to nearest 5%

PM Peak Hour:	**T = 1.49/1.55 (AM Peak)**	**190**	**15%**	**85%**	**29**	**161**	**---**
SAT Peak Hour:	**T = 0.41/1.55 (AM Peak)**	**52**	**50%**	**50%**	**26**	**26**	**---**

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Proposed) Manufacturing
Land Use Code (LUC) 140

Gross Floor Area 68,588

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split *		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	T = 3.82 (X)	262	62		50%	50%	131	131
AM Peak Adjacent Street	T = 0.73 (X)	50	50		75%	25%	38	12
PM Peak Adjacent Street	T = 0.74 (X)	51	54		35%	65%	18	33
AM Peak Hour of Generator	T = 0.78 (X)	53	50		70%	30%	37	16
PM Peak Hour of Generator	T = 0.75 (X)	51	50		50%	50%	26	25
Saturday	T = 1.49 (X)	102	2		50%	50%	51	51
Saturday Peak Hour of Gen.	T = 0.28 (X)	19	2	**	50%	50%	10	9

* Percentages rounded to nearest 5%

** Not Available (Assumption)

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

(Proposed) Specialty Retail Center
Land Use Code (LUC) 814

Gross Floor Area (ft^2): 3,798

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split *		Directional Distributio	
				IN	OUT	IN	OUT
Weekday	T = 44.32 (X)	168	4	50%	50%	84	84
Peak Hour of Adjacent Street Traffic 7-9 AM**	T = 0.74 (X)	3	N/A	60%	40%	2	1
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	10	5	45%	55%	5	5
AM Peak Hour of Generator	T = 6.84 (X)	26	4	50%	50%	13	13
PM Peak Hour of Generator	T = 5.02 (X)	19	3	55%	45%	10	9
Saturday	T = 42.04 (X)	160	3	50%	50%	80	80
Saturday Peak Hour of Gen.***	T = 6.63 (X)	25	3	50%	50%	13	12

**Based on ratio of AM/PM traffic for LUC 820, Shopping Center and applied to 814 PM rate.

* Percentages rounded to nearest 5%

***Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

(Proposed) Drinking Place
Land Use Code (LUC) 936

Square Feet 2,500

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies		Directional Split *		Directional Distribution	
					IN	OUT	IN	OUT
Weekday	---	---	---		---	---	---	---
PM Peak Hour of Adj. St.	T = 11.34 (X)	28	12		65%	35%	18	10
PM Peak Hour of Gen.	T = 15.49 (X)	39	8		70%	30%	27	12
Saturday	---	---	---		---	---	---	---
Sat. Peak Hour of Generator	T = 16.48 (X)*	41	---	***	65%	35%	27	14

*Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 932 - High-Turnover (Sit-Down) Restaurant

** Percentages rounded to nearest 5%

***Directional split for this peak hour assumed based on other peak hours for this land use and the directional split for LUC

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Proposed Site Trip Generation

Time Period	Apartment	Hotel	General Office Building	Manufacturing	Specialty Retail	Drinking Place	Total Site	Apartment		Hotel		General Office Building		Manufacturing		Specialty Retail		Drinking Place		Total Site	
								IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
AM Peak Adjacent Street	5	59	198	50	3	---	**315**	1	4	35	24	178	20	38	12	2	1	---	---	254	61
PM Peak Adjacent Street	6	62	190	51	10	28	**347**	4	2	34	28	29	161	18	33	5	5	18	10	108	239
AM Peak Hour of Generator	6	55	198	53	26	---	**338**	2	4	30	25	178	20	37	16	13	13	---	---	260	78
PM Peak Hour of Generator	7	64	190	51	19	39	**370**	4	3	38	26	29	161	26	25	10	9	27	12	134	236
Saturday Peak Hour of Gen.	5	76	52	19	25	41	**218**	3	2	42	34	26	26	10	9	13	12	27	14	121	97

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	20	18	2
Retail	814	1,250	sf	1	1	0
Restaurant	936	1,250	sf	0	0	0
Cinema/Entertainment						
Residential	220	9	dwelling units	5	1	4
Hotel						
All Other Land Uses[2]	140	63,045	sf	46	35	11
Total				72	55	17

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	72	55	17
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[3]	72	55	17
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	0%	N/A
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	18	18	1.00	2	2
Retail	1.00	1	1	1.00	0	0
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	1	1	1.00	4	4
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		0	0	0	0
Restaurant	3	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	0	0	0		0
Hotel	1	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	18	18	18	0	0
Retail	0	1	1	1	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	1	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	35	35	35	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	2	2	2	0	0
Retail	0	0	0	0	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	4	4	4	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	11	11	11	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	19	3	16
Retail	814	1,250	sf	3	1	2
Restaurant	936	1,250	sf	14	9	5
Cinema/Entertainment						
Residential	220	9	dwelling units	6	4	2
Hotel						
All Other Land Uses[2]	140	63,045	sf	47	16	31
Total				89	33	56

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	0	0
Restaurant	0	0		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	89	33	56
Internal Capture Percentage	4%	6%	4%
External Vehicle-Trips[3]	85	31	54
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	0%	50%
Restaurant	11%	20%
Cinema/Entertainment	N/A	N/A
Residential	25%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	3	3	1.00	16	16
Retail	1.00	1	1	1.00	2	2
Restaurant	1.00	9	9	1.00	5	5
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	4	4	1.00	2	2
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	0		1	0	1	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		3	0	2	0
Restaurant	1	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	0	1	0		0
Hotel	0	0	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	3	3	3	0	0
Retail	0	1	1	1	0	0
Restaurant	1	8	9	8	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	3	4	3	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	16	16	16	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	16	16	16	0	0
Retail	1	1	2	1	0	0
Restaurant	1	4	5	4	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	31	31	31	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing AM Generator Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	20	18	2
Retail	814	1,250	sf	9	5	4
Restaurant	936	1,250	sf			
Cinema/Entertainment						
Residential	220	9	dwelling units	5	2	3
Hotel						
All Other Land Uses[2]	140	63,045	sf	49	34	15
Total				83	59	24

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	83	59	24
Internal Capture Percentage	5%	3%	8%
External Vehicle-Trips[3]	79	57	22
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	6%	50%
Retail	20%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	18	18	1.00	2	2
Retail	1.00	5	5	1.00	4	4
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	2	2	1.00	3	3
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	1		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	1		0	0	0	0
Restaurant	3	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	0	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	17	18	17	0	0
Retail	1	4	5	4	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	34	34	34	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	1	3	4	3	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	3	3	3	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	15	15	15	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Shipyard	**Organization:**	
Project Location:	Protland	**Performed By:**	JAP
Scenario Description:	Shipyard Redevelopment and Expansion	**Date:**	3/6/2018
Analysis Year:	2018	**Checked By:**	
Analysis Period:	**Existing PM Generator Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	6,082	sf	19	3	16
Retail	814	1,250	sf	6	3	3
Restaurant	936	1,250	sf	19	13	6
Cinema/Entertainment						
Residential	220	9	dwelling units	6	4	2
Hotel						
All Other Land Uses[2]	140	63,045	sf	47	24	23
Total				97	47	50

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		1	0	1	0
Restaurant	0	1		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	97	47	50
Internal Capture Percentage	8%	9%	8%
External Vehicle-Trips[3]	89	43	46
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	0%
Retail	33%	67%
Restaurant	8%	33%
Cinema/Entertainment	N/A	N/A
Residential	50%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute

Project Name:	Shipyard
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	3	3	1.00	16	16
Retail	1.00	3	3	1.00	3	3
Restaurant	1.00	13	13	1.00	6	6
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	4	4	1.00	2	2
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	1	0	0	0
Retail	0		1	0	1	0
Restaurant	0	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		4	0	2	0
Restaurant	1	2		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	0	2	0		0
Hotel	0	0	1	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	3	3	3	0	0
Retail	1	2	3	2	0	0
Restaurant	1	12	13	12	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	2	4	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	24	24	24	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	16	16	16	0	0
Retail	2	1	3	1	0	0
Restaurant	2	4	6	4	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	2	2	2	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	23	23	23	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

JN: 3184
Project Description: Shipyard Redevelopment
Project Location: Portland, ME
Date: 3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Total Proposed Site Trip Generation After Shared Use Reduction

Time Period	Apartment	Hotel	General Office Building	Manufacturing	Specialty Retail	Drinking Place	Total Site	Apartment		Hotel		General Office Building		Manufacturing		Specialty Retail		Drinking Place		Total Site	
								IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	**IN**	**OUT**
AM Peak Adjacent Street	5	54	192	50	2	---	**303**	1	4	35	19	173	19	38	12	1	1	---	---	**248**	**55**
PM Peak Adjacent Street	4	60	190	51	5	21	**331**	2	2	33	27	29	161	18	33	2	3	16	5	**100**	**231**
AM Peak Hour of Generator	6	49	185	53	17	---	**310**	2	4	30	19	169	16	37	16	8	9	---	---	**246**	**64**
PM Peak Hour of Generator	2	62	188	51	7	26	**336**	1	1	37	25	29	159	26	25	3	4	21	5	**117**	**219**
*Saturday Peak Hour of Gen.	4	71	49	19	23	38	**204**	2	2	40	31	25	24	10	9	12	11	25	13	**114**	**90**

* - NCHRP does not provide shared use reduction information for the Saturday Peak Hour of the Gen. so the average reduction of the other peak hours (6%) was used.

JN:	3184
Project Description:	Shipyard Redevelopment
Project Location:	Portland, ME
Date:	3/6/2018

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Residential	35.8%
Non-Residential	15.0%
Hotel Reduction	10.0%

Total Proposed Site Trip Generation After Shared Use Reduction and Multimodal Reduction

Time Period	Apartment	Hotel	General Office Building	Manufacturing	Specialty Retail	Drinking Place	**Total Site**	Apartment		Hotel		General Office Building		Manufacturing		Specialty Retail		Drinking Place		**Total Site**	
								IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	**IN**	**OUT**
AM Peak Adjacent Street	3	49	163	42	2	---	**259**	3	0	32	17	147	16	32	10	1	1	---	---	**212**	**47**
PM Peak Adjacent Street	3	54	162	43	4	18	**284**	1	2	30	24	25	137	15	28	2	2	14	4	**86**	**198**
AM Peak Hour of Generator	4	44	157	45	15	---	**265**	3	1	27	17	144	13	31	14	7	8	---	---	**209**	**56**
PM Peak Hour of Generator	1	56	160	43	6	22	**288**	1	0	33	23	25	135	22	21	3	3	18	4	**101**	**187**
Saturday Peak Hour of Gen.	3	64	42	16	20	32	**177**	1	2	36	28	21	21	9	7	10	10	21	11	**97**	**80**

JN:	3184	Gorrill Palmer
Project Description:	Shipyard Redevelopment	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	3/6/2018	South Portland, Maine 04106

Net Site Trip Generation After Shared Use Reduction and Other Modes Reduction

Time Period	Total Site Trip Ends	Total Site IN	OUT
AM Peak Adjacent Street	**199**	165	34
PM Peak Adjacent Street	**213**	59	154
AM Peak Hour of Generator	**199**	162	37
PM Peak Hour of Generator	**213**	66	147
Saturday Peak Hour of Gen.	**131**	69	62

Section 2
Traffic Crashes

2.A. Crash Summary Data

Gorrill Palmer obtained the crash data from MaineDOT for the period of 2015-2017, the most recent period available (Attachment 2A).

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average **and**:

2. A minimum of eight crashes over the same three year period.

Based on the crash data provided by MaineDOT, there are no HCLs in the immediate vicinity of the site. Additionally, there have been no crashes involving pedestrians during the most recent three year period. However, there have been two crashes involving bicycles during the most recent three year period. One crash occurred at the intersection of Middle Street and India Street and involved a driver traveling northeast on Middle Street failing to yield to a cyclist traveling northwest on India Street. The other bicycle crash occurred at the intersection of Fore Street and Mountfort Street and involved a bicyclist on Mountfort Street southbound failing to stop at a stop sign and colliding with a vehicle traveling east on Fore Street. This project is not anticipated to exacerbate the conditions at either of these locations.

2.B. Attachments

Attachment 2A – Node Map, Crash Report

Attachment 2A

Node Map
Crash Report

PORTLAND NODE MAP

The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.095 Miles

1 inch = 0.07 miles

Date: 3/8/2018
Time: 10:04:34 PM

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☑ 1320 Summary

REPORT DESCRIPTION

Portland - Fore St., Middle St., Newbury St., Federal St. E., India St., Hancock St., Mountfort St.

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 0560286	Start Node: 18836	Start Offset: 0	☐ Exclude First Node
	End Node: 18822	End Offset: 0	☐ Exclude Last Node
Route: 0560524	Start Node: 18798	Start Offset: 0	☐ Exclude First Node
	End Node: 18820	End Offset: 0	☑ Exclude Last Node
Route: 0560344	Start Node: 18797	Start Offset: 0	☐ Exclude First Node
	End Node: 71558	End Offset: 0	☑ Exclude Last Node
Route: 0561000	Start Node: 18804	Start Offset: 0	☐ Exclude First Node
	End Node: 18822	End Offset: 0	☑ Exclude Last Node
Route: 0561110	Start Node: 18797	Start Offset: 0	☑ Exclude First Node
	End Node: 18798	End Offset: 0	☑ Exclude Last Node
Route: 0560531	Start Node: 18803	Start Offset: 0	☑ Exclude First Node
	End Node: 18802	End Offset: 0	☑ Exclude Last Node
Route: 0560531	Start Node: 18804	Start Offset: 0	☑ Exclude First Node
	End Node: 18803	End Offset: 0	☑ Exclude Last Node
Route: 0560505	Start Node: 18817	Start Offset: 0	☑ Exclude First Node
	End Node: 18818	End Offset: 0	☑ Exclude Last Node
Route: 0560344	Start Node: 71558	Start Offset: 0	☑ Exclude First Node
	End Node: 71560	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
18820	0560286 - 0.28	Int of FORE ST MOUNTFORT ST	2	1	0	0	1	0	0	100.0	2.189	0.15	0.46	0.00
												Statewide Crash Rate:	0.15	
18822	0560286 - 0.45	Int of FORE ST INDIA ST	2	1	0	0	0	1	0	100.0	4.377	0.08	0.41	0.00
												Statewide Crash Rate:	0.16	
18836	0560286 - 0.08	Int of FORE ST WATERVILLE ST	2	1	0	0	0	0	1	0.0	1.937	0.17	0.48	0.00
												Statewide Crash Rate:	0.15	
71558	0560286 - 0.37	Int of FORE ST HANCOCK ST	2	3	0	0	0	1	2	33.3	1.664	0.60	0.50	1.21
												Statewide Crash Rate:	0.15	
18798	0560524 - 0.14	Int of FEDERAL ST E MOUNTFORT ST	2	1	0	0	0	0	1	0.0	0.524	0.64	0.59	1.08
												Statewide Crash Rate:	0.14	
18802	0560524 - 0.17	Int of MOUNTFORT ST NEWBURY ST	2	1	0	0	0	0	1	0.0	0.495	0.67	0.59	1.13
												Statewide Crash Rate:	0.14	
18797	0560344 - 0	Int of FEDERAL ST E HANCOCK ST	2	1	0	0	0	0	1	0.0	0.130	2.56	0.40	6.38
												Statewide Crash Rate:	0.14	
18803	0560344 - 0.04	Int of HANCOCK ST NEWBURY ST	2	2	0	0	0	0	2	0.0	0.238	2.81	0.58	4.84
												Statewide Crash Rate:	0.14	
18818	0560344 - 0.09	Int of HANCOCK ST MIDDLE ST	2	0	0	0	0	0	0	0.0	0.542	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
18804	0561000 - 0.13	Int of INDIA ST NEWBURY ST	2	2	0	0	0	0	2	0.0	2.096	0.32	0.49	0.00
												Statewide Crash Rate:	0.16	
18817	0561000 - 0.18	Int of INDIA ST MIDDLE ST	2	5	0	0	1	1	3	40.0	2.569	0.65	0.47	1.39
												Statewide Crash Rate:	0.16	
71560	0560344 - 0.19	Int of HANCOCK ST THAMES ST	2	1	0	0	0	1	0	100.0	1.236	0.27	0.51	0.00
												Statewide Crash Rate:	0.14	
Study Years: 3.00		NODE TOTALS:		19	0	0	2	4	13	31.6	17.997	0.35	0.28	1.25

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
18820	18836	3131698	0 - 0.20	0560286 - 0.08	0.20	2	2	0	0	1	0	1	50.0	0.00373	178.82	452.35	0.00
Int of FORE ST	MOUNTFORT ST			RD INV 05 60286											Statewide Crash Rate: 174.91		
18820	71558	4047688	0 - 0.09	0560286 - 0.28	0.09	2	4	0	0	0	0	4	0.0	0.00189	703.93	538.87	1.31
Int of FORE ST	MOUNTFORT ST			RD INV 05 60286											Statewide Crash Rate: 174.91		
71558	18822	4047689	0 - 0.08	0560286 - 0.37	0.08	2	1	0	0	0	0	1	0.0	0.00168	197.98	555.28	0.00
Int of FORE ST	HANCOCK ST			RD INV 05 60286											Statewide Crash Rate: 174.91		
18798	18802	194393	0 - 0.03	0560524 - 0.14	0.03	2	0	0	0	0	0	0	0.0	0.00015	0.00	1749.34	0.00
Int of FEDERAL ST E	MOUNTFORT ST			RD INV 05 60524											Statewide Crash Rate: 407.74		
18802	18820	194401	0 - 0.05	0560524 - 0.17	0.05	2	5	0	0	0	0	3	0.0	0.00021	8124.93	1692.07	4.80
Int of MOUNTFORT ST	NEWBURY ST			RD INV 05 60524											Statewide Crash Rate: 407.74		
18797	18803	194392	0 - 0.04	0560344 - 0	0.04	2	1	0	0	0	0	1	0.0	0.00005	7134.70	1234.04	5.78
Int of FEDERAL ST E	HANCOCK ST			RD INV 05 60344											Statewide Crash Rate: 407.74		
18803	18818	194403	0 - 0.05	0560344 - 0.04	0.05	2	1	0	0	0	0	1	0.0	0.00008	4086.09	1689.69	2.42
Int of HANCOCK ST	NEWBURY ST			RD INV 05 60344											Statewide Crash Rate: 407.74		
71558	18818	4047715	0 - 0.04	0560344 - 0.09	0.04	2	1	0	0	0	0	1	0.0	0.00018	1847.17	1719.74	1.07
Int of FORE ST	HANCOCK ST			RD INV 05 60344											Statewide Crash Rate: 407.74		
18804	18817	3122291	0 - 0.05	0561000 - 0.13	0.05	2	1	0	0	0	0	1	0.0	0.00104	319.15	739.79	0.00
Int of INDIA ST	NEWBURY ST			RD INV 05 61000											Statewide Crash Rate: 218.74		
18817	18822	3106813	0 - 0.05	0561000 - 0.18	0.05	2	0	0	0	0	0	0	0.0	0.00111	0.00	728.90	0.00
Int of INDIA ST	MIDDLE ST			RD INV 05 61000											Statewide Crash Rate: 218.74		
18797	18798	194391	0 - 0.10	0561110 - 0.20	0.10	2	3	0	0	0	0	0	0.0	0.00005	21074.82	1254.99	16.79
Int of FEDERAL ST E	HANCOCK ST			RD INV 05 61110											Statewide Crash Rate: 407.74		
18802	18803	194400	0 - 0.08	0560531 - 0.19	0.08	2	3	0	0	0	0	2	0.0	0.00007	15220.70	1576.01	9.66
Int of MOUNTFORT ST	NEWBURY ST			RD INV 05 60531											Statewide Crash Rate: 407.74		
18803	18804	194402	0 - 0.08	0560531 - 0.11	0.08	2	3	0	0	0	0	3	0.0	0.00009	11047.28	1723.02	6.41
Int of HANCOCK ST	NEWBURY ST			RD INV 05 60531											Statewide Crash Rate: 407.74		
18817	18818	194423	0 - 0.08	0560505 - 0.39	0.08	2	0	0	0	0	0	0	0.0	0.00038	0.00	1512.89	0.00
Int of INDIA ST	MIDDLE ST			RD INV 05 60505											Statewide Crash Rate: 407.74		
71560	71558	4047714	0 - 0.06	0560344 - 0.13	0.06	2	0	0	0	0	0	0	0.0	0.00046	0.00	1442.84	0.00
Int of HANCOCK ST	THAMES ST			RD INV 05 60344											Statewide Crash Rate: 407.74		
Study Years: 3.00				Section Totals:	1.08		25	0	0	1	0	18	4.0	0.01117	746.27	412.29	1.81
				Grand Totals:	1.08		44	0	0	3	4	31	15.9	0.01117	1313.43	571.26	2.30

Crash Date: 9/11/2015 Time: 16:37 City: Portland Street/Highway: FORE ST

Start Node: 18820 Int of FORE ST MOUNTFORT ST End Node: 0 Offset: 0

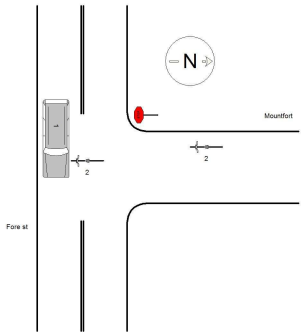
OE Start Node: 18820 Int of FORE ST MOUNTFORT ST OE End Node:

Type of Crash: 9 - Bicycle
Type of Location: 3 - Three Leg Intersection
Weather: 1 - Clear
Light: 1 - Daylight
Road Grade: 4 - Bottom of Hill
Surface Condition: 1 - Dry
Traffic Control: 5 - Stop Signs - Other
Cont. Circ. Env 1 1 - None
Cont. Circ. Env 2
Cont. Circ. Road 1 1 - None
Cont. Circ. Road 2

Narrative

Vehicle 1 was traveling Eastbound on the through way slowly in traffic. Unit 2 (bicycle) was coming down a hill from MountFort St. and failed to stop at the stop sign and struck vehicle 1 causing damage.

Diagram



Unit: 1

Type: 2 - (Sport) Utility Vehicle
Veh. Travel Dir.: 3 - Eastbound
Most Damaged Area: 10 - Front Driver Quarter Panel
Most Harmful Event: 13 - Motor Vehicle in Transport
Pre-Crash Actions: 1 - Following roadway
Contrib Circ. - Vehicle: 1 - None
Seq. Events 1: 21 - Motor Vehicle In Transport
Seq. Events 2:
Seq. Events 3:
Seq. Events 4:
Driver Distracted By: 1 - Not Distracted
Cond. at Time Crash: 1 - Apparently Normal
Driver Action 1: 1 - No Contributing Action
Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	30	1 - Male	5 - No Injury

Unit: 50

Type: 23 - Bicyclist
Veh. Travel Dir.:
Most Damaged Area: 0
Most Harmful Event:
Pre-Crash Actions:
Contrib Circ. - Vehicle:
Seq. Events 1:
Seq. Events 2:
Seq. Events 3:
Seq. Events 4:
Driver Distracted By:
Cond. at Time Crash:
Driver Action 1:
Driver Action 2:

Person Type	Age	Sex	Injury Degree
7 - Bicycle	19	1 - Male	3 - Non-Incapacitating

Maine Crash Report Summary

Crash Date: 4/28/2015 Time: 17:17 City: Portland Street/Highway: MIDDLE ST

Start Node: 18817 Int of INDIA ST MIDDLE ST End Node: 0 Offset: 0

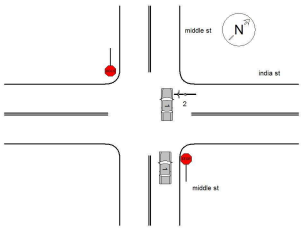
OE Start Node: ***18817*** ***Int of INDIA ST MIDDLE ST*** OE End Node:

Type of Crash: 9 - Bicycle
Type of Location: 4 - Four Leg Intersection
Weather: 2 - Cloudy
Light: 1 - Daylight
Road Grade: 1 - Level
Surface Condition: 1 - Dry
Traffic Control: 5 - Stop Signs - Other
Cont. Circ. Env 1 1 - None
Cont. Circ. Env 2
Cont. Circ. Road 1 1 - None
Cont. Circ. Road 2

Narrative

Vehicle 1 came to a complete stop and then proceeded through the intersection. Vehicle 2(cyclist) did not have a stop sign and was traveling on the through way. As a result vehicle 1 and the cyclist collided.

Diagram



Unit: 1

Type: 1 - Passenger Car
Veh. Travel Dir.: 4 - Westbound
Most Damaged Area: 3 - Center Passenger Side
Most Harmful Event: 13 - Motor Vehicle in Transport
Pre-Crash Actions: 1 - Following roadway
Contrib Circ. - Vehicle: 1 - None
Seq. Events 1: 21 - Motor Vehicle In Transport
Seq. Events 2: 18 - Pedalcycle
Seq. Events 3: 50 - No Other Events
Seq. Events 4:
Driver Distracted By: 1 - Not Distracted
Cond. at Time Crash: 1 - Apparently Normal
Driver Action 1: 3 - Failed to Yield Right-of-Way
Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	31	1 - Male	5 - No Injury
2 - Passenger	30	2 - Female	5 - No Injury
2 - Passenger	0	1 - Male	5 - No Injury

Unit: 50

Type: 23 - Bicyclist
Veh. Travel Dir.:
Most Damaged Area: 0
Most Harmful Event:
Pre-Crash Actions:
Contrib Circ. - Vehicle:
Seq. Events 1:
Seq. Events 2:
Seq. Events 3:
Seq. Events 4:
Driver Distracted By:
Cond. at Time Crash:
Driver Action 1:
Driver Action 2:

Person Type	Age	Sex	Injury Degree
7 - Bicycle	25	1 - Male	3 - Non-Incapacitating

Section 3
Development Entrances and Exits

3.A. Entrance and Exit Locations

The existing site has one full movement access on Hancock Street, one full movement access on Fore Street, one full movement access on Mountfort Street, and three full movement accesses on Newbury Street. The site is proposed to be accessed via four site accesses, two less than the current site. The first floor of the proposed parking garage will be accessed through an existing access on Fore Street, and the upper levels of the garage are proposed to be accessed via one new full movement entrance on Hancock Street. The parking for the proposed residential units will be accessed using a new entrance-only access on Hancock Street to the north of the proposed Hancock Street garage access, and a new exit-only access on Newbury Street.

3.B. Plan View

Attachment 1A of Section 1 shows the proposed site plan.

- Frontage Roads – Fore Street, Hancock Street, and Newbury Street
- Posted Speed Limit – 25 mph on all frontage roads
- Sight Lines – The posted speed limits on the frontage roads require a MaineDOT and City of Portland sight distance of 200 feet. Based on a field review of the site accesses, the sight distances at all accesses can be met if on-street parking is removed or relocated on either side of the site access. It should be noted that the sight distance at the proposed entrance to the residential units on Hancock Street was not evaluated because vehicles are not anticipated to be exiting from that access. Based on the sight distance review, a total of approximately 21 on-street spaces would need to be removed or relocated for all accesses to meet the requirements. It should be noted that limited available sight distance due to on-street parking spaces is extremely common throughout the City. The following describes each access in more detail:

  Proposed Hancock Street garage entrance: to meet the sight distance requirements, looking left approximately eight spaces on the east side of Hancock Street to the south of the proposed access would need to be removed or relocated. Looking right, approximately three parking spaces on the east side of Hancock Street north of the proposed access would need to be removed to meet the requirements.

Proposed Newbury Street residential parking exit: to meet the sight distance requirements, parking would need to be prohibited on the South side of Newbury Street for approximately 150 feet to the left of the exit and 50 feet to the right of the exit. This requires removal or relocation of approximately two existing spaces looking left and three existing parking spaces looking right. It should be noted that one of these existing spaces to be removed or relocated is a handicap space.

Existing Fore Street surface lot entrance proposed to be a garage entrance: to meet the sight distance looking left approximately three spaces on the north side of Fore Street to the east of the site access would need to be removed or relocated. Looking right, the hotel loading zone would need be relocated approximately 40 feet to the west, which would displace approximately two parking spaces.

Section 4
Title, Right, or Interest

4.A. Evidence of Title, Right, or Interest

A copy of the Deeds and Signature Authority are included in Attachment 4A.

4.B. Attachments

Attachment 4A – Deeds, Signature Authority

Attachment 4A

Deeds

Signature Authority

WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that **Ashleigh, Inc.**, a Maine corporation with its principal place of business in Portland, Maine, for consideration paid, **grants** to **Fred Forsley** of Cape Elizabeth, County of Cumberland and State of Maine, whose mailing address is 18 Cottage Lane, Cape Elizabeth, Maine 04107 with **Warranty Covenants**, the land with buildings thereon, in Portland, County of Cumberland and State of Maine, described as follows:

A certain lot or parcel of land, with the buildings thereon, situated on the westerly side of Mountfort Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stake on said westerly side of Mountfort Street at the southeasterly corner of the lot of land conveyed by The Thomas Laughlin Company to Carmina Spizuocco by deed dated August 11, 1927 and recorded in the Cumberland County Registry of Deeds in Book 1273, Page 269; thence southerly by said westerly side of Mountfort Street forty-nine and fifteen hundredths (49.15) feet to a spike in a fence; thence westerly at right angles to said Mountfort Street seventy-two (72) feet to other land now or formerly of said The Thomas Laughlin Company; thence northerly by land now or formerly of said Company forty-nine and fifteen hundredths (49.15) feet to land conveyed by said Company to Gaetana Bruni by deed dated August 11, 1927; thence easterly by land now or formerly of said Spizuocco about seventy and four tenths (70.4) feet to said westerly side of Mountfort Street and the point of beginning.

Meaning and intending to convey the same premises conveyed to the Grantor by virtue of a deed from Fred M. Forsley dated December 28, 2001 and recorded in the Cumberland County Registry of Deeds in Book 17147, Page 174. Page .

IN WITNESS WHEREOF, the said **Ashleigh, Inc.** has caused this instrument to be signed in its corporate name by **Fred Forsley,** its President, and thereunto duly authorized, this 22nd day of September 2005.

Witness

Ashleigh, Inc.

By: **Fred Forsley**
Its President

State of Maine
County of Cumberland, SS. September 22, 2005

Then personally appeared the above named **Fred Forsley**, and acknowledged the foregoing instrument to be his free act and deed in his capacity and the free act and deed of the corporation.

Before me,

Notary Public/ Attorney at Law

C. TRENT GRACE
Notary Public, Maine
My Commission Expires February 6, 2008

Received
Recorded Register of Deeds
Sep 27,2005 03:26:29P
Cumberland County
John B OBrien

BK12206PG170

58571

SHORT FORM QUITCLAIM DEED WITH COVENANT

Longfellow, Inc., a Maine corporation with a place of business at 86 Newbury Street, Portland, Maine, FOR CONSIDERATION PAID, grants to Shipyard Brewing Company Limited Liability Company, a Maine limited liability company with a mailing address of 86 Newbury Street, Portland, Maine, with Quitclaim Covenant, certain real property, together with any improvements thereon, situated in the City of Portland, Cumberland County, and State of Maine, more particularly described on Exhibit A attached hereto and made a part hereof:

IN WITNESS WHEREOF, Longfellow, Inc. has caused this instrument to be executed by Fred M. Forsley, its President thereunto duly authorized, this 8th day of November, 1995.

WITNESS:

Name: John L. Carpenter

LONGFELLOW, INC.

By: Fred M. Forsley
Fred M. Forsley
Its: President

State of Maine
County of Cumberland, ss.

November 8, 1995

PERSONALLY APPEARED the above-named Fred M. Forsley, President of Longfellow, Inc. as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Corporation.

Before me,

Attorney-at-Law/~~Notary Public~~

BK12206PG171

P

EXHIBIT A

A certain lot or parcel of land, with buildings thereon, situated in the block bounded by the Southerly side of Middle Street, Easterly side of Hancock Street, Southerly side of Newbury Street, Westerly side of Mountfort Street, Northerly side of Fore Street
-In the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a point on the Southerly side of said Middle Street, marking the Northeasterly corner of land conveyed to Micucci Brothers, Inc. by deed recorded in the Cumberland County Registry of Deeds in Book 11090, Page 193;

Thence, by the Southerly side of said Middle Street, N 63° 31' 00" E a distance of 222.36 feet to a point marking the intersection of the Southerly side of said Middle Street and the Easterly side of said Hancock Street;

Thence, by the Easterly side of said Hancock Street, N 23° 20' 20" W a distance of 276.62 feet to a point marking the intersection of the Easterly side of said Hancock Street and the Southerly side of said Newbury Street;

Thence, by the Southerly side of said Newbury Street, N 69° 07' 25" E a distance of 268.96 feet to a point marking the Northwesterly corner of land conveyed to David McCain by deed recorded in said Registry in Book 4680, Page 313;

Thence, by the Westerly line of said McCain land S 23° 54' 35" E a distance of 66.00 feet to McCain's Southwesterly corner;

Thence, by the Southerly line of said McCain N 69° 09' 10" E a distance of 49.00 feet to the Northwesterly corner of land conveyed to Charles W. & Susan Ann Cherwinski by deed recorded in said Registry in Book 5069, Page 278;

Thence, by the Westerly line of said Cherwinski S 20° 17' 25" E a distance of 47.30 feet to Cherwinski's Southwesterly corner;

Thence, by the Southerly line of said Cherwinski N 67° 50' 45" E a distance of 72.00 feet to a point marking the Westerly side of said Mountfort Street;

Thence, by the Westerly side of said Mountfort Street S 22° 09' 15" E a distance of 112.77 feet to a point marking the intersection of the Westerly side of said Mountfort Street and the Northerly side of said Fore Street;

Thence, by the Northerly side of said Fore Street on the following courses:

S 42° 28' 00" W a distance of 122.92 feet to an angle point;

S 35° 40' 50" W a distance of 327.64 feet to an angle point;

S 41° 54' 00" W a distance of 83.68 feet to a point of curvature;

Thence, by a curve to the right, whose radius is 384.90 feet, an arc distance of 86.10 feet to a point marking a compound curve;

Thence, continuing by said compound curve to the right, whose radius is 341.90 feet, an arc distance of 97.07 feet to a point of tangency;

Thence, S 70° 59' 00" W a distance of 40.66 feet to a point marking the Southeasterly corner of land conveyed to Guy Centafante by deed recorded in said Registry in Book 2127, Page 98, said point being located N 70° 59' 00" E a distance of 51.75 feet from the intersection of the Easterly side of said India Street and the Northerly side of said Fore Street;

Thence, by land of said Centafante on the following courses:

N 27° 56' 30" W a distance of 75.83 feet to a point;

N 57° 47' 00" E a distance of 39.00 feet to a point;

N 33° 35' 00" W a distance of 46.29 feet to land of said Micucci Brothers, Inc.

Thence, N 57° 47' 00" E a distance of 77.95 feet to a point;

Thence N 35° 35' 32" W a distance of 99.90 feet to the point of beginning containing 4.02 acres, more or less.

Bearings are based on Magnetic North 1955.

The property is conveyed subject to the following:

1. Agreement described in a deed from The Portland Historical Society to American Hoist & Derrick Company dated August 5, 1955, recorded in the Cumberland County Registry of Deeds in Book 2253, Page 85.

2. Possible rights or claims of the stockholders of The Marine Liquidating Corporation and/or their heirs and assigns in and to that certain portion of the real estate described on Exhibit A which was originally acquired by the entity then known as The Thomas Laughlin Company by deeds of Robert Seeley, dated September 14, 1906, recorded in the Cumberland County Registry of Deeds in Book 791, Page 275 and John M. Burke dated June 21, 1907 and recorded in said Registry of Deeds in Book 805, Page 252.

3. Rights and easements granted to Central Maine Power Company and New England Telephone and Telegraph Company by deed of American Hoist & Derrick Co. dated August 29, 1966 and recorded in the Cumberland County Registry of Deeds in Book 2978, Page 29.

4. Terms and conditions of a State of Maine Department of Environmental Protection Order dated December 18, 1990 and recorded in the Cumberland County Registry of Deeds in Book 9936, Page 205.

5. Declaration of Restrictive Covenant by Amdura Corporation dated as of March 9, 1992 and recorded in the Cumberland County Registry of Deeds in Book 9973, Page 122.

675.klp
LONGFELLOW.DD

RECEIVED
RECORDED REGISTRY OF DEEDS
95 NOV -9 AM 9:43
CUMBERLAND COUNTY
John B O'Brien

0038145 BK16372PG309

WARRANTY DEED

Know All Men By These Presents That We, Charles W. Cherwinski and Susan Ann Cherwinski
of 14 Mountfort Street, Portland,
County of Cumberland and State of Maine,

for consideration paid, grant to Fred Forsley

of 12 Mountfort Street, Portland,
County of Cumberland and State of Maine

with **WARRANTY COVENANTS:**

A certain lot or parcel of land together with any buildings thereon situated in Portland County of Cumberland and State of Maine, more particularly described in Exhibit A attached hereto and incorporated herein by reference.

In Witness Whereof, we have hereunto set our hand(s) this 31st day of May, 2001.

Witness

Charles W. Cherwinski

Susan Ann Cherwinski

MAINE REAL ESTATE TAX PAID

State of Maine
County of Cumberland ss.

On this 31st day of May, 2001, personally appeared before me the above named Charles W. Cherwinski and Susan Ann Cherwinski

and acknowledged the foregoing to be his/her/their free act and deed.

Notary Public, Attorney at Law

Return to: Fred Forsley

BK16372PG310

File No:, 01031686

Exhibit A - Deed

A certain lot or parcel of land, with the buildings thereon, situated on the westerly side of Mountfort Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stake on said westerly side of Mountfort Street at the southeasterly corner of the lot of land conveyed by The Thomas Laughlin Company to Carmina Spizuocco by deed dated August 11, 1927 and recorded in Cumberland County Registry of Deeds in Book 1273, Page 269; thence southerly by said westerly side of Mountfort Street 49.15 feet to a spike in a fence; thence westerly at right angles to said Mountfort Street 72 feet to other land now or formerly of said The Thomas Laughlin Company; thence northerly by land now or formerly of the said Company 49.15 feet to land conveyed by said Company to Gaetana Bruni by Deed dated August 11, 1927; thence easterly by land now or formerly of said Bruni and by land now or formerly of said Spizuocco about 70.4 feet to said westerly side of Mountfort Street and the point of beginning.

Meaning and intending to convey and hereby conveying the same premises described in a deed from Robert W. Fickett and Dorene D. Fickett dated November 19, 1982 to Charles W. Cherwinski and Susan Ann Cherwinski and recorded in the Cumberland County Registry of Deeds in Book 5069, Page 278.

RECEIVED
RECORDED REGISTRY OF DEEDS
2001 JUN -4 PM 12:32
CUMBERLAND COUNTY
John B O'Brien

SHORT FORM QUITCLAIM DEED
WITHOUT COVENANT

70-72 Newbury Street Associates, LLC, a Maine limited liability company, with a mailing address of 63A Wilson Street, Portland, ME 04101 for consideration paid, releases to **70-72 Newbury St., LLC**, a Maine limited liability company with a mailing address of 86 Newbury Street, Portland, Maine, 04101, the premises located at 62-72 Newbury Street in the City of Portland, County of Cumberland and State of Maine, as described on **Schedule A** attached hereto and made a part hereof.

WITNESS our hands this 30th day of March, 2007.

70-72 NEWBURY STREET ASSOCIATES, LLC

By David M. McCain
Its Manager

MAINE REAL ESTATE TAX PAID

STATE OF MAINE
CUMBERLAND, SS.

March 30, 2007

Then personally appeared the above-named David M. McCain, Manager of 70-72 Newbury Street Associates, LLC, and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of 70-72 Newbury Street Associates, LLC.

Before me,

~~Notary Public~~ Attorney at law

Printed Name: MICHAEL H. HILL

S:\M\MHH\70-72 Newbury Street Associates\Quitclaim Deed with Covenants.doc

SCHEDULE A

First Parcel

A certain lot or parcel of land with the buildings thereon, situated on the southeasterly side of Newbury Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the southeasterly side line of said Newbury Street at the most westerly corner of a lot of land conveyed to Mary J. Mundy by Samuel Sweetsir, et al by deed dated December 7, 1875, and recorded in the Cumberland County Registry of Deeds in Book 428, Page 320; thence running southeastwardly by said Mundy land and by land formerly of William Mundy, sixty-six (66) feet, more or less, to land now or formerly of William McSweeney; thence southwestwardly by said McSweeney land forty-nine (49) feet, more or less, to land now or formerly of Emeline S. Dutton; thence northwestwardly by said Dutton land sixty-six (66) feet, more or less, to said Newbury Street; thence northeastwardly by said Newbury Street, forty-nine (49) feet and six (6) inches, more or less, to the place of beginning.

Second Parcel

A certain lot or parcel of land with any buildings thereon situated on the southeasterly side of Newbury Street, in Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the southeasterly side line of said Newbury Street at the northerly corner of land formerly of Mrs. Wilson, and later of Joseph J. Bruni, which point is about seventy-two (72) feet from the intersection of said line of Newbury Street with the southwesterly line of Mountfort Street; thence running northeastwardly by said line of Newbury Street twenty (20) feet and four (4) inches; thence southeastwardly parallel with the northeasterly side line of land of Joseph J. Bruni to land formerly of Mrs. Hannah Roberts; thence southwestwardly by said Roberts land twenty (20) feet, more or less, to said land of Joseph J. Bruni; thence northwestwardly by said land of Joseph J. Bruni seventy-two (72) feet, more or less, to the point of beginning.

Being a strip of land twenty (20) feet and four (4) inches wide extending across the southwesterly end of land conveyed to Carmela Spizzuoco and Sabato Spizzuoco, by deed of Fannie Jacobson dated February 4, 1925 and recorded in the Cumberland County Registry of Deeds in Book 1192, Page 220.

Third Parcel

A certain lot or parcel of land with any buildings thereon situated in Portland, County of Cumberland and State of Maine and being in the rear of the westerly side of Mountfort Street, and in the rear of a certain lot or parcel of land conveyed by The Thomas Laughlin Company to Carmela Spizzuoco, and bounded and described as follows:

Beginning at a point in a line of a fence extending northerly to Newbury Street, said point being determined by measuring forty-eight and six-tenths (48.6) feet on a line at right angles to Newbury Street from a stake at a post set in the ground sixty-two and five–tenths (62.5) feet southerly of Newbury Street (sic) and at the southwesterly corner of said lot of land conveyed to said Spizzuoco; thence westerly on a course at right angles to Mountfort Street about twenty-one and eight-tenths (21.8) feet to a stake set in the ground at land of Bruni; thence northerly by land of said Bruni nine and eight-tenths (9.8) feet to a point; thence easterly on a line parallel with first described line about twenty-one and eight-tenths (21.8) feet to said fence extending northerly to Newbury Street; thence southerly nine and eight-tenths (9.8) feet to the point of beginning.

Fourth Parcel

A certain lot or parcel of land with the buildings and improvements thereon, situated on the southerly side of Newbury Street and the westerly side of Mountfort Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point marking the intersection of the southerly side of said Newbury Street and the westerly side of said Mountfort Street; thence by the westerly side of said Mountfort Street South 22° 09' 15" East, a distance of 62.50 feet to a point marking the northeasterly corner of land conveyed to Charles W. and Susan Ann Cherwinski by deed recorded in the Cumberland County Registry of Deeds in Book 5069, Page 278; thence, by the northerly line of said Cherwinski land South 67° 50' 45" West, a distance of 48.60 feet to a point marking land conveyed to David McCain by deed recorded in said Registry of Deeds in Book 4680, Page 313; thence by the easterly line of said McCain land on the following courses: North 23° 34' 05" West, a distance of 9.80 feet to a point; South 67° 50' 45" West, a distance of 1.57 feet to a point; North 23° 28' 30" West, a distance of 53.87 feet to a point marking the southerly side of said Newbury Street; thence by the southerly side of said Newbury Street North 69° 07' 25" East, a distance of 51.67 feet to the point of beginning.

Above courses are magnetic 1985.

Together with all rights and easements appurtenant to said premises. The premises conveyed herein are subject to the matters set forth in a Quitclaim Deed with Covenant dated September 4, 2003, from McCain General Partnership to 70-72 Newbury Street Associates, LLC recorded in said Registry in Book 20130, Page 281.

Meaning and intending to convey, and hereby conveying the same premises conveyed to the Grantor by said deed of McCain General Partnership dated September 4, 2003, and recorded in said Registry in Book 20130, Page 281.

Received
Recorded Register of Deeds
Mar 30,2007 02:36:56P
Cumberland County
Pamela E. Lovley

Bateman Investments, LLC

470 Fore Street, Suite 400
Portland, ME 04101

March 6, 2018

86 Newbury Street, LLC
470 Fore Street, Suite 400
Portland, ME 04101

RE: Signatory Authority

To Whom It May Concern:

This letter is to confirm that Bateman Investments, LLC is a member of 86 Newbury Street, LLC. 86 Newbury Street, LLC consists of two members, Bateman Investments, LLC and Shipyard Brewery Company, LLC (the property owner).

This letter further confirms that David H. Bateman, as member of Bateman Investments, LLC, has the authority to sign and submit this application on behalf of 86 Newbury Street, LLC to the City of Portland, Maine.

Signed,

Nathan Bateman
Manager
Bateman Investments, LLC

Section 5
Public or Private Right-of-Way

5.A. Public or Private Rights-of-Way

The existing site has one full movement access on Hancock Street, one full movement access on Fore Street, one full movement access on Mountfort Street, and three full movement accesses on Newbury Street. The site is proposed to be accessed via four site accesses, two less than the current site. The first floor of the proposed parking garage will be accessed through an existing access on Fore Street, and the upper levels of the garage are proposed to be accessed via one new full movement entrance on Hancock Street. The parking for the proposed residential units will be accessed using a new entrance-only access on Hancock Street to the north of the proposed Hancock Street garage access, and a new exit-only access on Newbury Street.

Section 6
Schedule

6.A. Schedule

The proposed project is anticipated to be completed in 2019.

Shipyard Brewing Redevelopment

Transportation Demand Management (TDM) Plan

July 31, 2018

A. Summary

86 Newbury Street, LLC, having entered into a long-term agreement with Vet's First Choice (VFC) and Cambria Hotels (a Choice Hotels brand) provides this Transportation Demand Management (TDM) Plan for VFC's new corporate facility and the new Cambria hotel - to be housed in the proposed mixed-use Shipyard Redevelopment. This 2.15-acre parcel spans almost the full block between Fore, Hancock, Newbury, and Mountfort Streets on Portland's Eastern Waterfront and is currently home to the Shipyard Brewing Company.

VFC's specialty pharmacy, technical fulfillment area and office space will take up 166,169 square feet of the building area on the Shipyard site. Initially, Vet's First Choice will be relocating 200 employees to the site from various peninsula office spaces nearby, with expected growth to 300 employees by 2025. The Cambria hotel is 105 rooms with 40 employees and caters to both business and leisure travelers. The remaining square footage of the different buildings on site will be used for a smaller-scale Shipyard brewery and tasting room, 10 residences and 372 structured parking spaces.

This TDM Plan aims to help accommodate this new growth and benefit the local transportation system through support of transportation alternatives and reductions in the rate of single-occupancy vehicle travel to and from 86 Newbury Street. *After the initial trip and parking projection reductions for pre-existing shared and multi-modal trips, the plan sets the following TDM targets for 3-5 years after Vet's First Choice and Cambria fully occupy the site:*

Shipyard Redevelopment Site

- 2.15-acre mixed-use urban infill site on the Eastern Waterfront
- **TDM Plan for primary site uses:**
  - Vet's First Choice: 166,169 ft^2; 200 employees initially, eventual growth to 300 employees by 2025
  - Cambria Hotel: 72,797 ft^2; 105 rooms, 40 employees

In addition to initial 3-20% shared-use (depending on time of day and site entry or exit) and 10-15% existing multi-modal rate reductions within trip generation and parking projections, the TDM Plan sets the following targets:

- ***Vet's First Choice***
  - ***Trip & parking reduction target:*** a further 8% reduction per capita (employees) within 5 years after full occupancy - resulting from TDM program
  - ***Multi-modal target:*** a further 5% increase in employee trips via transit, carpooling or vanpooling, by bicycle & on foot within 3-5 years after full occupancy
- ***Hotel:***
  - ***Trip & parking reduction targets:*** a further 5% reduction for employees and visitors within 5 years after full occupancy
  - ***Multi-modal target:*** a further 3% increase in employee and visitor trips via transit, carpooling or vanpooling, by bicycle & on foot within 3-5 years after full occupancy
- Will reassess targets at end of year one of VFC and Cambria operations at 86 Newbury

Cushman Transportation Consulting, LLC
94 Beckett Street, 2nd Floor, Portland, ME 04101 · (207) 200-1910 · www.sarahcushman.com

- *a 8% reduction in peak hour vehicle trips and parking demand for VFC, per capita, and a 5% multi-modal rate increase*
- *a 5% reduction in peak hour employee and visitor vehicle trips and parking demand for Cambria and 3% multi-modal rate increase*

Full occupancy of both Vet's First Choice and the hotel is expected to take approximately 60 months to complete and these targets will be need to be reassessed after the first full year of occupancy at each business.

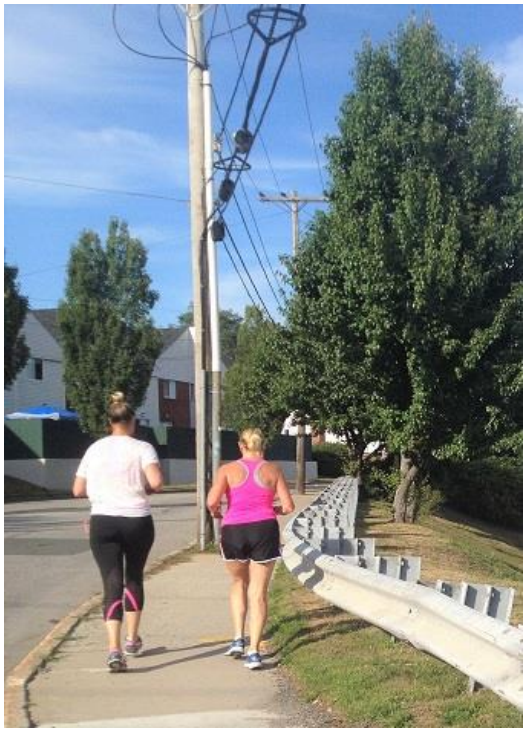
B. Company Overviews & Their Commitment to TDM

Vet's First Choice

Vet's First Choice is a private company that is the leading provider of cloud-based prescription management, pharmacy services, marketing solutions and business analytics for veterinary practitioners. The company was founded in Maine in 2010 and is headquartered currently in the Old Port, across Franklin Street from the proposed new corporate facility at the Shipyard Redevelopment. It has grown in recent years to encompass over 800 employees in Maine, Arizona, Kansas, Kentucky, Nebraska and Texas.

Vet's First Choice is committed to Greater Portland and to serving as a good corporate citizen. Historically, the company has proactively identified and encouraged employees who live on the Portland Peninsula to walk or bike to work in lieu of accepting a parking pass. Employees who have been held back by the lack of showers and lockers at VFC's current locations are looking forward to these amenities at the new corporate facility.

The company views this TDM plan as a long-term initiative and sees the benefits that TDM implementation will bring its employees in the form of increased transportation choice and the positive utility of multi-modal travel itself. For example, walking or carpooling also improve well-being by getting outside or problem-solving complex work situations with colleagues; taking the bus enables workers to relax or catch up on email via mobile devices.



The corporation also takes pride in being a good employer and offering valuable benefits to its employees. It has an active company wellness program that utilizes the VFC newsletter and weekly wellness email list to market the benefits of getting outside, walking and bicycling. Moreover, the company's health insurance provider offers funding for wellness-related activities and VFC is exploring how to implement the funds for maximum impact. Vet's First Choice staff are excited about the TDM program as another opportunity to improve employee quality of life and physical and mental health.

Vet's First Choice will relocate all of its 200 Portland employees from its current two company spaces in the Old Port to the innovative corporate facility at 86 Newbury Street. These existing employees are already well-versed in transportation options for reaching work on the Eastern Waterfront. In addition, 39% of them live within 5 miles of the Shipyard site, making walking, bicycling and the use of transit especially accessible.

> *…there is much evidence suggesting the Millennial generation is not as bound to the automobile as previous generations. Millennials are less likely to get their driver's licenses, take fewer car trips, and are more likely to get around by alternate means: by foot, by bike, or by transit.*
>
> - *2017 Portland Comprehensive Plan*

The company is utilizing 86 Newbury as a recruitment tool for new talent as it grows to approximately 300 employees within its first five years of occupancy. Based on the current employee demographics at Vet's First Choice, it is likely that many of these new employees will be members of the Millennial generation, individuals with an increased use and familiarity with communications, social media and digital technologies.

Millennials have been shown to prefer urban environments and it's likely that Vet's First Choice salaries will enable them to afford living closer to work. In fact, Vet's First Choice is in negotiations with the Shipyard development team to secure some of the proposed residential housing on site, which would facilitate the shortest possible commute.

Millenials tend to be more comfortable using modes other than the single-occupancy automobile for transportation. These multi-modal habits were heavily influenced by the Great Recession and driving by Millennials has increased slowly as the economy has improved. However, from a behavior change perspective, this familiarity with different ways of getting around will greatly facilitate these employees' participation in the proposed TDM program that follows.

Moreover, while there is substantial available parking on-site under current employee figures, the company understands the increasing value of TDM efforts to reduce the amount of company-required parking over time as the number of employees grows. This will both reduce the company's traffic and parking impacts and also save many thousands of dollars per year for VFC's bottom line.

Cambria Hotel

The proposed Cambria hotel is part of Choice Hotels International (NYSE: CHH), one of the largest and most successful lodging companies in the world and tracing its roots back to 1939. Choice currently franchises more than 6,800 hotels, representing more than 500,000 rooms, in more than 35 countries and territories. Ranging from limited service to full service hotels in the economy, mid-scale and upscale segments, Choice-branded properties provide business and leisure travelers with a range of high-quality, high-value lodging options throughout the United States and internationally.

Corporate Social Responsibility (CSR) is Choice's commitment to improve the quality of life for its associates and their families, as well as the surrounding community and society as a whole. It is reflected in many of the company's policies and is practiced at Choice through various initiatives and activities that are carried out by associates and franchisees, and through grants awarded by the Choice Hotels International Foundation.

Similar to VFC, Choice see the benefits that TDM implementation will bring its employees and guests by providing convenient, low-hassle and low-cost options for transportation. For example, the hotel's proximity to some of Portland's significant businesses (WEX, VFC, Tilson Technology) will provide business travelers with the ability to walk to their destinations during the day and get to many of Portland's dining and entertainment options in the evening on foot. Other significant destinations (the Portland Jetport, Cross Arena, Hadlock Field, Thompson's Point) can all be reached by hotel shuttle, public transportation and taxi or Transportation Network Company services (Uber, Lyft, etc.). Hotel parking will be entirely valet, which will allow for efficient flow within the parking structure and the ability to maximize available space.

The new hotel is expected to have a total of 40 employees and a maximum of 25 working during a typical shift. Of special note, in order to meet the labor demand of the hotel, 30-40% of employees will be working through visa programs and the hotel will provide housing for them within walking distance. Hotel staff generally reach work and leave work during off-peak hours. For example housekeeping employees generally work from 6:30am to 2:30pm and food service employees work the breakfast through lunch shift or the lunch through dinner shifts.

C. Site Transportation Overview & Context

Historically, the Eastern Waterfront has been a vital part of the economic life of the City of Portland, connecting local and distant markets by sea and rail. The multi-use nature of the Shipyard Redevelopment - including the continued-while-scaled-down presence of the brewery, 10 housing units, the Cambria hotel and VFC's corporate facility – forms part of the new generation of residential and commercial vibrancy in the area.

Grand Trunk Station at Fore & India

This unique site, nestled between the Old Port commercial district and East End residential neighborhoods, is located in the India Street Form Based Code zone and has always been home to a diverse mix of uses. The area is seeing an overall rebirth with in-fill development of residential housing, increased public access to the water, passenger boat service, businesses, other hotels and restaurants.

Vet's First Choice, the Cambria hotel and the larger Shipyard Redevelopment project support the mixed-use, urban form, and transportation demand management objectives of a number of Portland studies and plans, including:

- the City's *Master Plan for the Redevelopment of the Eastern Waterfront* (2002, amended 2006)
- the 2014 Urban Land Institute Advisory Services Panel Report *Waterfronts of Portland and South Portland, Maine: Regional Strategies for Creating Resilient Waterfronts*
- the 2017 Portland Comprehensive Plan, *Portland's Plan 2030*
- the 2017 *City of Portland Parking Study for the Eastern Waterfront & Downtown*

> *The Master Plan envisions new development in the area to be an amenity and an asset to neighborhood residents, the greater City, and the visiting public.*
>
> *-Master Plan for the Redevelopment of the Eastern Waterfront*

Parking Management

Surface parking's impervious surfaces are another major contributor to stormwater runoff quantity and detrimental water quality in receiving bodies—especially of concern with economically vulnerable fisheries. Development should be designed to reduce the impact of surface flow across Commercial Street and to mitigate effects on landside structures.

Recommendations

- Identify opportunity sites that, once relieved of surface parking, can provide resilient structures or site development strategies that mitigate surface flow.
- To relieve waterfront sites of surface parking, develop comprehensive program to manage all parking resources as a system that includes on-street parking and all public and private garages.
- Periodically update and report actual parking utilization data. Align with transportation demand management planning and commuter-trip-reduction programs.
- Develop broad-based community support for enacting ordinances and pricing that encourage car sharing and other parking requirements in public and private development.

2014 ULI Report on Resilient Portland & South Portland Waterfronts

LOCAL GOALS

WE WILL:

Promote multi-modal accessibility, enabling residents and visitors of all ages and abilities to participate fully in the social and economic life of the community.

Support livability by improving the quality of life in neighborhoods and improving the public health of residents.

Support sustainability by reducing energy consumption, greenhouse gas emissions, and stormwater impacts.

Support economic vitality by ensuring the efficient movement of goods, services, and people.

2017 Portland Comprehensive Plan

The site is pedestrian and bicycle-friendly, located within the strong sidewalk network and lower-speed street grid of the Portland peninsula. It's also near the terminus of the Eastern Promenade multi-use path, a pivotal link in Portland's alternate transportation system. Existing and newly recruited Vet's First Choice and Cambria employees living on most parts of the Peninsula will be within comfortable walking distance of the company's corporate facility. Those employees within a five-mile commute distance can also easily bike to work, especially as bicycle networks in Portland, South Portland and Falmouth continue to improve.

From a public transportation perspective the project is within walking distance of several METRO routes that stop at Congress and India Streets: the Route 1 that traverses the peninsula and connects with the Portland Transportation Center, the crosstown Routes 9A and 9B to off-peninsula neighborhoods, the Route 7 to and from Falmouth, and the Breez with service to Yarmouth, Freeport and Brunswick. The site is also within walking distance of all South Portland Bus routes via the stops at Fore and Union Streets.

Portland and local transit providers have long eyed improved transit connections to the Eastern Waterfront from other transportation nodes across the city, including the Portland Transportation Center and the heart of downtown – where a number of METRO routes, the Lakes Region Explorer and Shuttlebus-ZOOM services terminate. These routes are also within walking distance of the new site. However, closer access to transit would likely enable increased ridership by Cambria and Vet's First Choice employees.

Two recent examples offering transit improvement recommendations for the waterfront are the 2015 *Portland "Hub Link" Feasibility Study* and the 2017 *City of Portland Parking Study for the Eastern Waterfront & Downtown.* City management has also expressed interest in serving as a test site for an automated Olli bus between the Portland Transportation Center, downtown and the waterfront. With the advent of the 58 Fore Street complex and the O Hancock Street (WEX) building, additional discussions have arisen about possible public-private collaboration to bring transit into the Eastern Waterfront, beyond the METRO peninsula Route 8 on India Street and the routes that serve Congress at India. Vet's First Choice and Cambria plan to join these discussions with METRO as well, to benefit improved public transportation options for its employees and the general public.

We recommend continued pursuance of the following goals:

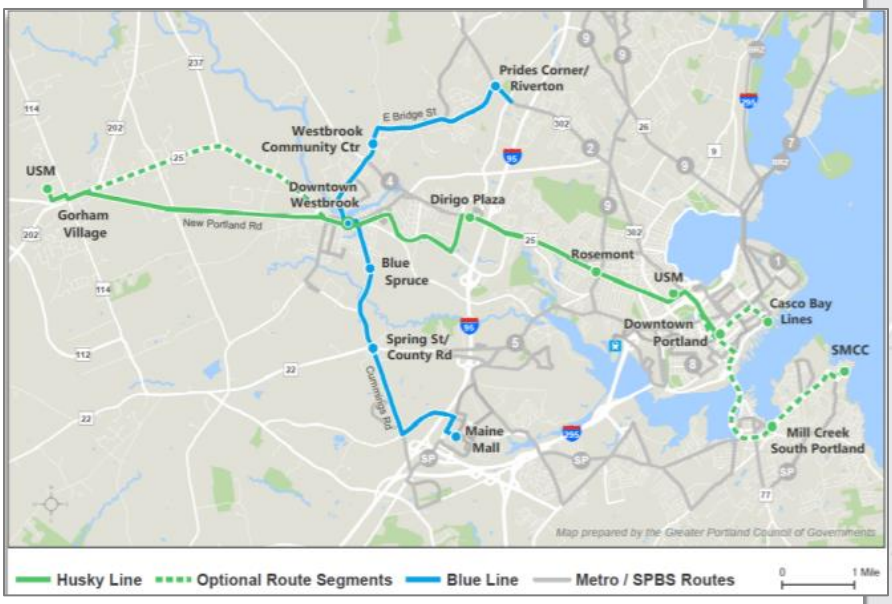
- *Increase the peak period frequency of key Peninsula routes to 10-20 min headways*
- *Provide a direct link between the Portland Transportation Center and Downtown/ Waterfront. As development on the Eastern Waterfront progresses, service should extend there as well.*
- *Use signal prioritization and other techniques (exclusive lanes perhaps) to help move buses through congested areas.*

…Additionally, we recommend the consideration of a downtown circulator route specifically meant to transport riders between the Waterfront and Cumberland Avenue in a loop.

- 2017 City of Portland Parking Study for the Eastern Waterfront & Downtown

In terms of shared mobility, the use of transportation network companies (TNCs) such as Uber and Lyft has grown substantially in recent years and the 2017 *Parking Study* suggested the use of TNCs as an interim custom solution for companies like Vet's First Choice, for employees to access transit routes that are not within close walking distance. A trip via a TNC does not reduce traffic congestion, unless it combines what would normally be two or more vehicle trips; however, it does reduce parking demand. Moreover, there is a UhaulCarshare vehicle located within four blocks of the site, at the corner of Commercial and Franklin Streets. A company carshare account can be useful for employee trips during the work day that require a vehicle.

Census commute data for employees originating in nearby communities with access to transit is behind the curve, not yet showing the results of the recent addition of the Lakes Region Explorer service from Bridgton, Naples, Raymond and Windham and the METRO Breez with service now from Brunswick, Freeport and Yarmouth. The delivery this spring of 11 new buses for the METRO fleet will also be a boon for transit-using employees - each with space for three bikes, Wi-Fi access and in-seat USB ports. Moreover, commuters from Gorham and Westbrook are eyeing the August 2018 launch of the METRO West project and the Husky Line and the associated improved frequency of service on Brighton Avenue.



Meanwhile, there have been a number of other development projects near the proposed Shipyard Redevelopment that have spurred the City of Portland to work to unify its methodology for handing traffic and parking, through a district-wide Traffic Movement Permit.

This growth has also enhanced the amenities surrounding the Shipyard site and these provide an attractive dual-purpose trip for employees who do end up driving to work. Examples include: walking to run errands at nearby businesses, having lunch meetings with colleagues at local restaurants, meeting up with family and friends for after-hours events downtown, and exercising on the Eastern Prom Trail. These internally captured trips represent no net new trip generation or parking demand beyond the original trip to work or to stay at the hotel.

D. TDM Coordinator

Highly successful TDM programs share three vital characteristics: (1) they are dynamic: piloting strategies, assessing impacts, and modifying tactics as needed; (2) they are rigorously monitored and supported by local governing bodies, in this case, the City of Portland; and (3) they are managed by committed and enthusiastic staff who are responsible for overseeing, promoting and sustaining the program.

The Vet's First Choice & Cambria TDM Coordinators are responsible for:

- Strategic parking management to reduce costs/need for accessory parking
- Encouraging greater use of preferred modes through social media, website, on-site kiosk and company-wide promotion
- Coordinating company policies, subsidies and incentives
- Overseeing comprehensive surveying of employees
- Monitoring of employee and visitor parking usage and the effectiveness of TDM strategies
- Filing annual reports and updating the plan with the City
- Exploration of additional TDM strategies, if needed

Vet's First Choice has designated Georgia Wraight, Chief Operating Officer as its Interim TDM Coordinator and the Cambria hotel will assign the Human Relations Director at the hotel management company as its TDM Coordinator (HR director to be hired as the hotel comes on line). These individuals are charged with coordinating the TDM plan implementation, monitoring activities and working with the City on any needed changes. Both companies will provide the TDM Coordinator with additional remuneration to support this work to lead their companies' ongoing TDM efforts. Acknowledging that roles and responsibilities change over time in any position, Vet's First Choice and Cambria will use the first few months of TDM implementation to enumerate their specific TDM Coordinator's responsibilities in detail, for any other staff to uphold the responsibility of those positions. The Coordinators' contact information is:

- Vet's First Choice: Georgia Wraight, Chief Operating Officer, 7 Custom House St, Portland, ME 04101, georgia.wraight@vetsfirstchoice.com, (888) 280-2221
- Cambria: to be shared with City immediately upon hiring; the developer will serve as the TDM Coordinator contact in the meantime

Day-to-day operations and monitoring of the TDM plan will be conducted in-house by the appointed TDM Coordinators; however, Vet's First Choice and Cambria will retain the services of a TDM consultant to review initiatives, problem-solve and develop new strategies if and when necessary.

E. Trip Generation and Parking Demand Projections and Targets

86 Newbury Street, LLC has hired Cushman Transportation Consulting, LLC (CTC) and Gorrill Palmer to assist with its TDM planning process. CTC has conducted recent research on TDM programs at evolving, multi-faceted development sites similar to Shipyard, 82 Hanover and Thompson's Point (e.g., in California and Northern Virginia) – including aspects of setting and managing TDM targets. This investigation helps inform the following trip reduction, parking reduction and multi-modal goals.

Projected Trip Generation & Parking Demand

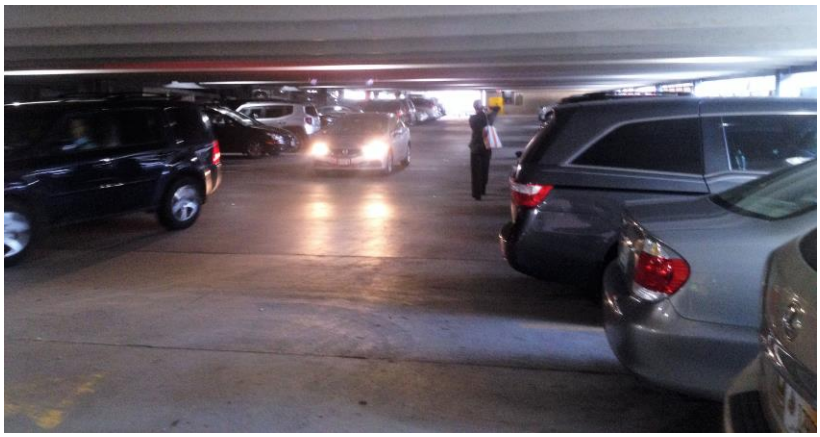
On behalf of the Shipyard Redevelopment, Gorrill Palmer has developed ITE and census-based trip generation and parking demand projections to evaluate the impact of the new Vet's First Choice corporate facility and Cambria hotel.

In addition, Cushman Transportation Consulting has collected and assessed current Vet's First Choice employee origination data and compared these with census commuting data for carpooling, transit use and transit availability in surrounding municipalities.

The Gorrill Palmer trip generation projections include an initial 3-20% shared-use reduction in trips for people who will visit multiple tenants at the site during one outing (specific percentage reductions depend on time of day and site entry or exit), as well as a 15% reduction for the number of people who would use non drive-alone modes of transportation to reach the site under current conditions (pre-TDM implementation). This percentage was set in consultation with the City's Traffic Consultant. The parking demand projections include a similar multi-modal rate adjustment – 15% for VFC uses and 10% for hotel uses.

Accordingly, Vet's First Choice is expected to generate a total of 196 vehicle trips during the morning peak hour and 197 trips during the evening peak hour. The peak VFC parking demand projection is for 303 spaces at 10am.

The Cambria hotel is expected to generate a total of 44 vehicle trips during the morning peak hour and 56 trips during the evening peak hour. The peak hotel parking demand projection is for 84 spaces at 6am.



Projections & Targets

Projected Trip Generation:

- ***Vet's First Choice:*** 196 trips during A.M. peak, 197 trips during P.M. peak
- ***Hotel:*** 44 trips during A.M. peak, 56 trips during P.M. peak

Projected Peak Parking Demand:

- ***Vet's First Choice:*** 303 spaces at 10am
- ***Hotel:*** 83 spaces at 6am

In addition to initial 3-20% shared-use (depending on time of day and site entry or exit) and 10-15% existing multi-modal rate reductions within trip generation and parking projections, ***the TDM Plan sets the following targets:***

- ***Vet's First Choice***
  - ***Trip & parking reduction target:*** a further 8% reduction per capita (employees) within 5 years after full occupancy - resulting from TDM program
  - ***Multi-modal target:*** a further 5% increase in employee trips via transit, carpooling or vanpooling, by bicycle & on foot within 3-5 years after full occupancy
- ***Hotel:***
  - ***Trip & parking reduction targets:*** a further 5% reduction for employees and visitors within 5 years after full occupancy
  - ***Multi-modal target:*** a further 3% increase in employee and visitor trips via transit, carpooling or vanpooling, by bicycle & on foot within 3-5 years after full occupancy
- Will reassess targets at end of year one of VFC and Cambria operations at 86 Newbury

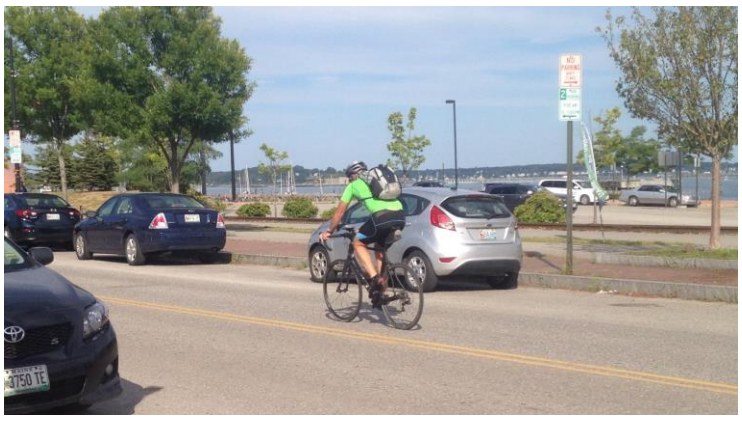
The city Land Use Code continues to have minimum off-street parking requirements and requires 372 spaces for the various Shipyard Redevelopment uses. The site will include a multi-level parking garage with 372 spaces. Initially, Vet's First Choice has forecasted leasing up to 318 parking spaces for its employees and Cambria expects to lease up to 100 spaces. Both companies propose parking management strategies to help ensure that there are enough parking spaces to support functioning of the site, while not providing more parking than necessary.

Targets for Reducing Drive Alone Trips & Parking Demand - & Increasing Multi-modal Trips

Vet's First Choice and the Cambria Hotel offer the following TDM targets given the diversity of the proposed Shipyard site user groups (salaried daytime employees, hourly employees working early mornings and evenings, hotel visitors, etc.) and within the context of the multi-modal accessibility of 86 Newbury Street, assertive on-site parking management, and robust implementation of TDM strategies and incentives. These are for reducing drive alone trips and parking demand and increasing the rate of site users reaching the Shipyard redevelopment via transit, carpooling or vanpooling, by bicycle & on foot. Both companies will revisit these targets after their first full year of operations. Full occupancy is expected to take approximately 60 months.

From other TDM experiments in North America, it is clear that individuals' use of various alternate modes shift over time as different employees and visitors come and go. For example, an employee who uses transit might leave for a different place of employment or a commuter who walks might switch to bicycling. In another instance, a couple that in the past has visited Portland via train and used a combination of Lyft rides and walking may begin to drive to the hotel at times with their growing family. Therefore, it seems most useful for VFC's and Cambria's TDM efforts to address the specific needs of transit users, carpoolers, bicyclists and walkers, while setting these overarching multi-modal trip targets for the site. Both companies plan to closely monitor existing trends to attain a reasonable mode-shift goal over time.

Vet's First Choice Targets



In addition to the initial 1-20% shared-use trip generation reductions (depending on time of day and site entry or exit) and the 15% existing multi-modal rate reduction for both projected trips and parking demand, VFC's sets the goal of a further 8% reduction in employee trips and parking demand through TDM efforts, by the end of 3-5 years. Moreover, Vet's First Choice sets a progressive multi-modal trip target for the same time frame of a further 5% increase.

Cambria Hotel Targets

After the 3-25% shared-use adjustment to hotel-generated trips (again, depending on time of day and site entry or exit) and the 10% existing multi-modal rate reduction for both projected trips and parking demand – and in addition to the high number of staff who are already likely to be multi-modal, which makes large reductions harder to attain - the hotel's TDM program has set a further 5% reduction in drive alone trips and parking demand. In addition, the hotel is setting a target of a 3% increase in employee and visitor multi-modal trips.

F. Trip and Parking Reduction Strategies

In the table beginning on the following page, Cambria and Vet's First Choice propose a number of best-practice and sensible parking and trip reduction strategies for its TDM Plan. These are based on both companies' understanding of the site's transportation context, their employees and visitors, and the usefulness of various TDM efforts. For example, strategically managed parking will produce the strongest results for reducing single-occupancy vehicle trips to the site. Unless otherwise noted in the 3rd column of the table, the TDM strategy will be used by both VFC and the hotel.

The highest priority items for the Shipyard TDM program's success are:

- *Strategic parking management* (parking unbundled from leases, parking cash-out for VFC employees, hotel valet parking, no parking subsidy for hotel employees
- *Full transit pass subsidy and carpool/vanpool voucher on par with monthly transit subsidy*
- *Social marketing work to establish commuting another way as the social norm*

In addition, both workplaces acknowledge the various needs of different multi-modal commuters. For instance, employees who walk to work or bicycle or carpool with children are more able to do so if they have on-site, secure storage for larger commuting gear. Moreover, employees will require tangible financial incentives such parking cash-out and transit pass subsidies or carpool vouchers to help encourage them to experiment with other ways of getting to work.

Another critical component for the success of Cambria and VFC's TDM Plan is a carefully thought-out marketing plan that regularly engages employees and visitors regarding preferred modes of transportation and provides easily accessible information. This work also builds their companies' TDM cultures and the sense of multi-modal travel as the social norm. Within this TDM Plan, Vet's First Choice and Cambria have begun designing a marketing strategy that complements other area Portland TDM work to promote walking, bicycling, rideshare, public transit and alternate work arrangements.

Finally, Greater Portland Council of Governments and the City of Portland are reexamining the need for an area Transportation Management Association (TMA) to benefit private sector employers. TMAs are generally public-private entities that assist employers with TDM implementation and monitoring, advocate for improved transit and act as brokers for services such as vanpools and shuttles. Cambria and Vet's First Choice plan to support the development of a TMA, if found to be feasible, and participate as members.

Unless otherwise noted in the 3rd column, the TDM strategy will be used by both VFC and the hotel.		
Infrastructure		
Transit Access	Transit Screen in main lobby with live-time transit service information for routes near the site	
	Transit passes available for purchase on-site	
	Free hotel shuttle service available for visitors and for employees at no charge. E.g. to get visitors to and from the airport or for employees to park remotely at Marginal Way Park & Ride	Hotel
	Work with City of Portland and METRO regarding possible expansion of public transportation to the Eastern Waterfront	
Pedestrian Access	Reconstruction of all street sidewalk segments abutting development	
	ADA barrier-free ramp improvements at the four street corners abutting the building	
	Striping improvements to existing crosswalks at Newbury & Hancock and Hancock & Middle	
	Street and building lighting improvements to improve sidewalk illumination	
	Secure storage on 1st floor for larger commute gear, e.g.: strollers, islander handcarts, etc.	VFC
	On-site showers and clothing lockers	

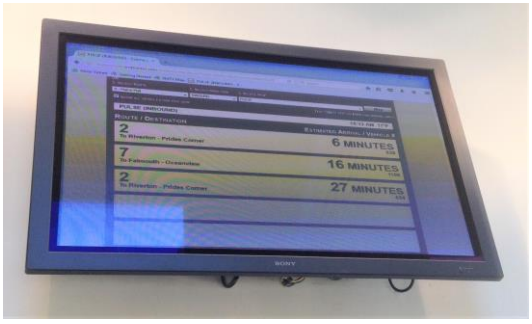
Bicycle Access	38 on-street bicycle parking spaces	
	20 secure and weatherproof parking spaces on 1st Floor for regular bicycles and larger-size or heavier bike commuting set-ups, such as: cargo bicycles, electric bikes and bicycles with trailers or child bicycling attachments	VFC
	26 secure and weatherproof parking spaces on lower level of parking structure with 24/7 monitoring by valet parking attendants; mix of bicycle lockers and open-view racks	Hotel
	On-site showers and clothing lockers	
	Two bicycle repair stations - one near bicycle parking in garage and one in 1st floor VFC commute gear storeroom	
	Depending on demand, work with City to install seasonal bike corral for summer and shoulder seasons; Alternately, committed to meeting a higher demand for on-street bike parking if needed	VFC
Shared Mobility	Secure storage on 1st floor for larger commuting gear, e.g.: car seats	VFC
	Fleet of 6 cruiser bicycles available for loan for visitors and for employee use for short trips. Will provide helmets, bike locks, bicycle safety guidelines and laminated local bike route map with each bicycle.	Hotel
	UhaulCarshare vehicle within 6 minute walk; may explore additional on-street carshare vehicle(s) to serve Shipyard and other new development on Eastern Waterfront	
Remote/Valet Parking	Will have contract with Unified Parking Partners for valet parking. Intentionally schedule special events that draw people not staying at the hotel for weekend evenings after 6pm. Hotel employees will not be provided with parking and will be encouraged to use other ways to reach the site.	Hotel
Electric Vehicle Charging	At least one electric car charging station per floor will be provided in the parking garage	Hotel
Other	On-site amenities such as three full service meals a day, vending cubby off the main corridor and business center to discourage unnecessary drive-alone visitor trips off site	Hotel
General Contribution to Area Transportation Improvements	Through the City's evolving MaineDOT district-wide Traffic Movement Permit process for the combined sites of 86 Newbury, 0 Hancock and 100 Fore Streets, the developer will make a to-be-determined financial contribution for the site, for city transportation improvements within the commute shed of the project.	

Employee & Visitor Incentives		
Parking Pricing/Cash Out/Incentives	Monthly parking cash incentive (cash-out) for employee to give up parking space - on par with per-space-fee employer pays landlord for on-site parking (employees currently provided parking at no cost)	VFC
	Allocate a small number of parking spaces for occasional use by employees who are primarily multi-modal commuters	VFC
	Preferential Parking program through GO MAINE – carpoolers are prioritized for parking spaces near entrance(s) and receive special permits	VFC
Transit Subsidies	Full subsidy of monthly and multi-ride passes for employees to use transit	
	One-time financial incentives to give up a parking space and start using transit	VFC
	Site registration with GO MAINE for rewards for transit riders and to provide access to Emergency Ride Home benefit	
	Explore new METRO fare media (2019) to enable billing company for individual employee trips.	
	Upon implementation of the Hub Link Study, with associated direct bus running from the Jetport and Portland Transportation Center to downtown and the Old Port, hotel will actively promote the use of this service. This will include offering printable free day passes pre-trip, with clear directions for taking the bus from the airport or Portland Transportation Center.	Hotel
Carpool-Rideshare Subsidies	Site registration with GO MAINE for ridematching/carpooling opportunities and rewards and to provide access to Emergency Ride Home benefit	
	One-time financial incentives to start new carpool or recruit new carpool members	
	Monthly voucher for carpool/vanpool on par with transit pass subsidy	
	Within two years of full site occupancy, do Enterprise vanpool zip code analysis of employees (and possibly collaborate with other nearby redeveloped sites with similar employee pools, such as WEX) to assess potential vanpools	
Bicycle-Pedestrian Subsidies	One annual footwear purchase for pedestrian commuters	VFC
	One annual bicycle maintenance visit to local bike shop for bicycle commuting employees	VFC
	Reimburse employees for bicycle safety courses	
	Purchase Bicycle Benefits memberships for bicycle commuting employees	VFC

Shared Mobility Subsidies	Full or partial subsidy for multi-modal employees who need to use UhaulCarshare or Transportation Network Companies (Uber/Lyft) during work day	VFC
	Monthly employee bikeshare memberships on par with transit pass subsidy, when/if bikeshare starts in Portland	
	May explore a customized Transportation Network Company (TNC - e.g., Lyft & Uber) solution for employees to access transit routes elsewhere on the peninsula	VFC
Flexible Work	Written policy for flextime, telecommuting & condensed work shifts	VFC
	Encourage all possible staff to avoid A.M. & P.M. peak travel times (7-9 a.m. and 4-6 p.m.)	VFC
	Free employee overnight accommodation (subject to room availability) for employees who are scheduled to work a late evening shift (ending at 11:00 p.m. or later) and a morning shift the following day – or in case of severe weather event	Hotel
Targeted Promotions	1st year: monthly raffle for multi-modal staff with benefits such as vacation time, gift cards, etc.	
	Thereafter, campaigns 1-2 times per year, tied to regional and national events like Way 2 GO MAINE and National Bike Month - and offering similar rewards; e.g., Vet's First Choice will organize an internal competition and challenge another local business such as WEX during the Way 2 GO MAINE business-to-business commuter challenge	
	Actively promote the use of the Amtrak Downeaster as a transportation option through co-promotional and hotel stay packages. Reservation will also provide transit connection information from Portland Transportation Center to downtown.	Hotel
	Upon construction of the proposed Portland Landing park and public dock, hotel will work with City and/or private entities to promote the use of water shuttle/taxi conveyance to Portland and South Portland sites.	Hotel
Information		
Education for Travel Choice	TDM orientation and benefits packets for relocating employees and new hires	
	One-on-one consultations or commute coaching available to explore employee options upon site opening and offered at least once annually, thereafter	

Education for Travel Choice cont'd	Transit Screen monitor located in lobby with looping slides, offering information on: • all TDM benefits available to employees, including company policies • links to current maps, routes, and schedules for public transit routes near the site • live-time transit info from Southern Maine Transit Tracker • information on GO MAINE ride-matching and Emergency Ride Home benefit • walk, bicycle & trail routes to and near site • list of facilities available for bicyclists, carpoolers, pedestrians, transit riders and vanpoolers • list of other available transportation options in the area • contact information for TDM Coordinator	
	Active "Optimize Your Commute" web page on company site including all the information above and links to each resource	
	Point-of-Purchase prompts: hotel will list preferred modes of travel and directions (transit, bicycle, bicycle rental, walking, taxi/Uber, etc.) before driving directions and parking information on hotel web site, at online point of purchase and via confirmation emails	Hotel
	Guest Transportation Options Packet (made available at check-in and/or in room): concise, customized information on how to access the hotel by various travel modes, with special consideration of efficient modes such as walking, cycling and public transportation. Includes: • Map of the area, showing the destination, major streets, nearby landmarks and time to walk/bike to them, the closest bus stops and walking times, recommended cycling and walking routes, etc. • Information about transit service frequency, fares, first and last runs, and schedules if possible; plus phone numbers and web addresses for transit service providers and taxi companies (Note: special transit schedule information can be provided for events that start and end at specified times) • How to reach the hotel from major transportation terminals (bus and train stations, airport, ferry terminal, etc.) • Access arrangements for people with disabilities • Availability of bicycle facilities, including secure bike parking and bikeshare, if available • Automobile parking availability and price	Hotel
	At least quarterly communications with employees regarding commuting benefits available – e.g. through email, e-newsletter, announcements, posters, etc.	
	Required employee and visitor transportation surveys and reporting to City will also serve as education tool	

Promotion of Alternate Modes	The above commuter challenges and incentive campaigns	
	Use company social media to build social proof of others doing the desired TDM actions (with posts from employees taking action – e.g., posting a photo of taking the bus to work or the morning carpool) - vs. just likes or retweets of the idea of using preferred alternate modes	
	At least once per quarter: recognize individual employees and visitors who reduce the traffic impact of the site through company social media, door posters, newsletter, email or other announcements.	
	Consider applying for Best Workplaces for Commuters status - a national qualification that no Maine business has yet attained	



G. Plan for Monitoring, Data Collection and Reporting

Recognizing that the implementation of a TDM Plan is a dynamic process, the VFC and Cambria TDM Coordinators will work with the City to monitor the effectiveness of the TDM Plan's components and to assess whether the site is achieving the trip and parking reduction targets listed above. Both companies will evaluate the value of various subsidies for preferred modes and make improvements. Another important piece will be to determine the flexibility of employees and visitors to utilize various travel modes to access the site.

Vet's First Choice and Cambria will also explore possible use of the national TRIMMS model (Trip Reduction Impacts of Mobility Management Strategies). This would be helpful for internal assessment, to estimate the impacts of the various transportation demand initiatives and provide a program cost effectiveness assessment, including the net program benefit and a benefit-to-cost ratio analysis.

The TDM Coordinators will conduct annual employee surveys that provide quantitative data (e.g., trip, parking and mode split) and qualitative data (e.g., perception of the Shipyard Redevelopment's alternate transportation access and TDM initiatives). Similarly, Cambria will also survey hotel visitors. The companies will carry out these surveys once annually for the first three years of full occupancy and then every two years thereafter. The data collection and surveys will produce comparable data from year to year and be available for compilation with other sites' travel data by a third party, such as the City. The following will be included in the monitoring assessment.

Employee Surveys & Parking Usage

The survey will be developed in consultation with the city's TDM manager and conform to overall city TDM modeling and planning. Survey questions will include:

- Employee's zip code of residence
- Mode(s) of travel to and from work and any use of alternate work arrangements
- If parking personal vehicle, where
- Type of participation in TDM program and/or use of any employee TDM benefits
- Preferences, barriers or concerns with modes of travel
- TDM marketing effectiveness
- To help report any business benefits from Vet's First Choice's TDM efforts, the survey may also collect data regarding: any changes in employee satisfaction with travel options, changes in levels of stress, impacts on employee turnover/absenteeism, increases in savings due to participation in subsidies, etc.
- Space to add comments

Surveying & Monitoring

- Employee and visitor surveys once annually for first 3 years, then every two years thereafter
- Collect parking usage data to cross-reference with the employee and visitor surveys
- Reassess parking and trip monitoring at 2 year mark
- Track employees' use of multi-modal subsidies
- Communication with India Street and Munjoy Hill Neighborhood Associations
- Annual report to City

Visitor Surveys

Similar to the employee survey, Cambria will consult the city's TDM manager and ensure the visitor survey is appropriate for the plan's context and needs. The hotel will provide opportunities for visitors to complete the survey during their stay, providing the survey at check-in and in each room, as well as via email upon check-out. Visitor survey questions will likely include:

- Visitor's zip code of residence
- Mode of travel to and from the site
- If by car, specify as a driver or a passenger
- If driver, ascertain how many passengers and parking location
- Check boxes of specific preferences, barriers or concerns with using other modes
- Space to add comments

Note: the use of these survey tools will also assist Cambria and Vet's First Choice with their TDM education efforts. That is, the questions themselves help people think differently about their transportation behavior. The surveys will also provide a reminder and link to VFC's and the Cambria's online transportation pages for further information about options.

Parking Usage

Using the employee and visitor surveys and site parking data, Vet's First Choice and Cambria will produce a summary of employee and visitor parking usage.

The TDM Coordinators will also form and maintain a relationship with the India Street and Munjoy Hill Neighborhood Associations, offering to discuss any neighborhood parking or traffic concerns directly and to attend a neighborhood association meeting once a year to learn more from neighbors and share information about VFC's and Cambria's TDM efforts and perspectives.

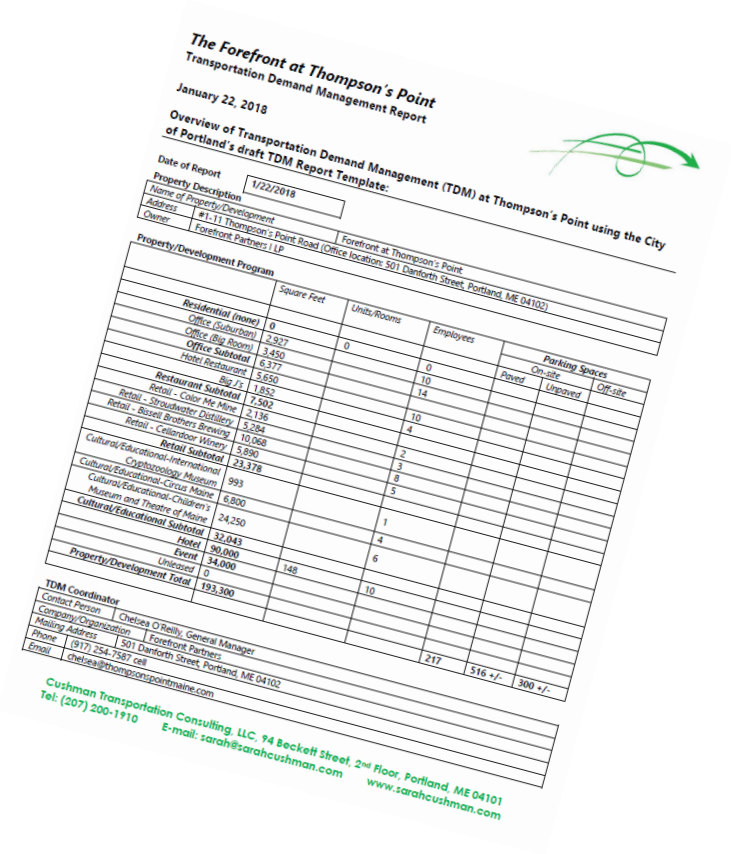
Use of Multi-Modal Subsidies

The TDM Coordinators will track the number of employees utilizing different TDM incentives. The Vet's First Choice TDM Coordinator will monitor the parking cash-out program and use of the subsidies for transit passes, carpool and vanpool vouchers, preferential parking for carpoolers, bicycle maintenance and footwear purchases, bicycle safety courses and Bicycle Benefits memberships. The Cambria TDM Coordinator will do the same for visitors' and employees' use of the hotel shuttle, transit passes, and bicycle loan program, etc. In addition, the two coordinators will tally the number of company employees who are members of GO MAINE. If Cambria and/or Vet's First Choice engage with a future bikeshare operation, UhaulCarShare or a transportation network company, the coordinators will assess that usage as well.

Annual Report

The TDM Coordinators will then collaborate to produce an annual TDM Report to meet the City's monitoring requirements. The report will include:

a. the above employee and visitor survey results
b. parking data
c. use of TDM subsidies
d. details of that year's TDM operations – including management, strategies, marketing and any new infrastructure development
e. lessons learned and any changes in the TDM plan during the year
f. plans for the following year



The Forefront at Thompson's Point
Transportation Demand Management Report
January 22, 2018

Overview of Transportation Demand Management (TDM) at Thompson's Point using the City of Portland's draft TDM Report Template:

Date of Report	1/22/2018
Property Description	
Name of Property/Development	Forefront at Thompson's Point
Address	#1-11 Thompson's Point Road (Office location: 501 Danforth Street, Portland, ME 04102)
Owner	Forefront Partners I LP

Property/Development Program	Square Feet	Units/Rooms	Employees	Parking Spaces On-site Paved	On-site Unpaved	Off-site
Residential (none)	0	0	0			
Office (Suburban)	2,927		10			
Office (Big Boxy)	3,450		14			
Office Subtotal	6,377					
Hotel Restaurant	5,650		10			
Big J's	1,852		4			
Restaurant Subtotal	7,502					
Retail - Color Me Mine	2,136		2			
Retail - Stroudwater Distillery	5,284		3			
Retail - Bissell Brothers Brewing	10,068		8			
Retail - Cellardoor Winery	5,890		5			
Retail Subtotal	23,378					
Cultural/Educational-International Cryptozoology Museum	993		1			
Cultural/Educational-Circus Maine	6,800		4			
Museum and Theatre of Maine	24,250		6			
Children's Cultural/Educational Subtotal	32,043					
Hotel	90,000	148	10			
Event	34,000					
Universal	0					
Property/Development Total	193,300		217	516 +/-	300 +/-	

TDM Coordinator	
Contact Person	Chelsea O'Reilly, General Manager
Company/Organization	Forefront Partners
Mailing Address	501 Danforth Street, Portland, ME 04102
Phone	(917) 254-7587 cell
Email	chelsea@thompsonspointmaine.com

Cushman Transportation Consulting, LLC, 94 Beckett Street, 2nd Floor, Portland, ME 04101
Tel: (207) 200-1910 E-mail: sarah@sarahcushman.com www.sarahcushman.com

Shipyard Redevelopment
Level III Site Plan Application
Response to Comments 9/18/18

	Comment	Response
1	Zoning: documentation of the ZBA determination regarding front yard setbacks on Newbury Street	ZBA Approval has been attached.
2	Parking review: We will need a plan showing how the parking is allocated per use within the garage.	A plan showing the parking allocation is attached.
3	Utility underground waiver request: a letter from the applicant describing the "hardship" and a formal letter from CMP describing the costs for undergrounding the utilities on Newbury and Mountfort Street.	A letter from the Applicant is attached summarizing the efforts to underground the power lines.
4	Ability to serve from PWD	The ability to serve letter from PWD is attached.
5	The average grade diagram doesn't show the four corners of each residential building. To clarify, there should be a separate average grade per building, not one per site.	See attached average grade diagram for each residential building.
6	Will hotel be valet only?	Yes, hotel will be 100% valet.
7	Clarify the difference between the retail/tasting room in the Shipyard building and the retail space shown in the hotel building.	The new retail space on Hancock Street is for expanded Shipyard retail sales and also provides a new ADA compliant entrance.
8	Signage - I was expecting a master plan-type proposal for the signage indicating generally where and kind of signs that will be sought in the future. I am surprised to not see any sign at the primary entrance to the office building. I am also not comfortable with the building sign shown facing the water and its height and scale - this is not characteristic of what is allowed on-peninsula.	Signage for the Fore and Mountfort elevations have been provided by Archetype under separate cover, prior submittals for the Hancock Street elevations depicted signage for the Shipyard Retail and proposed Hotel.
9	What are the next steps MHPC? We need confirmation when that has been resolved.	Please see attached memo update from IAC. MHPC has no further regulatory involvement, however as a courtesy we plan to share the findings of the archeological work with MHPC. The final stage of excavation is planned for the end of September.
10	Landscape: meeting with planning staff and Jeff Tarling on-site Friday at 10:30a	A meeting was conducted on-site on 9/14 as requested. A revised landscape plan in response to that meeting is attached.
11	Resolve the emergency/fire access issues with the overhead utilities.	As requested at our meeting on-site on 9/13 with City Staff the applicant has contacted CMP and initiated the work to relocate the poles on on Mountfort Street to the other side of the road.
12	Parking: Tom and Bruce are reviewing the materials provided for waiver requests and TDM. As a condition of approval, parking management plan will be requested.	Comment acknowledged.

Shipyard Brewing
Level III Site Plan Application
Response to Comments

	Reviewer Comment	Response
	Transportation	
1	Submit TMP, TDM, trip generation, parking study	TDM has been submitted. TMP Application has been submitted and scoping meeting is to be scheduled. Based on discussions with City Staff the TMP process is being considered for an alternative review process where 3 or more projects in the area will be considered together under one TMP. At this time the schedule for the TMP process is unclear but expected to be determined soon. No parking study is being provided as the site currently provides sufficient parking to meet code, however we have included parking calculations based on ITE rates which depict hourly demand throughout a typical weekday. Parking for the Pharmacy and Technical Fulfillment space has been provided at a rate of 1 space per 1000 sf which provides a total of 60 spaces for those uses. It is not anticipated that there will be 60 employees for those particular uses, as such there is sufficient parking for the Pharmacy and Fulfillment. In addition, we know that the hotel and office uses have staggered peak needs for parking as noted by the parking calculations included with this resubmittal.
2	Waivers: # of curb cuts	The proposed plan for 4 driveways makes the site considerably less non-conforming than it's current condition. The existing site has 7 driveways, many of which are over 40 feet wide. This plan seeks to keep the existing driveway on Fore Street and provide a new driveway that serves the parking garage on Hancock Street. 2 lesser driveways that strictly serve the residential units and Pharmacy Deliveries on Newbury Street are proposed as well. This is a one-way route where vehicles enter on Hancock and leave on Newbury, with a very low number of trips expected per day.
3	Sidewalk/ramp details – follow Tech Manual, 2% cross slope	The plans have been updated based on comments received from Staff, and have been designed to comply with the technical manual.
4	Widen sidewalks where possible	Sidewalks have been widened on all 4 sides of the project to be at least 10 feet wide, and in most cases are wider than 10 feet. As required, Hancock Street along the project frontage has been reduced in width by approximately 7 feet to align with the rest of Hancock Street. The reduction will provide additional sidewalk on what is likely to be the most active pedestrian area for the project. The on-street parking will remain along Hancock.
5	Bike parking standard – update calculation, possible waiver, show locations	34 bike parking spots are required, which will be provided at various locations on site. Both the hotel and office will have bike storage rooms inside the buildings to promote commuting by bike for their employees. A mix of exterior racks in key locations, and interior bike storage space is proposed to satisfy the code requirements. 20 rack spaces outside are proposed and at least 14 spaces will be provided inside the 2 bike storage rooms.
	Environmental Quality	
7	Construction limited between June 1 and August 1 for bat species	Comment acknowledged.
8	Street tree standard for multi-family (TM 4.6.1):1 tree/unit in ROW 10 req; 17? Provide trees within landscape areas where possible (Newbury Street); ask Jeff about trees on Hancock and Mountfort	The update Landscape Plan is included with this resubmittal and includes 11 street trees and an additional 7 smaller understory trees along Newbury Street.
9	Submit landscape plan for understory plantings review	An updated landscape plan has been provided with this submittal.
10	Details for Green Roof needed – diagram of total area showing at least 50% pervious, calcs for 1" storm event, draft maintenance plan, details	An exhibit showing that at least 50% of the site will be pervious surface either as a green roof or other surface has been included with this submittal. An allowance for mechanical space on the roof has been provided, although final design has not been completed the mechanical allowance is expected to be more than is needed.
11	Reflect changes for numbers in stormwater application	The Stormwater Report and Calculations have been updated to reflect the latest plans.

12`	Indicate how you are meeting the DEP and MHPO recommendations for construction	The MHPC recommended that a Phase I Archeological Reconnaissance Survey be performed in the area near the buildings at 70-72 Newbury an 10-12 Mountfort Street. In addition the MHPC requested that a history of these 2 buildings be provided including the tenants and thier ethnicity. The Applicant has retained the firm Independent Archeological Consulting, LLC (IAC) from Portsmouth, NH to perform these services, and they are currently underway and ongoing. Due to the amount of prior industrial use, development and redevelopment only a small isolated area near the corner of Newbury and Mountfort Streets has remained undisturbed since the mid 1800's. This area is the focus of the archeological work. Relative to construction we do not anticipate any restrictions by MHPC. IAC has included construction monitoring for the initial earthwork phase of the project in their proposal and, dependent on the outcome of the Phase i, may be onsite during excavation work to monitor for archeological resources that can be recovered.
	Public Infrastructure and Community Safety	
13	Separate addresses for each building/use	Comment acknowledged, separate addresses for each use will be requested.
14	Capacity letters need to be updated to reflect the changed program.	Updated requests for ability to serve have been provided to the various utility providers, responses will be provided when received.
15	Can overhead utilities poles be consolidated?	During its June 12 Workshop to review the proposed 86 Newbury Street mixed use project it was requested by the Planning Board that the Applicant investigate the potential of converting existing overhead power on Newbury Street to underground service. The Project Team as part of its due diligence efforts conducted an extensive design review meeting with CMP Staff to review and evaluate the feasibility of the undergrounding request. The current pole design and configuration on Newbury Street presents several challenges. These challenges are a result of many factors including the residential nature of the opposite side of Newbury Street, prior undergrounding elsewhere in the area, and the presence of other overhead utilities. The first challenge is the fact that this section of street contains three riser poles for the primary electric circuit serving this area of the City and a separate fourth riser pole for the other non-electric utilities (telephone/cable) since these other utilities cannot be located on the same pole as electric. In general, riser poles are not able to be combined with other riser poles, so consolidating three poles into one pole is not an option based on our discussions with CMP. As noted above these risers are a result of prior undergrounding work elsewhere, so if a circuit goes below ground it must come out somewhere and this particular street corner happened to be where three circuits all came back above ground. The Applicant would have to bear the cost of relocating all of this infrastructure and is unlikely to recapture any of the costs in the future. In theory this work would be achievable but would require substantial engineering, design and construction work and cost. Additional coordination and buy-in from all of the utility providers such as cable television and telephone would be necessary to remove all the poles from Newbury Street, which would add another layer of cost. The second issue which is more prohibitive is the fact that all of the existing housing units on the opposite side of Newbury Street are served by the overhead power. Per CMP these secondary lines that cross Newbury Street and service the housing units are the responsibility of CMP to maintain as long as they remain overhead. In order to eliminate the overhead power these secondary lines would need to be run under the street and connected to the existing buildings. Once these secondary lines are run underground the maintenance and responsibility shifts from CMP to the individual building or unit owner.

15 cont'd		We would need to obtain written agreements with all of these owners acknowledging that they would be taking on an additional financial obligation for these secondary lines. In CMP's experience this is usually impossible to obtain 100% buy in from the neighbors as it does not benefit the existing users. In addition, the cost of work to switch from overhead to underground would be an additional burden on the owners of these residential properties. Without 100% buy in we would be required to maintain the existing overhead secondary lines serving the housing units, which would mean there would continue to be poles on Newbury Street. After reviewing these two significant challenges it was determined that the best course of action would be to attempt to reconfigure the existing overhead service to potentially eliminate some of the poles and work to straighten out some of the runs to have a more visually appealing configuration. As noted above, the four riser poles that exist at the corner of Newbury and Hancock are unsightly and detract from the visual aesthetics of the street corridor. The Applicant recognizes this in the context that they are creating a world-class development, but also recognizes that the cost to underground is not only challenging and cost-prohibitive but in reality, may not actually improve the situation. Similar to other developments that have put the utilities on their street underground, this project would end up shifting these riser poles to the intersection of Newbury and Mounfort Street. In all likelihood these poles, plus at least one additional riser pole would then end up at the end of Newbury Street, directly in line with the view corridor looking east down Newbury. This unintended consequence, as noted above would be costly and not necessarily achieve the goal of improving aesthetics of the Newbury Street corridor. Not only that it may shift the burden to another property, who may contemplate undergrounding in the future. Recognizing that undergrounding on Newbury Street has benefits and challenges the Applicant would be willing to engage with the City, CMP and other stakeholders to develop a more regional solution to undergrounding existing overhead lines. A strategy to prioritize undergrounding where it's most beneficial would serve the entire Eastern Waterfront Area, especially as it continues to grow and change. This type of approach would also serve to mitigate the unintended consequences noted above of shifting the burden on a street by street basis, with ever increasing costs and complications. However; this process should not hold up the progress of this time-sensitive project.
	Site Design	
16	Garage Ventilation?	Ventilation details will be provided during detailed building design. Please note that the Fore Street side of the parking garage is open-air.
17	Within 100' of historic landmark – see HP Board advisory review notes	The architectural plans included with this resubmittal have taken into account the HP Boards advisory comments. The Applicant has modifed the program to include residential units along Newbury Street, and has modified the architecture at the corner of Newbury and Mountfort street in order to better reflect the scale of the neigborhood in that area.
18	Site lighting/photometrics needed; Street lights required – medium scale, black with LED 3000 K color temp (new spec to be adopted into Tech Manual) Spacing listed in Tech Manual, 2"-4" concrete footing	The lighting plan has been updated, street lights are City Standard in black with 3000 K color temp and the foundation detail has been provided to provide a 4" max spacing between the sidewalk and bottom of the pole mounting.
19	Specify HVAC equipment locations	HVAC locations have been depicted on the exhibit for the green roof.
	Subdivision Review	
20	PWD letter needed – update capacity request to reflect latest sf	Updated requests for ability to serve have been provided to the various utility providers, responses will be provided when received.
21	Trash rooms/solid waste management?	A trash room is proposed on the ground floor and is shown on the site plan and building floor plans.
22	Permits needed: Traffic Movement Permit, DEP Maine Construction General Permit, Permit By Rule	As noted above, an application for a TMP has been submitted to the City. A Permit By Rule (PBR) will be submitted to DEP shortly, by signing the PBR form the Applicant is agreeing to the terms of Maine's Consruction General Permit (CGP). As such, as separate CGP application is not required.
23	Waiver Requests: Drive aisle widths, # of curb cuts/driveways, Location of driveways from intersection on Fore Street	The Applicant is requesting the following site-related waivers: 1. a waiver for the number of site driveways, 2. a waiver for parking garage dimensions, and 3. a waiver to the driveway separation requirements. Please see the attached Waiver Table and Justification Statement.
24	Street Trees -10 required for 10 residential units; 17? provided in/near ROW	The update Landscape Plan is included with this resubmittal and includes 11 street trees and an additional 7 smaller understory trees along Newbury Street.

25	Staff suggest that trees should go in the private landscape areas where possible to increase sidewalk width and improve viability of trees	Planters on Newbury have been removed from the sidewalk and trees are shown on private landscape
	Additional Submittals Required	
26	We need a legal document (P&S agreement or deed) showing Right, Title, & Interest	A deed showing 86 Newbury St, LLC owns the property has been provided with this resubmittal, along with an explanation that Bateman Investments is a member of 86 Newbury Street, LLC.
27	Housing Replacement – 9 units to be demolished	10 units are proposed as part of this project, with at least 10% provided to meet the City's Inclusionary Zoning requirements.
28	Construction Management Plan narrative	An updated Construction Management Plan has been provided which includes the required Narrative on the plan sheet.
29	Neighborhood Meeting minutes/attendance	Neighborhood Meeting minutes have been provided.
	Easements/Licenses	
30	10' no-building easement adjacent to Residence Inn	Comment acknowledged, this is shown on the plan and the proposed building does not encroach within the no-build easement.
31	Access easement to Residence Inn (shown on site plan) – applicant indicated this easement may be revised	The Applicant is proposing to satisfy the terms of the Access Easement, an exhibit has been provided with this resubmittal to show the clear height being provided by the proposed parking garage.
	General Development Standards	
32	Staff request additional info – diagram showing how 50% pervious lot area is met, Ch 32 compliance and calculations, details, and greenroof maintenance agreement	An exhibit showing that at least 50% of the site will be pervious surface either as a green roof or other surface has been included with this submittal. An allowance for mechanical space on the roof has been provided, although final design has not been completed the mechanical allowance is expected to be more than is needed. A post construction O&M section has been added to the stormwater report that satisfies Ch. 32. The Applicant requests that a maintenance agreement for the green roof will be provided to the City as a condition prior to a Certificate of Occupancy.
33	More information needed to determine parking requirement.	No parking study is being provided as the site currently provides sufficient parking to meet code, however we have included parking calculations based on ITE rates which depict hourly demand throughout a typical weekday. Parking for the Pharmacy and Technical Fulfillment space has been provided at a rate of 1 space per 1000 sf which provides a total of 60 spaces for those uses. It is anticipated that the Pharmacy will not employ more than 25 and the Fulfillment will not employ more than 35, as such there will be more than sufficient parking for the Pharmacy and Fulfillment. In addition, we know that the hotel and office uses have staggered peak needs for parking as noted by the parking calculations included with this resubmittal.
	Siting Standards	
34	Waiting for final site plan for lot coverage	Lot Coverage (buildings only) is 75% and has been shown on the Site Plan.
	Setbacks	
35	Waiting for revised plans for final evaluation; staff suggest extending sidewalks into front yard where feasible	Sidewalks have been widened on all 4 sides of the project to be at least 10 feet wide, and in most cases are wider than 10 feet. Additionally sidewalks have been extended up to building faces where possible.
	Building Entries	
36	Newbury = 1 required per building, Mountfort = 2 required, Fore = 1 required (possible waiver request), Hancock = 1 required for residential building; 1 or 2 required for Hotel, 2 provided	The applicant is requesting a waiver for the 1 required entry on Fore Street.
37	More information needed on principal entry elevation	See revised plans and elevations for further information on principal entry of the office building. Additional renderings have also been submitted for further information of entry design.
	Height Standards	
38	Hampshire/Federal = UN 45'max; Federal/Franklin = UT 77' max; Provide height measured from average grade	All height measurements (from average grade) are provided on building elevations.
39	3 stories on Newbury; 7 stories on Mountfort/Fore (more info needed for bonus story); 6 stories on Hancock	Number of stories are address/provided on building elevations. Further information on green roof has been submitted.
	Neighborhood Context	

40	Intent: be mindful of the transitional nature of the site – especially on Newbury and Mountfort streets. The large office building needs to become more contextual with the small-scale, residential streets and blocks that surround it. The façade composition and material placement can be used to transition this office use and larger scale. Newbury Street residential buildings will be good scale for transition from residential buildings across the street. Hancock Street is mostly mid-rise buildings – hotel is appropriate scale and has active frontage.	Revised design addresses staff as well as historic comments on design and transition from Newbury Street and Mountfort Street to Fore Street. In regards to the office building design, the curtainwall material was scaled down, and is featured predominantly along Fore Street and at the intersection of Fore and Mountfort. The building transitions to more tradition materials along Mountfort and Newbury Street, The scale of the building also transitions at Mountfort and Newbury in relation to the existing context.
41	Guidelines: staff will evaluate these items more closely when revised submission is received.	Comment acknowledged.
	Articulation & Composition	
42	Intent generally met but more information needed for office building facades and the residential buildings.	Revised building elevations and renderings have been provided for further information on the design of the residential buildings along Newbury Street, as well as the office building.
43	Guidelines: Façade plane changes, overhanging cornices, massing variation	Comment acknowledged.
	Fenestration	
44	Standard 4.3 -- what is VT of glass?	Specifications of glass options have been provided. This addresses possible VT levels of the glass curtainwall.
	Building Materials	
45	Intent: More info needed for residential buildings; hotel building has appropriate mix of brick and industrial references; office building curtain wall is not appropriate in relationship to the residential blocks.	Revised building elevations and renderings have been provided for further information on the design of the residential buildings along Newbury Street, as well as the office building.
	Building Entries	
46	Intent: Please provide entry locations in revised submission. Most facades appear to include active entries.	See revised site plans.
47	Guidelines: Staff will confirm the guidelines are met with the revised submission.	Comment acknowledged.
48	Standard 6.1 -- Principal entry for hotel on Hancock, for office on Mountfort, for residential buildings on Newbury. Fore Street may not have an entrance and would require a waiver.	Applicant requests a waiver for the entry on Fore Street
49	Standard 6.7: Frequency -- See zoning checklist	
	Roof Lines	
50	Intent: More information requested regarding any roof mechanical systems – placement and design integration	See revised building elevations for mechanical locations, mechanical units to have screening/treatment.
51	Guidelines: Staff will weigh in more once revisions to hotel and office buildings are made. HP did comment on the roof forms of the residential buildings and whether they could relate more to the front-end gable buildings across the street. Staff feel that flat roofs are appropriate for multi-family buildings	Comment acknowledged. Revised elevations and renderings have been provided.
52	Standard 7.1 -- More information requested regarding rooftop systems.	See revised building elevations for mechanical locations and screening.
	Structured Parking	
53	Guidelines: The structured parking is buried behind other buildings. More information is requested regarding the parking deck materials/design on Fore Street.	See revised elevation for design along Fore Street.
	Civil Engineering - Third Party Reviewer; Lauren Swett	
54	The Applicant has noted utility ability to serve letters are pending.	Updated requests for ability to serve have been provided to the various utility providers, responses will be provided when received. We've met with PWD, CMP and Unitil to review the plans and are currently finalizing utility designs with these parties. All have indicated that they would be able to serve the project. We have submitted an updated Wastewater Capacity Application to the City's Department of Public Services and it is currently under review. In general, water and sewer flows are expected to decrease significantly given that the water-intensive brewing operations are being scaled down.
55	Please provide additional information on the stormwater connection in Mountfort Street. Information on the proposed manhole, pipe sizes, inverts, etc. should be provided. Note that if the stormwater pipe from the site is greater than 8 inches in size, a manhole must be installed in the street to connect to the main. Direct-to-pipe connection methods are not allowed for larger pipes.	The connection on Mountfort Street has been updated to include a proposed manhole. The sewer invert at the intersection of Newbury and Mountfort was unable to be deteremined; as builts plans have been requested from the City.
56	Provide a construction management plan narrative using the City's template which is available online: http://www.portlandmaine.gov/DocumentCenter/View/18030	An updated Construction Management Plan has been provided which includes the required Narrative on the plan sheet.
57	The post-development stormwater figure does not match the current site plan.	The Post-Development Water Quality Map has been updated to match the current plans.
58	The Applicant has shown stormwater (foundation drain) connections to catch basins in the city street. Private connections to City catch basins are not allowed.	Foundation drains have been connected to the existing storm system on-site.

Shipyard Brewing
Level III Site Plan Application
Response to Comments

59	The HydroCAD model indicates that the increase in impervious surface is greater than 1,000 SF, while the application notes that the increase is de minimus	The revised Stormwater Report and Hydrocad Calculations show that the current plan results in a slight reduction in impervious area in the post-development condition.
60	Applicant has provided a note on their detail sheet that "subsurface detention systems may be substituted with an engineer approved equal". Please note that the detention system must be a DEP-approved system.	The note has been updated on Sheet C103.
61	A post-construction stormwater O&M plan and a stormwater agreement in accordance with Chapter 32 requirements is required.	A post-construction O&M Plan is included in the Stormwater Report, and is also provided in the Erosion Control Report. A Stormwater Agreement will be provided to Staff under separate cover.
62	Note that with the level of impact to Mountfort Street, which is under moratorium, it appears that the most of street may need to be repaved.	The Applicant is anticipating that Mountfort Street, along the frontage of the project will need to be resurfaced due to the number of utility connections and the incidental damage that is likely during construction. The plans have been modified to to show this.
63	Applicant is proposing a green roof. Additional design and construction information should be provided, i.e. construction details, storage calculations, O&M plan, maintenance agreement.	Additional details of the green roof have been provided with this submittal. Detailed design of the roof has not been provided at this stage as the building design has not commenced. The Applicant requests that this information be provided once the final roof design has been completed. At this time the stormwater design does not account for any storage volume from the green roof, which provides a conservative approach.

NEWBURY STREET
PAVED – PUBLIC – 45' WIDE

HANCOCK STREET
PAVED – PUBLIC – 40' WIDE

MOUNTFORT STREET
PAVED – PUBLIC – 40' WIDE

N:301916.87
E:2930892.56

N:301951.94
E:2931345.88

3 STORY BUILDING

SU–30
AASHTO 2011 (US)

WB–67
AASHTO 2011 (US)

SU
AASHTO 2001 (US)

RIM=43.84
CL INV.=34.44

RIM=43.60
CL INV.=34.54

RIM=43.52
HOOD=39.28
MAIN END

RIM=46.63
CL INV.=36.93

RIM=49.13
CL INV.=39.13

RIM=49.32
UNABLE TO OPEN

TRIV. BONNET
BOLT HYDRANT
ELEV.=47.97

RIM=34.13
UNDER VEHICLE

WOOD RAMP &
DECK w/AWNING

WOOD BENCH

PARKING SIGN

RIM=22.13
UNABLE TO ACCESS
UNDER DUMPSTER

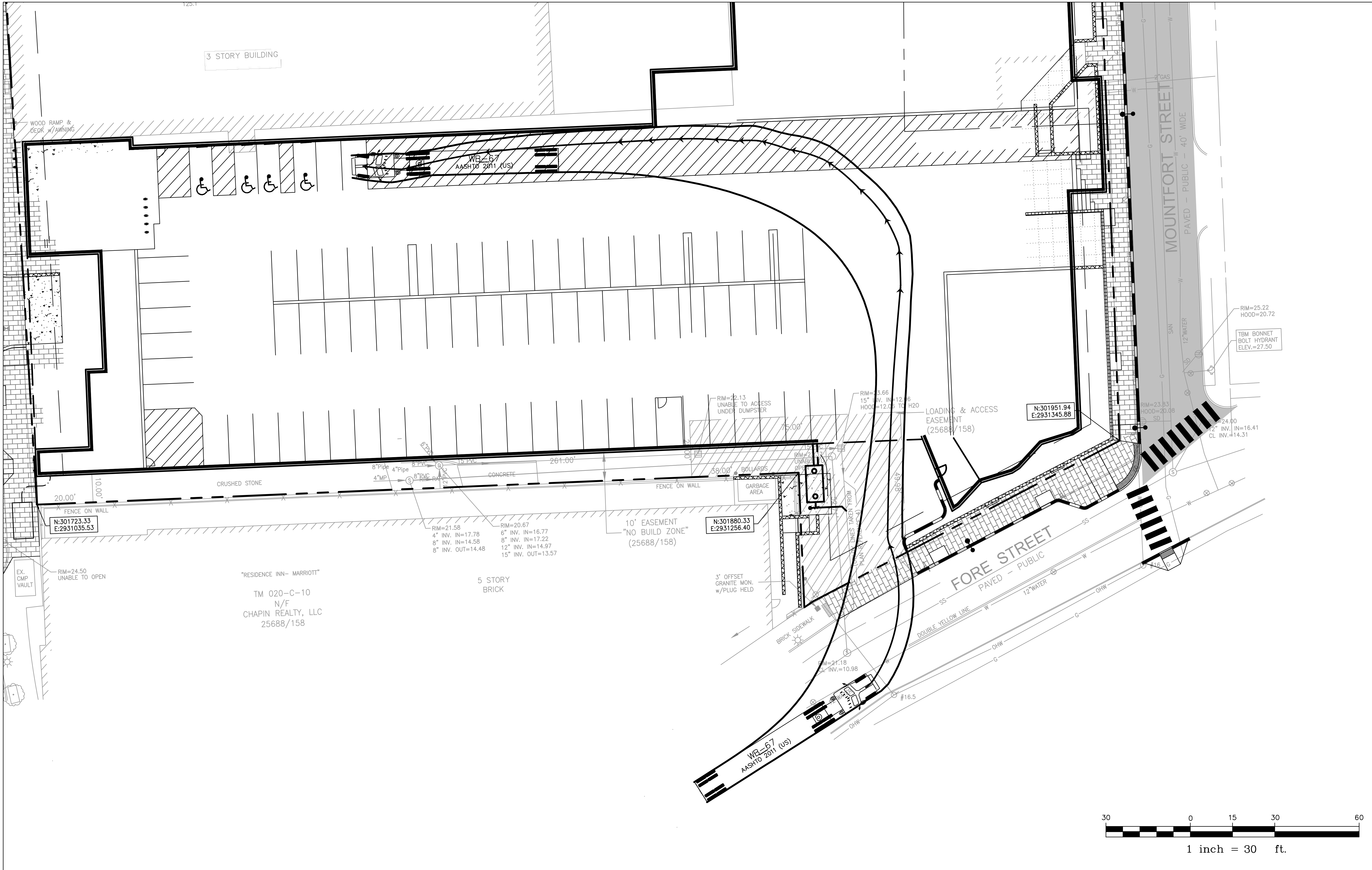
LOADING & ACCESS
EASEMENT

125.1'

2"GAS
12"SS
8"WATER
4"WATER
12"WATER
OHW
UGE
CIRF

30 0 15 30 60

1 inch = 30 ft.


3 STORY BUILDING
WOOD RAMP & DECK w/AWNING
WB-67
AASHTO 2011 (US)
MOUNTFORT STREET
PAVED - PUBLIC - 40' WIDE
RIM=25.22
HOOD=20.72
TBM BONNET
BOLT HYDRANT
ELEV.=27.50
RIM=22.13
UNABLE TO ACCESS
UNDER DUMPSTER
RIM=23.66
LOADING & ACCESS
EASEMENT
(25688/158)
N:301951.94
E:2931345.88
RIM=23.53
HOOD=20.08
RIM=24.00
CL INV.=14.31
261.00'
75.00'
38.00'
BOLLARDS
CRUSHED STONE
CONCRETE
FENCE ON WALL
GARBAGE AREA
20.00'
10.00'
N:301723.33
E:2931035.53
N:301880.33
E:2931256.40
RIM=21.58
4" INV. IN=17.78
8" INV. IN=14.58
8" INV. OUT=14.48
RIM=20.67
6" INV. IN=16.77
8" INV. IN=17.22
12" INV. IN=14.97
15" INV. OUT=13.57
10' EASEMENT
"NO BUILD ZONE"
(25688/158)
RIM=24.50
UNABLE TO OPEN
EX. CMP VAULT
"RESIDENCE INN- MARRIOTT"
TM 020-C-10
N/F
CHAPIN REALTY, LLC
25688/158
5 STORY
BRICK
3' OFFSET
GRANITE MON.
w/PLUG HELD
BRICK SIDEWALK
FORE STREET
PAVED - PUBLIC
DOUBLE YELLOW LINE
12"WATER
RIM=21.18
WB-67
AASHTO 2011 (US)
30
0
15
30
60
1 inch = 30 ft.

3 STORY BUILDING

WOOD RAMP & DECK w/AWNING

EX. CMP VAULT

RIM=24.50
UNABLE TO OPEN

"RESIDENCE INN– MARRIOTT"

TM 020–C–10
N/F
CHAPIN REALTY, LLC
25688/158

5 STORY
BRICK

CRUSHED STONE

20.00'

10.00'

FENCE ON WALL

N:301723.33
E:2931035.53

261.00'

8"Pipe
4"MP

4"Pipe

8"PVC
RIM=21.58
4" INV. IN=17.78
8" INV. IN=14.58
8" INV. OUT=14.48

8"PVC
RIM=20.67
6" INV. IN=16.77
8" INV. IN=17.22
12" INV. IN=14.97
15" INV. OUT=13.57

CONCRETE

FENCE ON WALL

10' EASEMENT
"NO BUILD ZONE"
(25688/158)

N:301880.33
E:2931256.40

38.00'

BOLLARDS

GARBAGE AREA

3' OFFSET
GRANITE MON.
w/PLUG HELD

RIM=22.13
UNABLE TO ACCESS
UNDER DUMPSTER

75.00'

RIM=25.66
15" INV. IN=12.06
HOOD=12.06 TO HOD

LOADING & ACCESS
EASEMENT
(25688/158)

N:301951.94
E:2931345.88

WB–67
AASHTO 2011 (US)

MOUNTFORT STREET
PAVED – PUBLIC – 40' WIDE

2"GAS

12"WATER

SAN

RIM=25.22
HOOD=20.72

TBM BONNET
BOLT HYDRANT
ELEV.=27.50

RIM=23.83
HOOD=20.08

24.00
12" INV. IN=16.41
CL INV.=14.31

#16.5

FORE STREET
PAVED – PUBLIC

DOUBLE YELLOW LINE

RIM=21.18
CL INV.=10.98

WB–67
AASHTO 2011 (US)

30 0 15 30 60

1 inch = 30 ft.

July 10, 2018

Planning Division

Portland City

Dear Ms. Barbara Barhyd

The city of Portland is about to put the desires of 'big redevelopers' ahead of private citizens. I realize that the so-called revenue stream from the redevelopment of the Shipyard Brewery is hard to resist for public officials, but I respectfully suggest that this redevelopment will hurt Portland.

The approval of the proposed demolition and redevelopment of the Shipyard Brewery will eradicate the quality of life for the residents of Bay House at 22 Hancock, the surrounding condos, the free-standing houses, and churches, both in the short term and long term. If that's the city's goal, you are achieving it.

As a place to live and work, the attraction of Portland is neither the large ships that dock nor being able to order a beer keg at a Brew Hotel. Portland offers a lifestyle for the young and old; a lifestyle that is thriving in the residential areas surrounding the Old Port. We have small gyms, health food stores, Italian markets, coffee shops, bakeries, boutiques, restaurants and bars. We getting surrounded by hotels, parking garages, etc. enough is enough. Strike down the redevelopment of the Shipyard Brewery and tell them to stay in place or build elsewhere.

Regards,

Leon A. Wilson Jr. Brigadier General, USAF, retired

22 Hancock, Unit A207

Google Groups

86 Newbury Street

Kate Philbin <kphilb3@gmail.com> Jul 24, 2018 9:12 AM
Posted in group: **Planning Board**

Dear Board Members,

I understand and support the desire for Portland to grow. I understand that growth brings change to our life here on the peninsula. What I don't see, and it concerns me deeply, is a cohesive vision for the development of the East End. What am I seeing? New condos, new hotels, new office space, new retail and restaurant spaces, and new parking garages. What I don't see is a creative, thoughtful and progressive plan on how to transport these new residents and employees on and off the peninsula. It is my belief that more parking garages are not the answer. The peninsula is finite with only several access points to bring people on and off the peninsula. Where is the plan for handling traffic - not parking but traffic? I would like to see the building development slow down and speed up the public transportation development. Endless parking garages are not a solution; they exacerbate the problem of traffic.

86 Newbury Street - refuse to grant the zoning height waiver and do not demolish the affordable housing on the street. I think it's disgraceful to cater to the wealthy and show such disregard for working class residents and their needs for affordable housing. All the service jobs in these new offices, hotels, condos, shops, and restaurants will be staffed by people making the minimum wage or slightly more. Where will they live?

Thank you.

Kate Philbin
45 Eastern Promenade
Portland

The 86 Newbury Street development

Berry Manter <berrymanter@yahoo.com> Jul 24, 2018 4:46 PM
Posted in group: **Planning and Urban Development**

To City Planners and council members,

It has come to my attention that the Shipyard building and surrounding block is to be replaced with a massive project that is requesting zoning changes for height and lot fulfillment.

This proposed development is close to sensitive historic buildings and includes parking for nearly 400 cars — adding to presently challenging commuter traffic.

I urge the city planners to FIRST create a forward thinking transportation/parking plan that ensures as Portland grows it accommodates the challenges of the populations of workers and inhabitants that will negotiate the city. Mass parking should be closer to 295 and the currently under utilized commuter parking. Public transit, bike lanes, pedestrian ways should be enhanced.

It is the primary responsibility of city planners to guide present development into future decades and anticipate both current and future needs. This begs that the concept of retaining quality of life for those of us who have entrusted you with this service. This responsibility includes ensuring the quality of structures both reflects and is equal to, if not superior to, the quality of the structures replaced. It feels wrong to build massive “office space” and luxury condos that destroy livable and viable middle income housing and the neighborhoods in which they exist.

Please, give awareness to past fashionable trends of “urban renewal”, and moving commerce to “Big Malls” — in time these visions have failed. The current rushed glut of poorly constructed “luxury condos”, sterile hotels and office spaces in the downtown feel like the short-sighted, but avoidable, mistake of the future that erodes the quality of Portland, Maine.

I urge you to NOT grant a zoning height change, to include affordable housing in all condo proposals, and create a comprehensive mass transit plan that removes traffic congestion off the peninsula.

Sincerely,

Berry Manter
46 Eastern Prom
Portland

87 Newbury Project Concerns & Questions

William Campbell <wfcampbelljr@gmail.com> Jul 24, 2018 1:48 PM
Posted in group: **Planning Board**

Dear Planning Board Members,

Unfortunately I can't make it to the workshop meeting today regarding 87 Newbury St. My residence is directly beside this project. I do have a few concerns and could you please get the following questions answered. I will tape this meeting and follow up at a later date.

1) Traffic Studies: This whole neighborhood has had a transformation of construction during the past few years. WEX will be in operations soon and will add more traffic to neighborhood. Fore Street is still blocked off with the Ocean Gateway Garage. Middle St and Hancock Street is getting harder to exit from my residence. What steps are being taken to prevent gridlock? Is any part of Hancock Street going to be blocked off during construction? This needs to be prevented because Hancock St. is now overwhelmed with traffic as a result of other constructions on Fore St. & Middle St.

2) Newbury St Utility Poles :
With a project of this magnitude, these utility poles should come down. I feel that the developer is focused on taking the easiest way out by blaming CMP. There should be an underground connection to the existing residential owners across the street. This also should be at no expense to the current residential owners. This is a sign of "Good Will" to the neighbors and will contribute to making our neighborhood esthetically pleasing. This should be the developer's own initiative to do right by the neighborhood and the city. This will be the opportune time to do this type of improvement.

3) EPA: I am concerned about the demolition of these old residential properties. What about the materials that were used to build these homes in the past? What about the soil? Is there any contamination? Are there strong regulations in place to protect the neighbors?

Thank You,
Bill Campbell
22 Hancock Street
Unit 306
Portland, Me 04101

Shipyard development

Stoller, Diane <dstoller@emhs.org> Jul 26, 2018 8:57 AM
Posted in group: **Planning Board**

I attended yesterday's workgroup for the Shipyard project and listened to all the presentations about trying to get the people working there to use alternate transportation. I live at 113 Newbury St and I ride my bike to work at the Mercy Fore River Campus everyday. I should have stood up and made the comment but it really didn't occur to me until I got home since this is really not specific to the Shipyard development (which I am in favor of by the way). If the city wants large volumes of people to be biking the city will HAVE to address the lack of bike lanes. There is really no way to move through the city on a bike that has designated lanes that bikers can ride in, especially from East to West and vis versa. The more bikers that there are the bigger issue this will be. While it is great for the developer to put in a bike station the REAL issue is having a place to ride to and from work. We are not all going to commute along the Eastern Prom trail and the other bike trails we have to get to real places in the city, and right now there is almost no way for this to happen safely for both bikers and cars. I think the funds should be appropriated to have bike lanes designed and marked through out the city so the drivers will at least know the bikers are allowed on the roads. Diane Stoller

Google Groups

86 Newbury St India Street District

Carol Connor <balsamique@live.com> Jul 25, 2018 2:50 PM
Posted in group: **Planning Board**

Dear Planning Board Staff and Members,

I am an owner resident at 12 Montreal St who is concerned about the details of planned development on and around Munjoy Hill and the working waterfront. It is mind-boggling to witness the eruption of massive new buildings in the vicinity of India and Fore Streets, creating visual impediments and shadows where there once was abundant light and space.
Clearly this is a time to consider the overall impact of growth in this section of Portland.

As a boat owner and summer resident on Long Island, the Hamilton Marine Store and Portland Company Complex is very familiar ground for me. I was opposed to the development the city approved for that section of the waterfront, and daily witness the disruptive activity associated with nearby construction around Fore,India and Newbury Streets.
It should be sufficient that the builders work within existing zoning restrictions, and be creative within that context to meet their office and parking needs.
The request for zoning changes to increase the building height should be denied by the planning board. Enough is Enough.
If parking is needed, make it part of the initial plan within the existing zoning rules. Why should the Munjoy South residents have to put up with an even higher
Building mass?
I respectfully request that the planning board deny the petition for zoning changes that would only further degrade the quality and character of the neighborhood.

Regards,

Carol M. Connor
12 Montreal St
Portland, ME
04101

Sent from my iPad

Portland Maine | Yes. Google's good here.

Matthew Grooms <mgrooms@portlandmaine.gov>

300 Allen Avenue - Final Traffic Comments

Tom Errico <thomas.errico@tylin.com> Wed, Sep 19, 2018 at 3:19 PM
To: Matthew Grooms <mgrooms@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

Hi Matt – I have reviewed the Application materials and offer the following final traffic comments.

- The parking layout generally meets City Technical standards with the exception of the parking aisle width where a 20-foot width is provided. The Applicant should formally request a waiver and provide supporting documentation.

  Status: Given location of the parking spaces, the ability to use space near the building to maneuver and minimizing impact to wetlands, I support a waiver for the proposed aisle width.

- Sight distance from the driveway shall be provided.

  Status: The requested information has been provided and I have no further comment.

- The Applicant should provide an opinion on the location of the driveway as it relates to the Allen Avenue cross-section and the transition from a two-lane section to a three-lane section.

  Status: The Applicant has indicated that the Allen Avenue Paving project is shifting the three-lane section towards Washington Avenue and the driveway will not be located in a transition area. I find conditions to be acceptable and have no further comment.

- Crash data for Allen Avenue in the vicinity of the project should be provided with a safety analysis of conditions.

  Status: The Applicant reviewed crash data and there are no High Crash Locations in the vicinity of the project. I have no further comment.

- A trip generation estimate shall be provided.

  Status: The Applicant has estimated the project will generate approximately 20 to 23 trips during the AM and PM peak hours. This level of traffic is not expected to create safety or capacity problems. I have no further comment.

- A pedestrian sidewalk shall be provided between the Duplex buildings and Allen Avenue.

  Status: The plans have been revised and I have no further comment.

- The Applicant shall provide a parking analysis that documents parking demand. Shared parking should be a consideration.

  Status: The Applicant has reduced the parking supply and I find it to be reasonable. I have no further comment.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
TY LIN INTERNATIONAL
12 Northbrook Drive
Falmouth, ME 04105
+1.207.781.4721 main
+1.207.347.4354 direct
+1.207.400.0719 mobile
+1.207.781.4753 fax
thomas.errico@tylin.com
Visit us online at www.tylin.com
Twitter | Facebook | LinkedIn | Google+

"One Vision, One Company"

Portland Maine Yes. Google's good here.

Matthew Grooms <mgrooms@portlandmaine.gov>

300 Allen Avenue

Lauren Swett <lswett@woodardcurran.com> Thu, Aug 9, 2018 at 9:21 AM
To: Matthew Grooms <mgrooms@portlandmaine.gov>

Hi Matt,

I have reviewed the grading a drainage plans for 300 Allen Avenue, and they have modified their stormwater treatment strategy to account for their proposed site layout changes – one larger grassed underdrained soil filter has been replaced by a smaller soil filter and a Focal Point system. They are still providing an adequate level of treatment for the proposed development.

They have a very small increase in flow at one of their points of interest. I still need to do a detailed review of the HydroCAD, but I don't anticipate that the flow increase will be an issue at this location.

They will be required to submit a stormwater maintenance agreement and O&M plan to address maintenance of the proposed stormwater systems on the site.

Thanks,

Lauren

Lauren Swett, P.E.*

Technical Manager

Woodard & Curran

41 Hutchins Drive

Portland, Maine 04102

Phone: (207)558-3763 (direct)

(207)219-3591 (cell)

(800)426-4262 (office)

Email: lswett@woodardcurran.com

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Planning and Urban Development Department
Planning Division

Subject: RP Design Review – 300 Allen Avenue

Written by: Caitlin Cameron, Urban Designer

Date of Review: Tuesday, September 11, 2018

The multi-family and office development at 300 Allen Avenue was reviewed against the *R-P Residential-Professional Zone* as well as the *Multiple-Family* standards in a context with a mix of commercial and residential character. Reviewers: Caitlin Cameron, Urban Designer, Matt Grooms, Planner, and Jean Fraser, Planner, Planning Division of the Department of Planning & Urban Development.

Design Review Comments *(red text denotes standards that are not met)**:***

(a) R-P Residential Professional Zone

(1) Standard: For development within the R-P zone where there is a consistent established architectural style or character to the existing structures in the immediate vicinity in which the development is proposed, that the concurrently visible architectural style or character of the proposed development would not be incongruous to that established style or character.

Residential Buildings – no change since Workshop

- The established residential character uses articulation and massing elements such as gable and hip roofs, elevated ground floor, bay windows, extended porches, and overhanging eaves and cornices. To this end, the gable roof, shingle siding, shutters, and covered entries are appropriate. However, additional elements such as extended porches, bay windows, elevated entry, or similar would make the architecture more similar to the surrounding fabric – applicant is constrained by the setback requirements and has not been able to add bay windows or extended porch for that reason.
- The building and front doors have a direct relationship to the street similar to the other houses nearby.
- The slope of the roof was revised to be more comparable to the context. The gable dormers now have windows in response to staff comment.
- Parking areas are placed away from the street and should be screened from abutting properties according to this standard as well as the Site Plan standards.

Office Building

- Staff support the revisions to the office building – moved the shed dormer away from the street, emphasis on the entry with storefront, canopy, direct path from sidewalk. The building clearly conveys its commercial use while formally referencing the residential buildings nearby with its roofline, window patterns and proportions, and material type and placement.

- Red brick at the ground floor feels out of place here – the surrounding fabric is clapboard and shingle with brick foundation. Staff support the approach to differentiate the ground floor with trim and material change but suggest using a grey color palette and either a fiber cement or brick in a darker grey color.
- What is the rationale for the smaller windows on the façade?
- The lights are not highlighting architectural features. Staff recommend that building lighting only occur at the entrance – perhaps downlights in the canopy or sconces. Lights must be cut-off.
- The canopy at the entrance helps emphasize the entrance but the supports feel out of scale with the building and have an awkward placement with the window – consider alternatives.

Memorandum
Planning and Urban Development Department
Planning Division

To: Sean Dundon, Chair and Members of the Portland Planning Board
From: Matthew Grooms, Planner
Date: August 9, 2018
Re: Twelve-Unit Mixed-Use Development, Estelle Estates, LLC
Project #: 000012-2018 CBL: 344-E-006
Meeting Date: August 14, 2018

I. INTRODUCTION

Estelle Estates, LLC has submitted a Level III Site Plan, Subdivision and Conditional Use application for a new mixed-use development with twelve residential condominiums and 3,200 square feet of office space on a 1.27-acre parcel located at 300 Allen Avenue within the North Deering Neighborhood. This property falls within both the R-5 Residential and RP Residential Professional zones. The surrounding context consists of predominantly single-family and multi-family housing (located to the north, south and west) and commercial property, located to the east. The proposed development involves demolition of an existing single-family structure and construction of one new three and a half story office building, three three-story duplex structures and two three-story triplex structures and 36 off-street parking spaces.

Figure 1: Approximate location of Development Site

The Planning Board held an initial workshop on this proposal on June 12, 2018 to review site plan, subdivision, conditional use and inclusionary zoning standards. The purpose of this second workshop is specifically for the Planning Board to weigh in on the design of the proposed office building and overall site configuration, with specific attention paid to separation of on-site uses and usable open space. Because of this, the subsequent memo does not provide a comprehensive overview of all applicable standards, but only these two topics. For additional information, please review the attached June 12th Planning Board memo (Attachment 1).

A total of 344 notices were sent to property owners within 500 feet of the site and a legal ad ran in the August 3th and 6th, 2018 editions of the Portland Press Herald.

Applicant: Peter Bouchard, ESTELLE ESTATES, LLC
Consultants: Doug Reynolds, P.E., Gorrill Palmer; Rex J. Croteau, Titcomb Associates

II. PLANNING BOARD WORKSHOP – JUNE 12, 2018

At the June 12th workshop, the Planning Board noted several concerns with the proposal for 300 Allen Avenue, and stated that they were not prepared to have this project go to a public hearing. Specifically, those concerns were as follows:

1. While supportive of modular buildings, the actual designs being proposed did not meet the standards of the design manual, and would need to be reworked to incorporate relevant standards.
2. Proposed buildings were found to have no activity at ground-level, with garages and no active living space. It was recommended that additional efforts be made to activate this plane.
3. Open space provided was very limited, and did not appear suitable for active or passive use. The Board recommended that the applicant increase and/or convert limited existing open space into a more usable site amenity.
4. The proposed office use transcended into the residential portion of the site. The Board asked that the office use be segregated to the extent possible.

5. The proposal includes extensive wetland impacts of 9,159 square feet. Members of the Board asked that these impacts be reduced to the extent possible.
6. A portion of the northerly-most triplex building was situated on top of a 35' foot water and sewer easement, and needed to be relocated out of that easement.

III. MEETING WITH APPLICANT – JULY 17, 2018

Early in July, revised plans for the project at 300 Allen Avenue were submitted and reviewed by City staff. These revisions addressed some of the Board's comments, notably; building design more compliant with design manual standards, reduction in impervious surface and wetland impacts, increased outdoor space for use by residents, and relocation of the triplex building out of the sewer easement. However, the office parking was still located in close proximity to the residential units, and the amount of usable outdoor space had not significantly increased. As a result of this, the staff requested an in-person meeting that was held on July 17, 2018, where the primary focus was site configuration.

At this meeting, the applicant stated that a number of factors reduced their overall flexibility in being able to address this concern of the Planning Board. These included the sewer easement, which occupies a significant portion of the lot's buildable area, site topography, which limits the potential for usable open space, stormwater requirements, the presence of two separate zoning districts, required parking, required fire turnaround, and required building setbacks. Together, these factors essentially locked the developer into the proposed design, with only minor modifications being possible.

The staff made several suggestions at this meeting, which included relocating office parking adjacent to the office use, providing front porches onto residential buildings with frontage along Allen Avenue, clustering the duplex units into larger residential buildings with between three (3) and six (6) units, and orienting the duplex units so that they would be entirely or partially arrayed across the rear of the property. Due to either property constraints or marketability concerns, the applicant felt that these approaches were largely infeasible, with the exception of relocating office parking, which appeared to be feasible.

Following this meeting, revised plans were submitted, which most significantly relocated eight (8) parking spaces under the proposed office building and reduced their overall surface parking count, and a fire-truck turnaround was provided.

IV. UPDATED PLANS FOR AUGUST 14, 2018 WORKSHOP

The project is proposed as a mixed-use development with twelve two-bedroom condominiums located in three three-story modular duplex buildings and two three-story modular triplex structures as well as a two and a half-story modular office building. According to the application, all proposed buildings will be less than 35' feet in height. Each residential unit will feature a one-car garage located at ground level within the principal buildings, and additional parking space either alongside the residential unit or within a small off-street parking area. Eight (8) tandem parking spaces are now proposed at ground level of the office building, with the four (4) remaining required parking spaces being located in a small parking area across from the duplex residential units. This parking area is connected via a 5' foot bituminous pathway. Individual units that front Allen Avenue also feature bituminous walkways that connect with the public sidewalk.

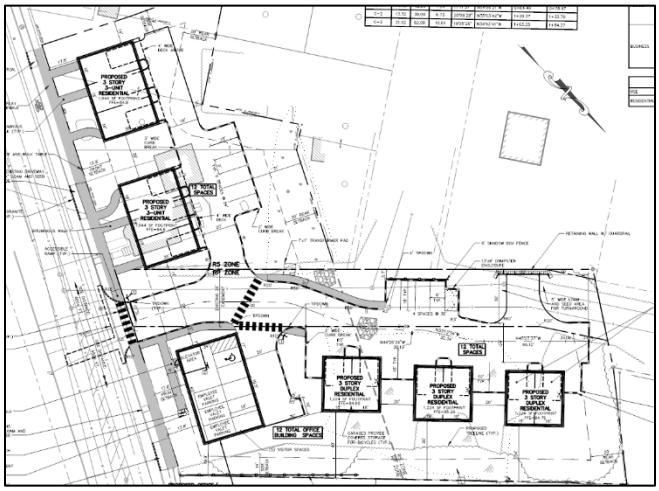

Figure 2: Revised site plan based upon staff and Board feedback

The residential buildings have been modified to address preliminary design review comments, and have had balconies provided for each unit, which are intended to provide additional outdoor space on this constrained site. The rhythm of window placement has been made consistent, dormers have been provided with windows and building facades have been slightly articulated to provide greater texture. The suggestion to provide a front porch was deemed infeasible due to setback requirements, and so at this point, the ground level remains largely inactive.

At the time of the July 17th meeting, the design of the office building was very similar to that of the proposed residential buildings and found to be too residential in nature. Staff suggested that this building be revised so as to stand out as a non-residential building. Based upon this suggestion, and

discussions with staff to relocate some of the parking underneath the office building, the overall design of that building was significantly revised. This building is now three and a half stories tall with eight (8) tandem parking spaces located at ground level and accessible via the rear of the building. The second and third floors will consist of office space, and the fourth floor will feature storage space. The building is accented by a shed dormer along the Allen Avenue façade.

Another concern discussed at the July 17th meeting was the lack of an adequate fire-truck turnaround. The placement of this turnaround has been particularly challenging as the city's technical manual requires that the turnaround be located on the right side of a street, and due to the existing easement, this posed a significant challenge, as residential buildings were confined to this same area. The City's life-safety reviewer has consented to a left-turnaround, which has been provided just beyond the four (4) space office parking area.

Due to the extensive grade differential present at 300 Allen Avenue, that portion of the site will be extensively regraded, with a finished floor elevation of between 84.2' feet and 85.5' feet. Around the perimeter of the easterly lot, the slope will be stabilized using rip-rap in several locations and will also be the location for proposed stormwater treatment systems.

In regards to stormwater management, the development will utilize a Bioretention pond, grassed underdrained soil filters, a FocalPoint, and drip strips to provide water quality and quantity treatments.

Other site improvements include the removal of one existing curb cut and replacement with sidewalk, installation of granite curbing, installation of a mixture of trees, shrubs, ornamental grasses and perennials, located predominately along the Allen Avenue frontage and along the westerly property boundary. In response to both Board feedback and concerns from abutters, the applicant has significantly increased buffer plantings around the exterior of the site and has added shadowbox fencing around proposed parking areas to shield vehicle headlights. Site lighting is achieved through five pole-mounted light fixtures located throughout the site.

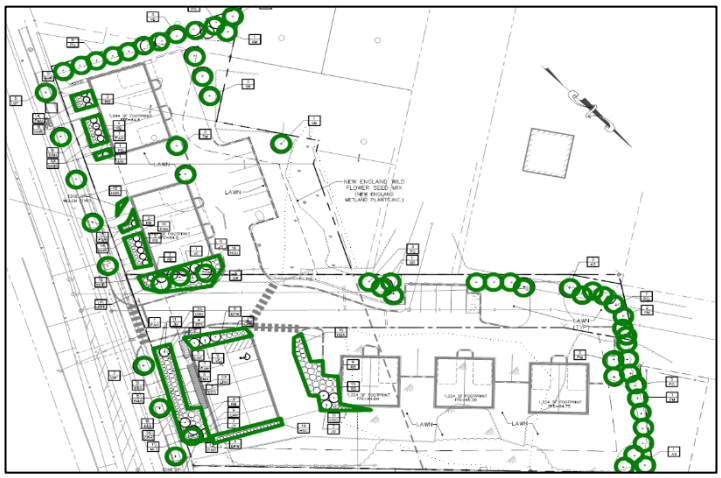

Figure 3: Proposed landscape plan, augmented to screen site from abutting residential properties

V. DISCUSSION BASED UPON UPDATED PLANS

Going in to this second workshop, the staff finds that the applicant has made a good-faith effort at addressing staff and Board concerns within the parameters of the project being proposed. Site constraints pose a serious challenge to developing this site, and it may not be feasible to increase the amount of usable open space without significant revision to the proposal, notably a decrease in the number of residential units. It should be noted that the project as presented meets applicable zoning, site plan and subdivision standards.

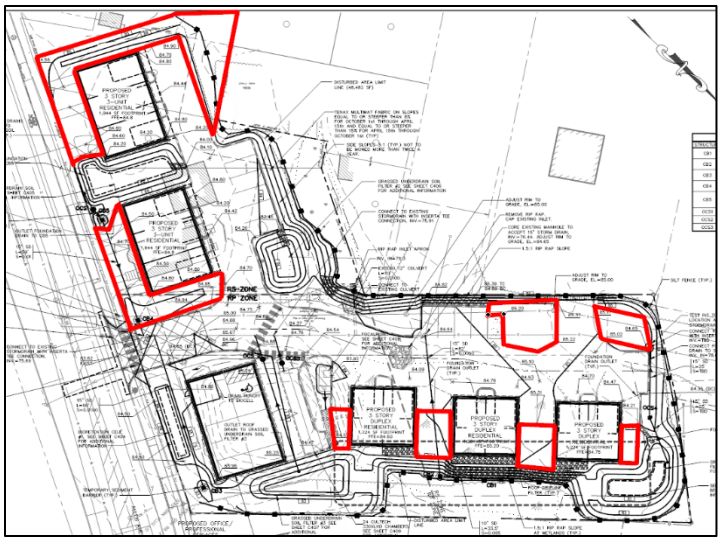

Figure 4: Open-space areas potentially suitable for active/passive use shown in red

In looking at the site, much of the proposed open-space is essentially remainder area, located in and around parking areas or along the property boundary. The duplex units feature 20' feet of open space in between each building, or approximately a 10' foot wide strip for each unit. The triplex units meanwhile are limited to space between the proposed building and Allen Avenue, or in close proximity to neighboring properties to the south of this site. The applicant is proposing to landscape much of this area to provide buffering and meet

site landscaping requirements. To compensate for this lack of open space, each residential unit is provided with two balconies, one located off of the kitchen and dining area on the second floor, and a second located off a bedroom on the third floor. Nearby, publicly accessible open space includes Pine Grove Park, located 0.7 miles east of this site, and University Park, located 0.5 miles to the southwest.

This workshop is an opportunity for the Board to review changes made and determine whether or not the configuration of the site is acceptable, or if more significant revisions to the proposal are necessary.

VI. PUBLIC COMMENT AND NEIGHBORHOOD MEETING

As of the writing of this report, three (3) written comments have been received by the Planning Division. The concerns raised in these comments were primarily focused on drainage, the height of the proposed buildings and screening of the development from adjacent properties. In preliminary review comments, the staff asked that additional buffer plantings be provided in accordance with city's standards for site buffering. The staff have also requested updated building elevations that clearly indicate the height of buildings as measured from average grade.

The required neighborhood meeting for this project was held on June 25, 2018 at the Lyman Moore Middle School, and was attended by thirteen (13) members of the public. At this meeting, those in attendance raised questions regarding projected traffic impacts, buffering of the site against nearby residential areas, drainage improvements, snow removal, and development schedule. In the neighborhood meeting packet provided, responses to these questions are listed, and additionally have been addressed in revised plan submittals (Attachment M).

VII. ZONING ANALYSIS

The proposed project lies partially within the R-P Residence Professional zone and partially within the R-5 Residential zone, with the office component being located entirely within the R-P zone. The residential structures are considered a multiplex development and are permitted by right within both the R-5 and R-P zones.

Figure 5: Location of property with zoning context

In terms of dimensional requirements, the project meets the standards of the R-5 and R-P standards for setbacks, building height, lot size, lot width, street frontage, units per building and impervious surface ratio. The front yard was initially non-compliant, although the site plan has been revised and the front yard setback now meets city standards.

The proposed uses require a total of thirty-two (32) parking spaces, eight (8) for the proposed office use and twenty-four (24) for the proposed residential uses. A total of thirty-six (36) parking spaces are being provided, which staff finds acceptable. This figure was reduced significantly from forty-four (44) in an effort to reduce wetland impacts.

VIII. DESIGN REVIEW

Building design was a significant concern of the Planning Board at the June 12th workshop where it was felt that the designs being proposed were not in compliance with city design standards. The Board had concerns that the ground plane of the site was not sufficiently activated, and that the building's articulation and positioning of fenestration was awkward, particularly for the triplex units along Allen Avenue. The Board also requested that renderings and elevations for the proposed office building be provided.

The applicant has since submitted two separate sets of renderings for the proposed buildings, including renderings of the office building. This building was significantly revised following the July 17th meeting with staff, where parking was placed on the ground level, and the façade was significantly simplified. Based upon these most recent elevations, the City's Urban Designer has provided the following comments. These comments are predominantly concerned with the office building, as the residential buildings have since addressed the majority of staff and Board comments.

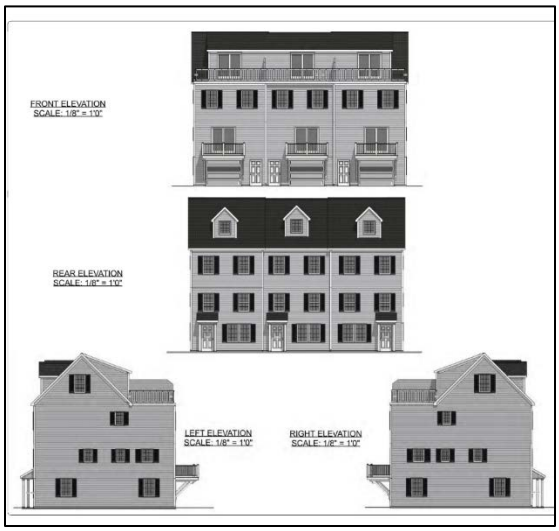

Figure 6: Proposed triplex elevations

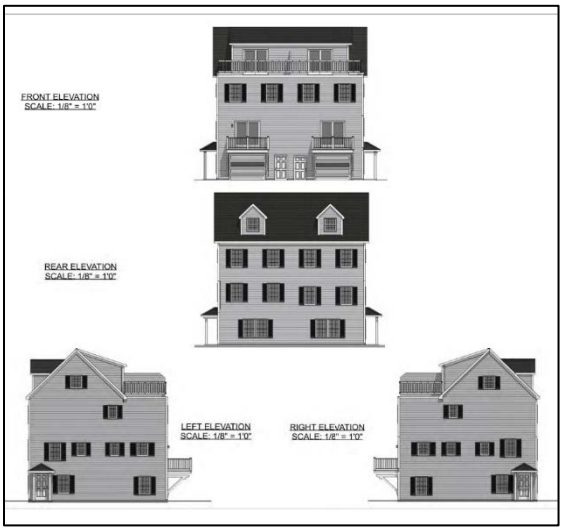

Figure 7: Proposed duplex elevations

Residential Buildings:

- **Staff comment**- Previously staff and the Planning Board commented on the lack of articulation
  - Update based on revised drawings – The project currently uses plane changes, gable dormers, covered entries to provide visual interest. Additional elements such as extended porches, bay windows, elevated entry, or similar could be incorporated to address these comments in a contextual way.
- **Staff comment** – Staff suggested that one, connected porch might be more appropriate and functional space rather than individual stoops.
  - Update based on revised drawings – While still in favor of this approach, the staff recognizes that this is infeasible based upon front yard setbacks and site constraints.

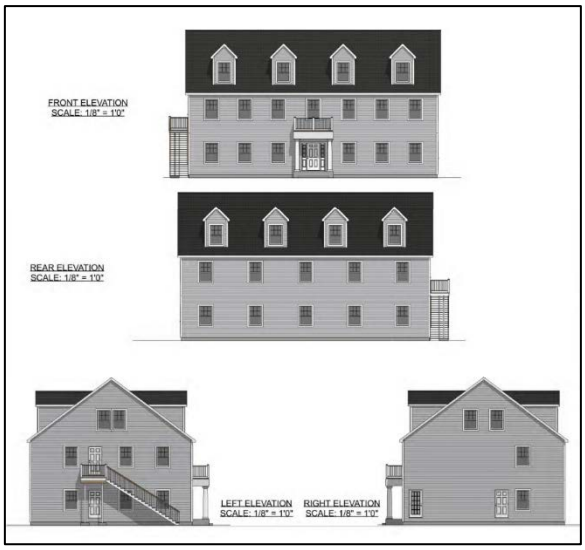

Figure 8: First proposal for office building

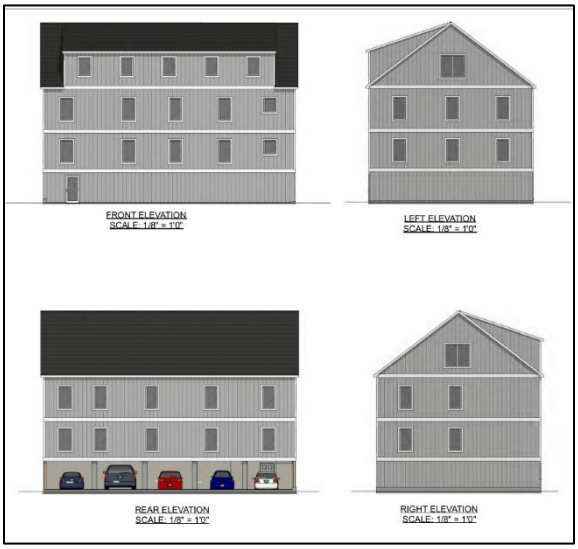

Figure 9: Revised proposal based upon feedback from staff and relocation of parking

Office Building:

- **Staff comment** – Does the Board consider the building to have a commercial character? Is a gable roof with shed dormer appropriate strategy to relate a commercial building to the residential neighborhood?

- **Staff comment** – The front façade is flat, which is out of character with the neighborhood where more articulation exists, even in commercial buildings. Once solution would be to remove the shed dormer or to move it to the back side of the building.
- **Staff comment** – Staff further suggest the street-facing, ground floor entry needs to become more prominent to be legible as the entrance but also to convey this commercial use.
- **Staff comment** – Staff recommend a material other than board and baton which is a rural material – clapboard or shingle or vertical board would be more appropriate.
- **Staff comment** – The building and front door are oriented to the street but there is not direct access from street to the door. The door lacks emphasis as the primary entrance to the building and is diminutive compared with the scale of the building. Staff suggest that a direct path from the street to the door be introduced and that the ground floor façade be revised to be more active – clerestory windows, larger door with sidelites/canopy, emphasis with lighting and signage, change in materials.
- **Staff comment** - Parking areas are placed away from the street or below the building, facing interior to the site. The ground floor now houses structured parking instead of active uses – the façade design now lacks activity and engagement at the street level.

IX. NEXT STEPS

1. Address staff comments
2. Address additional comments of the Planning Board
3. Determine whether or not the scope of the project is suitable to the development site
4. Prepare final plan submission, including subdivision and site plan submittal requirements as included in 14-496(1) and (b) and 14-527(e) and (f) for review by the Planning Authority and Planning Board
5. Hold final Planning Board Hearing

X. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Planning Board Workshop Report (6.12.18)
2. Final Design Review Comments
3. Public Comment
    a. Susan Mckenna and James Mckenna
    b. Christopher Ellingwood
    c. Christopher Ellingwood

APPLICANT'S SUBMITTALS

A. Cover
B. Application Form
C. Agent Authorization
D. Project Narrative
E. Right, Title & Interest
F. Financial and Technical Capacity
G. Stormwater Management Plan
H. Resource Letter
I. Ability to Serve Letters
J. Level III Site Plan Checklist
K. Zoning Analysis Table
L. Tier I NRPA Permit
M. Revised Building Elevations
N. Traffic Memo
O. Lighting Cut Sheets
P. Autoturn Plan
Q. Response to Staff Comments
R. Neighborhood Meeting

PLANS

Plan 1. Cover Sheet
Plan 2. Existing Conditions Plan I
Plan 3. Existing Conditions Plan II

Plan 4. Site Plan
Plan 5. Utility Plan
Plan 6. Grading, Drainage and Erosion Control Plan
Plan 7. Site Details
Plan 8. Miscellaneous Details
Plan 9. Drainage Details
Plan 10. Bioretention Pond I Plan and Details
Plan 11. Grassed Underdrain Soil Filter 1 Plan and Details
Plan 12. Grassed Underdrain Soil Filter 2 Plan and Details
Plan 13. Grassed Underdrain Soil Filter 3 Plan and Details
Plan 14. Grassed Underdrain Soil Filter 4 Plan and Details
Plan 15. FocalPoint Details
Plan 16. Erosion and Sedimentation Control Details
Plan 17. Erosion and Sedimentation Notes
Plan 18. Lighting Plan
Plan 19. Landscape Plan

PLANNING BOARD REPORT
PORTLAND, MAINE

Level III Site Plan, Subdivision and Conditional Use
300 Allen Avenue
Administrative Authorization and Conditional Use Applications
PL-000012-2018, CU-000014-2018
Estelle Estates, LLC, Applicant

Submitted to: Portland Planning Board: Public Hearing Date: September 25, 2018	Prepared by: Matthew Grooms, Planner Date: September 20, 2018

I. INTRODUCTION

Estelle Estates, LLC has submitted a Level III Site Plan, Subdivision, Conditional Use application for inclusionary zoning and Conditional Use application for off-street parking in the R-5 Residential zone, for a new mixed-use development with twelve residential condominiums and 3,200 square feet of office space on a 1.27-acre parcel located at 300 Allen Avenue within the North Deering Neighborhood. This property falls within both the R-5 Residential and RP Residential Professional zones. The surrounding context consists of predominantly single-family and multi-family housing (located to the north, south and west) and commercial property, located to the east. The proposed development involves demolition of an existing single-family structure and construction of one new two-story office building, three duplex structures, two triplex structures and 36 off-street parking spaces.

Figure 1: Approximate location of Development Site

The Planning Board has held two workshops on this proposal, with the first being on June 12, 2018, and the second being August 14, 2018. The first workshop provided the Board with a general overview of the project and compliance of the project with site plan, subdivision, conditional use and inclusionary zoning standards. The second workshop meanwhile dealt with design of the proposed office building and site configuration, with specific attention paid to separation of on-site uses and usable open space. This hearing report provides a thorough analysis of compliance with applicable standards, and an overview of the work that has been completed to date to address staff and Board comments and concerns.

A total of 344 notices were sent to property owners within 500 feet of the site and a legal ad ran in the September 14th and 17th, 2018 editions of the Portland Press Herald.

Applicant: Peter Bouchard, ESTELLE ESTATES, LLC
Consultants: Doug Reynolds, P.E., Gorrill Palmer; Rex J. Croteau, Titcomb Associates

II. REQUIRED REVIEWS

Waiver Requests	*Applicable Standards*
Preservation of Significant Natural Features – Applicant is seeking to infill 9,159 square feet of scrub shrub wetland, and has applied for a Tier I application with Maine DEP. Staff Comments: The review staff concur that wetland impacts have been reduced to the extent practicable while still meeting zoning and site plan standards, and for this reason, are supportive of this waiver.	Site Plan Standard, *Section 14-526(b)(1).* requiring that significant natural features be preserved through incorporation into site design.

Review	*Applicable Standards*
Site Plan	*Section 14-526*
Subdivision	*Section 14-497*
Conditional Use – Inclusionary Zoning	*Section 14-487*
Conditional Use – Off-Street Parking	*Section 14-118*

III. PROJECT DATA

Existing Zoning	R-5 Residential, R-P Residence Professional
Existing Use	Vacant/single-family
Proposed Use	Mixed-Use w/ 12 residential units and 3,200 sf of office space
- Bedroom Mix	12 two-bedroom units
Parcel Size	55,342 SF (1.27 acres)

	Existing	*Proposed*	*Net Change*
Building Footprint	1,800 SF	9,744 SF	7,944 SF
Building Floor Area	3,600 SF	17,888 SF	14,288 SF
Impervious Surface Area	2,700 SF	28,066 SF	25,366 SF
Parking Spaces	2	36	34
Bicycle Parking Spaces	0	14	14
Estimated Cost of Project	$500,000		

IV. EXISTING CONDITIONS

The proposed project site is located on Allen Avenue between Pennell Avenue and Washington Avenue and at present consists of three separate lots, one of which is occupied by a single-family structure with garage and others being undeveloped. An existing bituminous sidewalk runs along the entire length of frontage for all three properties.

Figure 2: Existing conditions. Rise in elevation shows vegetated soil stockpile. Structure closest in view is to be demolished.

The easterly and largest of the three lots being developed is 39,330 square feet in area and while undeveloped was recently cleared. This lot features a maximum elevation of approximately 90' feet located atop a vegetated soil stockpile at the front of the site. This stockpile features steep slopes of 33% down to a minimum elevation of 80' feet. To the rear of this hill, emergent wetlands occupy a significant portion of the site, totaling 9,159 square feet. Mature tree cover can be found around the perimeter of this parcel.

The central lot is 14,213 square feet in area and contains a single-family structure with associated two-car garage. The rear portion of the lot contains additional wetlands with more limited topographical variation, gently sloping from between 80' feet and 82' feet in elevation.

The westerly lot is 4,642 square feet in area, and is currently undeveloped, providing a grassed buffer between the property located at 278 Allen Avenue and the existing single-family structure located at 292 Allen Avenue, proposed for demolition. As with the adjacent lot, the topographical variations are minor, ranging from a minimum of 82' feet and a maximum of 84' feet. Some mature vegetation can be found at the rear of the lot.

V. PROPOSED DEVELOPMENT

The project is proposed as a mixed-use development with twelve two-bedroom condominiums located in three three-story modular duplex buildings and two three-story modular triplex structures as well as a three and a half-story modular office building. According to building elevations, all proposed residential buildings appear to be less than 35' feet in height (though this still needs to be verified with updated building elevations), and the proposed office building will have a maximum height of 42.5' feet, though height for a gable-roofed building is calculated from the midpoint, which is 34.625' feet. Each residential unit will feature a one-car garage located at ground level within the

principal buildings, and additional parking space either alongside the unit as with the duplex structures, or in a separate off-street parking area for the triplex building. The office use requires twelve (12) off-street parking spaces, eight (8) of which are located beneath the office building and another four (4) are located in a separate off-street parking area towards the rear of the site across from the duplex buildings. This parking area is connected to the proposed office building via a 5' foot bituminous walkways. Individual units that front Allen Avenue also feature bituminous walkways that connect with the public sidewalk along Allen Avenue.

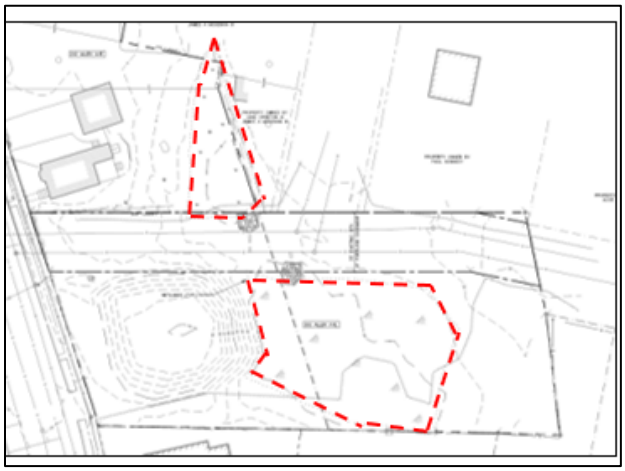

Figure 3: Areas of on-site wetland

Due to the extensive grade differential present at 300 Allen Avenue, that portion of the site will be extensively regraded, with a finished floor elevation of between 84.2' feet and 85.5' feet. Around the perimeter of the easterly lot, the slope will be stablizied using rip-rap in several locations and will also be the location for proposed stormwater treatment systems.

In regards to stormwater management, each of the proposed buildings will feature roof dripline filtration system that will feed subcatchment areas prior to being treated within one of four grassed underdrained soil filters. The site will also feature a bioretention pond as a separate stormwater BMP, that will be located between the proposed office building and Allen Avenue. Following treatment, runoff will discharge into the existing stormdrain located beneath Allen Avenue via a new stormdrain connection.

The site will be serviced by a 2" water line and 6" sanitary sewer connection. Electrical service will be located underground although the utility infrastructure along Allen Avenue is proposed to remain pole-mounted. Other utility connections include gas and then telephone/cable.

Other site improvements include the removal of one existing curb cut and replacement with sidewalk, installation of granite curbing, installation of a mixture of trees, shrubs, ornamental grasses and perennials, located predominately along the Allen Avenue frontage and along the westerly property boundary. Parking lot trees and other plantings are provided as well, with buffer plantings and shadow fencing located along the perimeter of the site to provide additional buffering. Five pole mounted light fixtures are also proposed in order to illuminate the project site.

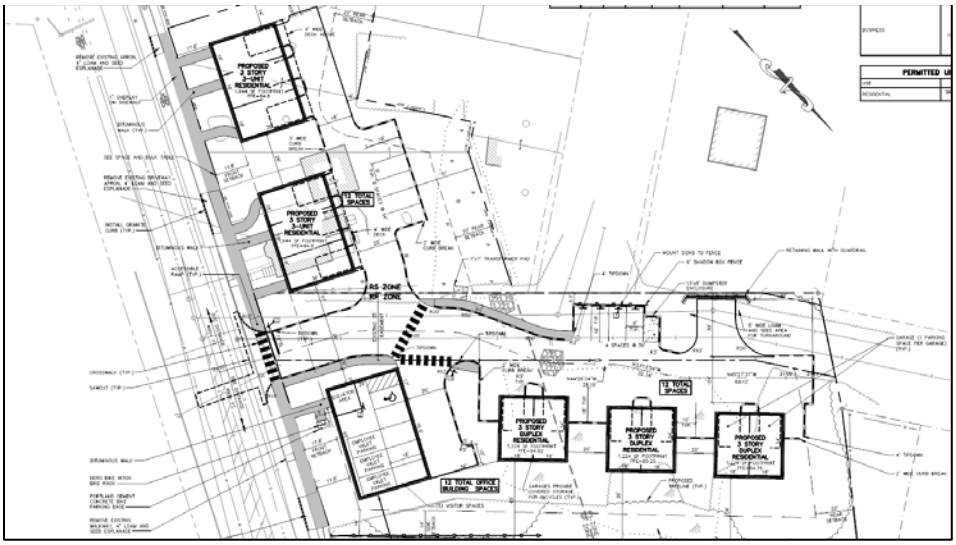

Figure 4: Final proposed site plan

VI. PUBLIC COMMENT AND NEIGHBORHOOD MEETING

As of the writing of this report, two (2) written comment have been received by the Planning Division. The concerns raised by the abutter were primarily focused on the height of the proposed buildings and screening of the development from adjacent properties. In preliminary review comments, the staff asked that additional buffer plantings be provided in accordance with city's standards for site buffering which has been provided. The staff have also requested updated building elevations that clearly indicate the height of buildings as measured from average grade, which again, has been provided.

The required neighborhood meeting for this project was held on June 25, 2018 at the Lyman Moore Middle School, and was attended by thirteen (13) members of the public. At this meeting, those in attendance raised questions regarding projected traffic impacts, buffering of the site against nearby residential areas, drainage improvements, snow removal, and development schedule. In the neighborhood meeting packet provided, responses to these questions are listed, and additionally have been addressed in revised plan submittals (Attachment M).

VII. REVIEW PROCESS

A. Planning Board Workshop – June 12, 2018

At the June 12th workshop, the Planning Board noted several concerns with the proposal for 300 Allen Avenue, and stated that they were not prepared to have this project go to a public hearing. Specifically, those concerns were as follows:

1. While supportive of modular buildings, the actual designs being proposed did not meet the standards of the design manual, and would need to be reworked to incorporate relevant standards.

2. Proposed buildings were found to have no activity at ground-level, with garages and no active living space. It was recommended that additional efforts be made to activate this plane.

3. Open space provided was very limited, and did not appear suitable for active or passive use. The Board recommended that the applicant increase and/or convert limited existing open space into a more usable site amenity.

4. The proposed office use extended into the residential portion of the site. The Board asked that the office use be segregated to the extent possible.

5. The proposal includes extensive wetland impacts of 9,159 square feet. Members of the Board asked that these impacts be reduced to the extent possible.

6. A portion of the northerly-most triplex building was situated on top of a 35' foot water and sewer easement, and needed to be relocated out of that easement.

B. Meeting with Applicant – July 17, 2018

Early in July, revised plans for the project at 300 Allen Avenue were submitted and reviewed by City staff. These revisions addressed some of the Board's comments, notably; building design more compliant with design manual standards, reduction in impervious surface and wetland impacts, increased outdoor space for use by residents, and relocation of the triplex building out of the sewer easement. However, the office parking was still located in close proximity to the residential units, and the amount of usable outdoor space had not significantly increased. As a result of this, the staff requested an in-person meeting that was held on July 17, 2018, where the primary focus was site configuration.

At this meeting, the applicant stated that a number of factors reduced their overall flexibility in being able to address this concern of the Planning Board. These included the sewer easement, which occupies a significant portion of the lot's buildable area, site topography, which limits the potential for usable open space, stormwater requirements, the presence of two separate zoning districts, required parking, required fire turnaround, and required building setbacks. Together, these factors essentially locked the developer into the proposed design, with only minor modifications

being possible.

The staff made several suggestions at this meeting, which included relocating office parking adjacent to the office use, providing front porches onto residential buildings with frontage along Allen Avenue, clustering the duplex units into larger residential buildings with between three (3) and six (6) units, and orienting the duplex units so that they would be entirely or partially arrayed across the rear of the property. Due to either property constraints or marketability concerns, the applicant felt that these approaches were largely infeasible, with the exception of relocating office parking, which appeared to be feasible.

Following this meeting, revised plans were submitted, which most significantly relocated eight (8) parking spaces under the proposed office building and reduced their overall surface parking count, and a fire-truck turnaround was provided.

Figure 5: Revised landscape plan, in response to abutter concerns

Figure 6: Plan showing available open-space on-site

C. Planning Board Workshop – August 14, 2018

At the August 14th workshop, the Planning Board noted that the redesign of the residential buildings was successful in addressing Board feedback, and also acknowledged that the applicant had done much to address screening of the property from abutters and reduce wetland impacts to the extent practicable. In discussions during the second workshop, members of the Board continued to push the applicant to make improvements on site configuration, specifically the juxtaposition of the office use and residential uses, ground floor activation of residential units and creation of usable open space. Of particular note, the Board requested that the applicant continue to work with staff on the following concerns:

1. Design of office building and proper integration of the building within the surrounding context
2. Review of Division 25 to determine if front porches would be permitted to extend within setbacks
3. Provide additional information on building elevations, i.e. building height and building materials

Following the workshop, the applicant submitted updated building elevations for the office building which largely address staff and Board comments (staff comments are listed below). Additionally, upon review of the Division 25 standards, a small front porch is permitted within the front setback, so long as the porch does not exceed 50 square feet, which does not meet the suggestion for a long and shared porch along the front of the triplex buildings. Lastly, updated building elevations were received for the office building which do include additional information related to building height and materials. The elevations for the residential buildings shall also be required, and has been made a condition of approval.

The overall site configuration has not been significantly changed, as a result of existing site constraints which include existing grades, utility easement, fire department requirements and zoning.

VIII. RIGHT, TITLE, & INTEREST AND FINANCIAL & TECHNICAL CAPACITY

a. The applicant has provided a purchase and sale agreement and deed of sale for the purchase of three parcels, recorded at the Cumberland County Registry of Deeds (Book 34605, Page 339). The applicant is also seeking to finalize a land swap of 897 square feet, that would be transferred to the property at 278 Allen Avenue. This land transfer has not occurred as of the writing of this memo.

b. As evidence to demonstrate sufficient financial and technical capacity, the applicant has provided a letter from Barton Mortgage Corporation stating that the applicant has sufficient financial and technical capacity to complete the project. The anticipated cost of the project is $500,000. (Attachment E)

IX. ZONING ANALYSIS

The proposed project lies partially within the R-P Residence Professional zone and partially within the R-5 Residential zone, with the office component being located entirely within the R-P zone. The residential structures are considered a multiplex development and are permitted by right within both the R-5 and R-P zones.

In terms of dimensional requirements, the project appears to meet the majority of R-5 and R-P standards for setbacks, building height, lot size, lot width, street frontage, units per building and impervious surface ratio. A maximum building height of 45' feet is permitted within the R-P zone, whereas 35' feet is permitted within the R-5. The staff are requesting that an updated building elevation be provided for the duplex and triplex buildings which demonstrates compliance with height standards. This has been drafted as a condition of approval.

Figure 7: Location of property with zoning context

The proposed uses require a total of thirty-two (36) parking spaces, eight (12) for the proposed office use and twenty-four (24) for the proposed residential uses. A total of thirty-six (36) parking spaces are being provided.

Off-Street Parking Conditional Use

The use 'off-street parking', as a stand-alone use, is identified as a conditional use for the R-5 Residential zone. The project proposes a total of twelve (12) off-street parking spaces dedicated to the office use, all but one (1) of which are located within the R-5 zone. In reviewing this proposal, the zoning administrator determined that a conditional use application would be required to allow for this configuration. The proposal was reviewed against the general standards for conditional use, listed under Section 14-474. These standards relate to integration of a conditional use with other permitted uses, and considers traffic impacts, screening and negative externalities such as odor, glare, noise and other such characteristics of the use. Based upon these criteria, the staff finds the proposed conditional use to be compliant with the general conditional use standards.

X. DEVELOPMENT REVIEW

A. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527) and SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The applicant has not submitted a recording plat. A recording plat will need to be submitted and review by DPW and Corporation Counsel, and has been made a condition of approval.

B. SUBDIVISION (Section 14-496)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below.

1. Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) 1), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)
   Lauren Swett, P.E. with Woodard and Curran Engineering, has reviewed the erosion and sediment control plans and details, and inspection and maintenance requirements and offers the following comment (Attachment 1):

- I have reviewed the grading and drainage plans for 300 Allen Avenue, and they have modified their stormwater treatment strategy to account for their proposed site layout changes – one larger grassed underdrained soil filter has been replaced by a smaller soil filter and a Focal Point system. They are still providing an adequate level of treatment for the proposed development.

2. Sufficient Water Available (Section 14-497 (a) 2 and 3)
The project will be served by a new 2-inch domestic service from the existing water main in Allen Avenue. An 'Ability to Serve' letter shall be provided by the Portland Water District and has been made a condition of approval.

3. Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)
The proposed project closes existing curb-cuts located on the property and relocates the curb cut and driveway to the easterly lot, with a 24' foot driveway for two-way traffic. The proposed driveway is located in the immediate vicinity of where Allen Avenue transitions from a three-lane street to a two-lane street. Tom Errico, P.E. with T.Y. Lin reviewed the proposal's details including access, parking, construction management plan and vehicle circulation, and has provided the following comments (Attachment 1):

- The applicant should provide an opinion on the location of the driveway as it relates to the Allen Avenue cross-section and the transition from a two-lane section to a three-lane section.
  - Status: The applicant has indicated that the Allen Avenue Paving project is shifting the three-lane section towards Washington Avenue and the driveway will not be located in a transition area. I find conditions to be acceptable and have no further comment.

- Sight distance from the driveway shall be provided.
  - Status: The requested information has been provided and I have no further comment.

- Crash data for Allen Avenue in the vicinity of the project should be provided with a safety analysis of conditions.
  - The applicant reviewed crash data and there are no high crash locations in the vicinity of the project. I have no further comment.

- A trip generation estimate shall be provided.
  - The applicant has estimated the project will generate approximately 20 to 23 trips during the AM and PM peak hours. This level of traffic is not expected to create safety or capacity problems. I have no further comment.

4. Will Provide for Adequate Sanitary Sewer and Stormwater Disposal (Section 14-497 (a) 6), and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage (Section 14-497 (a) 7)
The applicant is proposing a new 6" sanitary sewer connection for the site and has submitted a wastewater capacity application to the Water Resources Division of DPW. That application is currently under review and has been made a condition of approval.

5. Comprehensive Plan (Section 14-497 (a) 9)
The development has been designed to be consistent with the City's Master Plan, adopted in June of 2017.

B. SITE PLAN STANDARDS (Section 14-526)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. Transportation Standards
   a. Impact on Surrounding Street Systems and Access and Circulation- Tom Errico, P.E. with T.Y. Lin, has reviewed the proposal for compliance with city standards related to access and circulation and has provided the following comments:

      - A pedestrian sidewalk shall be provided between the Duplex buildings and Allen Avenue
        - Status: The plans have been revised and I have no further comment.

- The parking layout generally meets City Technical standards with the exception of the parking aisle width, where a 20-foot width is provided. The applicant should formally request a waiver and provide supporting documentation.
    - Given location of the parking spaces, the ability to use space near the building to maneuver and minimizing impact to wetlands, I support a waiver for the proposed aisle width.

b. Sidewalks
The applicant is proposing to remove existing curb cuts along their property's frontage and reconstruct the bituminous sidewalk. The project will also feature individual unit connections out to the public sidewalk and an internal pedestrian pathway system.

c. Public Transit Access
The public transit requirements do not apply to this project.

d. Parking
Thirty-six (36) parking spaces are being proposed. These include spaces that are located within garages, individual unit driveways and separated parking areas. Per Division 20, the City's off-street parking standards, the project is required to provide parking at a ratio of two (2) spaces per residential unit, and one (1) space per 400 square feet of office space for a total requirement of twenty-four (24) and twelve (12) respectively, or thirty-six.

e. Bicycle Parking
The proposal includes space for bicycle storage within each residential unit and exterior bicycle parking accommodations at the proposed office building. Proposed bicycle parking meets site plan standards.

2. Environmental Quality Standards

f. Preservation of Significant Natural Features
The development site features scrub shrub/emergent marsh wetlands that are located in the center of and along the western boundary of this site. No vernal pools or rare or unusual plant or animal species were observed at the site. As a result of the location of these wetlands and general site constraints, the applicant has indicated that it is impossible to avoid wetland impacts. The project proposal impacts 9,159 square feet of wetland, requiring the applicant to apply for a Tier I NRPA permit through Maine DEP (Attachment L). Since the initial workshop, Maine DEP has approved the proposed wetland impacts, and the staff have found the proposal to have reduced impacts to the extent practicable.

g. Landscaping and Landscape Preservation
A landscaping plan was submitted as part of the application, showing a mixture of trees, shrubs, perennials and ornamental grasses along the property's frontage, within proposed parking areas, along the westerly property boundary and in the rear of the site as buffer plantings.

In regards to street trees, a total of twenty-four (24) are required along the property's frontage. A total of ten (10) are illustrated on the proposed landscape plan. The applicant shall be required to either provide additional trees or an acceptable equivalent as identified in the site plan ordinance. This has been drafted as a condition of approval.

h. Water Quality, Storm Water Management and Erosion Control
Once developed, this site will feature 28,066 square feet of impervious surface and is subject to the Basic, General, Flooding and Urban Impaired Stream standards of Maine DEP Chapter 500 for stormwater quality and quantity control. The proposed treatment system includes on-site wet pond, a series of grassed underdrained soil filters, roof dripline filtration systems and vegetated buffers and swales which provide on-site infiltration areas. Once treated, remaining stormwater will discharge into the existing stormdrain beneath Allen Avenue.

Lauren Swett has reviewed the applicants plans and project details, and offers the following comments (Attachment 1):

- I have reviewed the grading and drainage plans for 300 Allen Avenue, and they have modified their stormwater treatment strategy to account for their proposed site layout changes – one larger grassed underdrained soil filter has been replaced by a smaller soil filter and a Focal Point system. They are still providing an adequate level of treatment for the proposed development.

- They have a very small increase in flow at one of their points of interest. I still need to do a detailed review of the HydroCAD, but I don't anticipate that the flow increase will be an issue at this location.

- They will be required to submit a stormwater maintenance agreement and O&M plan to address maintenance of the proposed stormwater systems on this site.

3. Public Infrastructure and Community Safety Standards

i. Public Safety and Fire Prevention
Mike Thompson, Division Chief of the Fire Prevention and Community Outreach Division, has reviewed the submitted plans and found them to be acceptable.

j. Availability and Adequate Capacity of Public Utilities
The project will be served by the Portland Water District, City Department of Public Works, and underground/power/cable/communications. Evidence of utility capacity shall be required of all utility providers and submission of these utility letters has been made a condition of approval.

4. Site Design Standards

k. Snow and Ice Loading
Based upon the roof design, it is not anticipated that snow or ice loading will be a concern to pedestrians within the public right-of-way or on the applicant's property.

l. View Corridors
This site is not within a Protected View Corridor as per the "View Corridor Protection Plan" approved by the Portland City Council in 2001.

m. Historic Resources
The site is not located within a historic district or within 100 feet of a historic district, landmark or landscape and as a result, this project is not required to be reviewed by Historic Preservation.

n. Exterior Lighting
The applicant has submitted a lighting and photometric plan. The plan shows the location of five (5) pole mounted site light fixtures and photometrics in compliance with city standards. The applicant has also provided a lighting cut sheet detail for the proposed fixtures, showing full cut-off fixtures.

o. Noise and Vibration
Exterior mechanical equipment is to be roof-mounted, and centrally located on top of the building to minimize visibility from adjacent properties and public spaces. It is not anticipated that this equipment will result is adverse conditions related to noise and vibration. It should be noted that HVAC equipment requires a separate building permit, through which process, noise and vibration of the units is considered.

p. Signage and Wayfinding
This standard does not apply to the proposal.

q. Zoning Related Design Standards
A design review according to the City of Portland Design Manual Standards was performed for the proposed new construction of a mixed-use commercial and residential condominium project at 300 Allen Avenue. The review was performed by Caitlin Cameron, Urban Designer, Jean Fraser, Planner

and Matthew Grooms, Planner. The project was reviewed against the R-P Residential Professional zone as well as the Multiple-Family standards in a context with a mix of commercial and residential character.

Design Review Comments (red text denotes standards that are not met):

R-P Residential Professional Zone

Standard: For development within the R-P zone where there is a consistent established architectural style or character to the existing structures in the immediate vicinity in which the development is proposed, that the concurrently visible architectural style or character of the proposed development would not be incongruous to that established style or character.

Residential Buildings – no change since Workshop

- The established residential character uses articulation and massing elements such as gable and hip roofs, elevated ground floor, bay windows, extended porches, and overhanging eaves and cornices. To this end, the gable roof, shingle siding, shutters, and covered entries are appropriate. However, additional elements such as extended porches, bay windows, elevated entry, or similar would make the architecture more similar to the surrounding fabric – applicant is constrained by the setback requirements and has not been able to add bay windows or extended porch for that reason.
- The building and front doors have a direct relationship to the street similar to the other houses nearby.
- The slope of the roof was revised to be more comparable to the context. The gable dormers now have windows in response to staff comment.
- Parking areas are placed away from the street and should be screened from abutting properties according to this standard as well as the Site Plan standards.

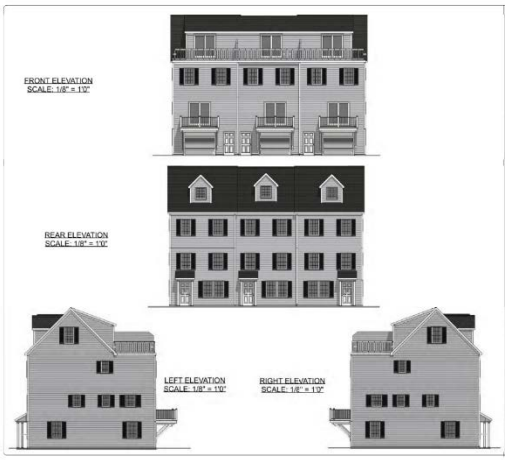

Figure 8: Proposed triplex elevations

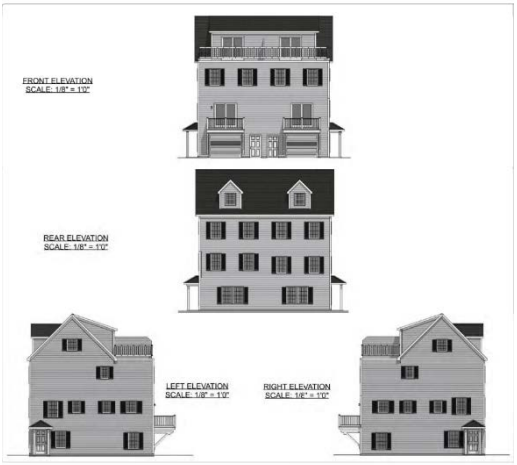

Figure 9: Proposed duplex elevations

Office Building

- Staff support the revisions to the office building – moved the shed dormer away from the street, emphasis on the entry with storefront, canopy, direct path from sidewalk. The building clearly conveys its commercial use while formally referencing the residential buildings nearby with its roofline, window patterns and proportions, and material type and placement.

- Red brick at the ground floor feels out of place here – the surrounding fabric is clapboard and shingle with brick foundation. Staff support the approach to differentiate the ground floor with trim and material change but suggest using a grey color palette and either a fiber cement or brick in a darker grey color.
- What is the rationale for the smaller windows on the façade?
- The lights are not highlighting architectural features. Staff recommend that building lighting only occur at the entrance – perhaps downlights in the canopy or sconces. Lights must be cut-off.
- The canopy at the entrance helps emphasize the entrance but the supports feel out of scale with the building and have an awkward placement with the window – consider alternatives.

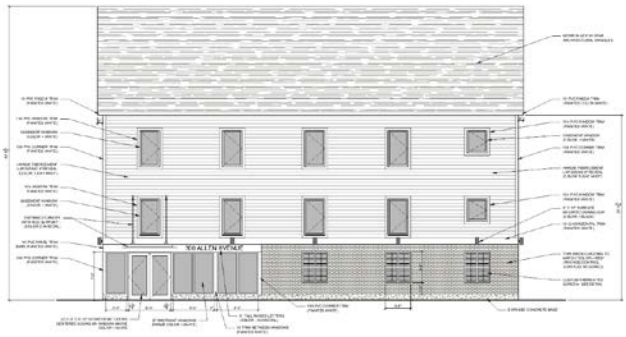

Figure 10: Proposed front elevation for office building

Figure 11: Proposed rear elevation for office building

C. INCLUSIONARY ZONING

As this proposal is providing ten (10) or more residential units, the applicant is required to meet city standards for Inclusionary zoning, which require that 10% of both units and bedrooms being provided be set aside for a household earning 120% of the area median income (AMI) or less. This unit may be provided as a fee in lieu, off-site within close proximity of the project or on-site. The applicant has elected to provide one (1) two-bedroom unit, which satisfies these requirements. Victoria Volent, Housing Program Manager with the City, has reviewed this application and has found it to be compliant, noting the following conditions:

- Staff recommends the Board approve this conditional use provided the applicant and the City enter into a Workforce Housing Agreement (WHA) before a building permit may be issued. The workforce housing agreement shall outline the details of the affordability restrictions placed on the workforce unit and will be filed as covenant to the 300 Allen Avenue property's deed with the Cumberland County Registry of Deeds before a Certificate of Occupancy may be issued.

XI. STAFF RECOMMENDATION

The Planning Division recommends approval of the Level III site plan, subdivision and conditional use applications with the recommended conditions of approval under the Planning Board motion.

XII. PLANNING BOARD MOTIONS

A. CONDITIONAL USE

Work Force Housing

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on September 25, 2018 for application CU-000014-2018 relevant to the Conditional Use as authorized by Division 30, Section 14-487 Ensuring Workforce Housing; and the testimony presented at the Planning Board Hearing, the Planning

Board [**finds/does not find**] that the proposed conditional use for workforce housing meets the standards of Section 14-474 with the following conditions:

1. The applicant shall enter into a Workforce Housing Agreement (WHA) before a building permit may be issued. The workforce housing agreement shall outline the details of the affordability restrictions placed on the workforce unit and will be filed as covenant to the 300 Allen Avenue property's deed with the Cumberland County Registry of Deeds before a Certificate of Occupancy may be issued.

Off-Street Parking

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on September 25, 2018 for application CU-000014-2018 relevant to the conditional use, "off-street parking" as authorized by Division 6, Section 14-118 and subject to conditional use standards Section 14-474; and the testimony presented at the Planning Board Hearing, the Planning Board [**finds/does not find**] that the proposed conditional use "off-street parking" meets the standards of Section 14-474.

B. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the planning board report for the public hearing on September 25, 2018 for application PL-000012-2018 relevant to Portland's site plan ordinance and subdivision ordinance and other regulations; and the testimony presented at the Planning Board hearing:

1. The Planning Board [finds/does not find], based upon the consulting transportation engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Standard (Section 1.14) which requires that aisle width for right-angle parking be 24 feet per Figure I-27. The Planning Board [**waives/does not waive**] the Technical Manual Standard (Section 1.14) to allow an aisle width measuring 20 feet within the proposed surface parking lot.

C. SUBDIVISION

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on September 25, 2018 for application PL-000012-2018 relevant to the subdivision regulations; and the testimony presented at the Planning Board hearing, the Planning Board [**finds/does not find**] that the plan is in conformance with the subdivision standards of the land use code, subject to the following conditions of approval, which must be met prior to the signing of the plat:

1. A final subdivision plan and recording plat shall be reviewed and approved by the Department of Public Works and Corporation Counsel.
2. Finalized condominium documents shall be submitted which address control of off-street parking spaces provided on-site. These documents shall be reviewed and approved by Corporation Counsel.

D. DEVELOPMENT REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on September 25, 2018 for application PL-000012-2018 relevant to the site plan regulations; and the testimony presented at the Planning Board hearing, the Planning Board [**finds/does not find**] that the plan is in conformance with the site plan standards of the land use code, subject to the following conditions of approval that must be met according to the following timeline:

Prior to Applying for a Building Permit

1. The applicant shall provide updated building elevations that address the following outstanding concerns
    a. Proposed elevations for the office building shall address Urban Designer comments regarding the entrance canopy, building mounted light-fixtures, and ground-level façade treatment. An updated photometric plan shall also be provided that includes proposed office building lighting.

   b. Updated elevations for each duplex and triplex building shall be submitted that contain information pertaining to building height and façade materials.
2. The applicant shall provide utility capacity letters from utility providers demonstrating sufficient capacity to serve this development.

Prior to Issuance of a Building Permit

3. The applicant shall provide a street tree contribution of $800, calculated at a rate of $400 per tree, for the two street trees not provided on-site as required.
4. The applicant shall coordinate with DPW and the Planning Authority on development of a construction management plan that is satisfactory to DPW.
5. A stormwater maintenance agreement shall be submitted for review and approval by DPW and Corporation Counsel.

XIII. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Final Traffic Comments
2. Final Stormwater/Drainage Comments
3. Final Design Review Comments
4. Planning Board Memo (8.14.18)
5. Public Comment
   a. Susan and James Mckenna
   b. Christopher Ellingwood

APPLICANT'S SUBMITTALS

A. Cover Letter
B. Application Form
C. Agent Authorization
D. Project Narrative
E. Right, Title & Interest
F. Financial and Technical Capacity
G. Basic Standards
H. Stormwater Management Plan
I. Resource Letter
J. Ability to Serve Letters
K. Level III Site Plan Checklist
L. Zoning Analysis Table
M. Tier I NRPA Permit Application
N. MDEP Tier I NRPA Permit
O. Traffic
P. Lighting Cut Sheets
Q. Autoturn Plan
R. Triplex Building Elevations
S. Duplex Building Elevations
T. Office Building Elevations
U. Comment Response Letter

PLANS

Plan 1. Cover Sheet
Plan 2. Existing Conditions Plan I
Plan 3. Existing Conditions Plan II
Plan 4. Site Plan
Plan 5. Utility Plan
Plan 6. Grading, Drainage and Erosion Control Plan
Plan 7. Site Details
Plan 8. Miscellaneous Details

Plan 9. Drainage Details
Plan 10. Bioretention Pond I Plan and Details
Plan 11. Grassed Underdrain Soil Filter 1 Plan and Details
Plan 12. Grassed Underdrain Soil Filter 2 Plan and Details
Plan 13. Grassed Underdrain Soil Filter 3 Plan and Details
Plan 14. Grassed Underdrain Soil Filter 4 Plan and Details
Plan 15. Focal Point Plan and Details
Plan 16. Focal Point Details
Plan 17. Erosion and Sedimentation Control Details
Plan 18. Erosion and Sedimentation Notes
Plan 19. Lighting Plan
Plan 20. Landscape Plan

Relationships.
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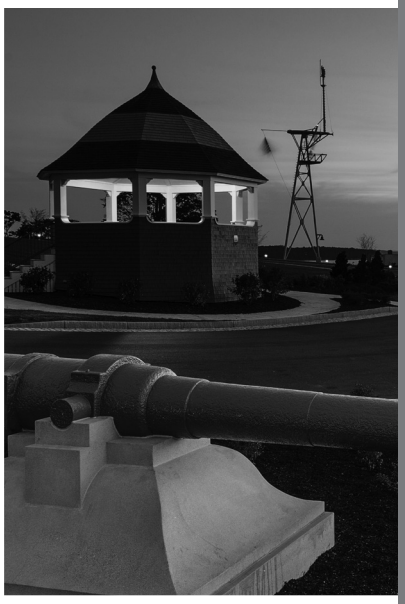

Level III Site Plan Review Application for 300 Allen Avenue Portland, Maine

PREPARED FOR:
Estelle Estates, LLC
South Portland, Maine

March 2018

SUBMITTED BY:
Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), Design Manual and Technical Manual.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719
planning@portlandmaine.gov

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	Mixed Use Development
Proposed Development Address:	300 Allen Avenue
Project Description:	Proposed Office/Professional Services Building and 12 unit multiplex residential structures with associated infrastructure.
Chart/Block/Lot:	344 E006
Preliminary Plan	
Final Plan	

II. Contact Information (Please enter n/a on those fields that are not applicable)

APPLICANT

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Home #:	
Cell #:	
Fax #:	
E-mail:	peter@bouchard.us

OWNER

Name:	
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

AGENT/REPRESENTATIVE

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Cell #:	207-329-5584
Fax #:	
E-mail:	dreynolds@gorrillpalmer.com

BILLING (to whom invoices will be forwarded to)

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SURVEYOR

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Home #:	
Cell #:	
Fax #:	
E-mail:	

ARCHITECT

Name:	
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ATTORNEY

Name:	
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
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Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Douglas Reynolds
E-mail:	dreynolds@gorrillpalmer.com
Name:	Drew Gagnon
E-mail:	dgagnon@gorrillpalmer.com
Name:	David Vitali
E-mail:	dvitali@gorrillpalmer.com

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☑	Less than 50,000 sq. ft.	$750.00
☐	50,000 – 100,000 sq. ft.	$1,000.00
☐	100,000 – 200,000 sq. ft.	$2,000.00
☐	200,000 – 300,000 sq. ft.	$3,000.00
☐	Over 300,000 sq. ft.	$5,000.00
☐	Parking lots over 100 spaces	$1,000.00
☐	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

☐	Planning Staff Review	$250.00
☐	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

☐	Traffic Movement	$1,500.00
☑	Stormwater Quality	$250.00
☑	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [12] x $25.00 each	$ 300
☐	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [ ] x $200.00 each	$
☐	Change of Use	
☐	Flood Plain	
☐	Shoreland	
☐	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ 1,800

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE	55,342	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	48,898	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
IMPERVIOUS SURFACE AREA		
Impervious Area (Total Existing)	2,700	sq. ft.
Impervious Area (Total Proposed)	28,066	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	1,800	sq. ft.
Building Footprint (Total Proposed)	9,744	sq. ft.
Building Floor Area (Total Existing)	3,600	sq. ft.
Building Floor Area (Total Proposed)	17,888	sq. ft.
ZONING		
Existing	RP/R5	
Proposed, if applicable	N/A	
LAND USE		
Existing	Vacant/Residential	
Proposed	Office/Professional/Residential	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)	1	
# of Residential Units (Total Proposed)	12	
# of Lots (Total Proposed)	1	
# of Affordable Housing Units (Total Proposed)	1 (Workforce housing unit)	
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)	0	
# of One-Bedroom Units (Total Proposed)	0	
# of Two-Bedroom Units (Total Proposed)	12	
# of Three-Bedroom Units (Total Proposed)	0	
PARKING SPACES		
# of Parking Spaces (Total Existing)	2 (Assumed in residential Driveway)	
# of Parking Spaces (Total Proposed)	24 for residential, 12 for office	
# of Handicapped Spaces (Total Proposed)	1	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	2 (office), 12 (residential garage)	
ESTIMATED COST OF THE PROJECT	$500,000	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a ***legal signature*** per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of ~~Applicant:~~ AGENT	
Date:	3/6/2018

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST**
X		1	Completed Application form
X		1	Application fees
X		1	Written description of project
X		1	Evidence of right, title and interest
X		1	Evidence of state and/or federal approvals, if applicable
X		1	Written assessment of proposed project's compliance with applicable zoning requirements
X		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
X		1	Written requests for waivers from site plan or technical standards, if applicable.
X		1	Evidence of financial and technical capacity
X		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST**
X		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
X		1	**Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)**
X		Proposed grading and contours;	
X		Existing structures with distances from property line;	
X		Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;	
X		Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);	
X		Preliminary infrastructure improvements;	
X		Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;	
X		Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);	
Waiver		Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);	
X		Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;	
X		Exterior building elevations.	

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
		1	* Completed Application form
		1	* Application fees
		1	* Written description of project
		1	* Evidence of right, title and interest
		1	* Evidence of state and/or federal permits
		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
		1	* Evidence of financial and technical capacity
		1	Construction Management Plan
		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
		1	Stormwater management plan and stormwater calculations
		1	Written summary of project's consistency with related city master plans
		1	Evidence of utility capacity to serve
		1	Written summary of solid waste generation and proposed management of solid waste
		1	A code summary referencing NFPA 1 and all Fire Department technical standards
		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST** **(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	**Final Site Plans including the following:**
		Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);	
		Existing and proposed structures on parcels abutting site;	
		All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;	
		Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;	
		Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;	
		Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;	
		Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;	
		Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;	
		Location of all snow storage areas and/or a snow removal plan;	
		A traffic control plan as detailed in Section 1 of the Technical Manual;	
		Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);	
		Location and proposed alteration to any watercourse;	
		A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;	
		Proposed buffers and preservation measures for wetlands;	
		Existing soil conditions and location of test pits and test borings;	
		Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;	
		A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;	
		Grading plan;	
		Ground water protection measures;	
		Existing and proposed sewer mains and connections;	

- Continued on next page -

		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2.
3. Name address, telephone number of architect

4. Proposed uses of any structures [NFPA and IBC classification]
5.
6. Square footage of all structures [total and per story]

7. Elevation of all structures

8. Proposed fire protection of all structures
   - ***As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)***

9. Hydrant locations

10. Water main[s] size and location

11. Access to all structures [min. 2 sides]

12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division

Date: 02/28/2018

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 300 Allen Avenue

Chart Block Lot Number: 344 E003, E004, E006

Proposed Use: Office/Professional/Residential
Previous Use: E003 - grassed lawn, E004 - single family, E006 - vacant
Existing Sanitary Flows: 270 GPD
Existing Process Flows: 0 GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.
Existing 12"sewer within existing City Easement that crosses the site

Site Category		
	Commercial *(see part 4 below)*	x
	Industrial *(complete part 5 below)*	
	Governmental	
	Residential	x
	Other *(specify)*	

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: Barbara Barhydt Phone: 207-874-8699
Owner/Developer Name: ESTELLE ESTATES, LLC
Owner/Developer Address: 39 Darling Avenue, South Portland, ME 04106
Phone: Fax: E-mail:
Engineering Consultant Name: Gorrill Palmer
Engineering Consultant Address: 707 Sable Oaks Drive, Suite 30, South Portland, ME 04106
Phone: 207-772-2515 Fax: 207-772-2520 E-mail: dreynolds@gorrillpalmer.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 2,280 peak, 1,267 average GPD
Peaking Factor/ Peak Times: 180%
Specify the source of design guidelines: *(i.e.* x *"Handbook of Subsurface Wastewater Disposal in Maine," __ "Plumbers and Pipe Fitters Calculation Manual," __ Portland Water District Records, Other (specify)* _____

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: _____

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

March 1, 2018

Re: **Agent Authorization**
Mixed Use Development
Portland, Maine

To Whom it May Concern:

Peter Bouchard ("Developer") is in the process of developing a site (the "Site") in the state of Maine, Cumberland County, located at 300 and 292 Allen Ave, in Portland. On behalf of the Developer, I hereby authorize Gorrill Palmer, (the "Engineer") to act as agent for the purpose of obtaining permits and approvals related to the development of the Site.

In such capacity, the Engineer's authority is expressly limited to signing and delivering applications for permits and approvals that are related to the development of the Site, advancing nominal funds as are required to file such applications and to representation at meetings and hearings for the applications. The Engineer is not authorized to negotiate on the Developer's behalf or to bind or obligate the Developer i any manner whatsoever, including without limitation accruing any obligations on the Developer's behalf to pay for or construct improvements without additional authorization in writing.

This authorization is effective as of the date of this correspondence and will remain valid until revoked in writing.

ESTELLE ESTATES, LLC

Peter Bouchard

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

Project Narrative
300 Allen Avenue
March 2018

The following narrative presents the information required for the Preliminary Level III Site Plan application.

Project Description:

The project is located at 300 Allen Ave in Portland, which is currently vacant and contains a vegetated soil stockpile in the easterly section of the site. Development is also proposed on the adjacent lot located at 292 and 280 Allen Ave. Currently, a single-family building with a parking garage is present at 292 Allen Ave and 280 Allen Ave is vacant with a fully developed lawn cover. Two areas of wetland are present on-site: one along the east property line at 300 Allen Ave and one further south behind the existing house and garage at 292 Allen Avenue. An application to the MDEP for a Tier I NRPA permit will be submitted to the State and copied to the U.S. Army Corps of Engineers for the proposed wetland fill.

The project is a proposed mixed-use development consisting of a 2,400 sf office/professional services building, three 1,224 sf footprint duplex residential structures, two 1,826 sf triplex residential structures, associated parking, and infrastructure. A single curb cut is proposed for access to the development. The project will require a conditional use permit for off-street parking in the R-5 zone. A conditional use permit application has been filed with this preliminary site plan application.

Right, Title and Interest:

The Applicant, ESTELLE ESTATES, LLC, purchased the lot located at 292 Allen Ave and the Title can be found in Attachment 4. The applicant has interest in 300 Allen Ave and a PSA and an emailing stating a 60 day extension is included in Attachment 4.

State and Federal Permits:

An NRPA Tier I permit application will be filed with the state for the proposed wetland fill of less than 14,999 square feet. The U.S. Army Corps of Engineers has been copied on the NRPA application. The project disturbs more than one acre and therefore requires a construction general permit. Copies of Resource Letters sent to the Maine Historic Preservation Commission (MHPC), the Maine Department of inland Fisheries and Wildlife (MDIFW) and the Maine Natural Areas Program (MNAP) can be found in Attachment 8.

Zoning Assessment:

The project is in the R-5 zone and the R-P zone. Two-family dwellings and multi-family dwellings are permitted uses within the R-5 zone. An office/professional use and a residential use are permitted in the R-P zone. Parking for the office/professional use is proposed within the R-5 zone. The project will require a conditional use permit for off-street parking in the R-5 zone. A conditional use permit application has been filed with this preliminary site plan application.

Easements or Other Burdens:

There is an existing 35-foot easement and right of way across the westerly portion of the site over the City's sanitary sewer and storm drain. The development proposes to connect into these utilities.

Proposed Waivers:

The following waivers are requested:

- A waiver is requested for the requirement in Section 14-526.b for the preservation of significant natural features. The proposed wetland impact could not be avoided in the development of the site. The applicant has demonstrated compliance with applicable state and federal regulations by applying for an MDEP NRPA Tier I permit for the wetland impact.

Evidence of Financial and Technical Capacity:

ESTELLE ESTATES, LLC has experience with development in the Greater Portland area and has hired Professional Engineers to prepare permitting and construction plans for this project. Given this, the applicant possesses sufficient technical capacity. Attachment 5 contains evidence of the financial and technical capacity for this project.

Construction Management Plan:

A construction management plan will be prepared by the General Contractor prior to the start of work at the site as noted on the site plan contained within the plan set. The management plan will address the anticipated start and end date of the project, discuss the construction sequence, and provide a pedestrian circulation plan. The management plan will be submitted to the City Planning Division prior to commencement of site work.

Traffic:

The proposed development anticipates fewer than 100 passenger car equivalents (PCE) and does not appear to require a traffic study.

Significant Natural Features:

Wetlands existing at 300 Allen Ave were delineated by Jones Associates of Auburn, Maine in July 2016 and wetlands at 292 Allen Ave were delineated by Boyle Associates in January 2018. There are no significant natural features on-site except for the wetlands at the center of the site and along the western property line. Given the size of the site, wetland impacts could not be avoided. An application for a MDEP NRPA Tier I wetland permit will be submitted to the state and copied to the City and the U.S. Army Corps of Engineers.

Stormwater:

Section 14-526.b.3.b of the Land Use Ordinance states that all development other than Level I residential shall comply with Section 5 of the Technical Manual including Basic, General, and Flooding standards as applicable to prevent and control the release of pollutants to waterbodies, watercourses, wetlands and groundwater, and reduce adverse impacts associated with increases or changes in flow, soil erosion and sedimentation.

Section14-526.b.3.c of the Land Use Ordinance states that all development other than Level I residential that are located within the watershed of an Urban Impaired Stream shall comply with the Urban Impaired Stream Standards of Chapter 500. The site is within the watershed of Fall Brook which is listed as an Urban Impaired Stream.

Section 5.II.c of the Technical Manual states that Level II and III site plans shall be required to submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including Basic, General and Flooding standards.

The Basic Standard is met by the Erosion and Sedimentation Control Report submitted with this application in Attachment 6.

The General and Flooding Standards are addressed in the Stormwater Management Report for the project which is included in Attachment 7.

The Stormwater Management Report also addresses the Urban Impaired Stream Standard which will be met by paying a compensation fee of $7,300 to the City of Portland Compensation Fee Utilization Plan.

Master Plan:

There does not appear to be a Master Plan for this section of Allen Avenue.

Utility Capacity:

Attachment 9 contains letters sent to the Portland Water District, Portland Public Services and Central Maine Power requesting confirmation of their ability to serve the project. Responses will be forwarded to the City upon receipt.

Solid Waste Management:

The development consists of twelve residential units and a small office building. A dumpster is proposed in the northwestern corner of the site, located near the Professional/Office parking. Attachment 9 contains an ability to serve letter sent to Pine Tree Waste requesting confirmation of their ability to serve the project.

NFPA:

An existing fire hydrant is located approximately 500 feet to the north of the proposed entrance drive, and approximately 400 feet to the south.

Design Standards:

The development is in conformance with the design standards of Section 14-526 of the City Land Use Code as noted below. Waiver requests from the standards are also noted below.

14-526 (a) Transportation Standards – The required off-street parking is shown on the plans. Two bicycle parking spaces are shown adjacent to the proposed office building. The residential units have garages that can provide bicycle storage. Due to limited site area snow will not be stored on-site and will be removed by the snow removal contractor as noted on the site plan.

14-526 (b) Environmental Quality Standards – The site does not contain significant natural features other than the wetlands at the center of the site and the western 292 Allen Ave. Impacts to the wetlands could not be avoided by development of the site. A waiver to the requirement to preserve the wetland is requested. An application for the wetland fill will be submitted to the MDEP and copied to the U.S. Army Corps of Engineers. A landscaping plan for the site is included in the plan set. Stormwater management is discussed above and in Attachments 6 and 7.

14-526 (c) Public Infrastructure and Community Safety Standards – There does not appear to be a Master Plan for this section of Allen Avenue. An existing fire hydrant is located approximately 500 feet to the north of the proposed entrance drive, and approximately 400 feet to the south. The proposed electric service is underground, and the applicant has contacted the Portland Water District and the Department of Public

services to obtain ability to serve letters for water service and wastewater service. The proposed utility connections are shown on the Utility plan of the plan set.

14-526 (d) Site Design Standards – The proposed buildings are 1.5 and 2 story structures which will not have a detrimental impact on adjoining properties. There are no known historic resources on the project site. All site lighting will be full cut off and will not impact adjoining properties. A lighting plan is included in the plan set. HVAC units shall comply with applicable state and federal emission requirements. No signage other than traffic signs is proposed for the project. The building designs are not incongruous with surrounding development. Building Elevations and details can be found in Attachment 10.

HVAC Verification:

The actual HVAC units are to be determined. All units used on the project will comply with all applicable state and federal emissions standards.

Boundary Survey

A boundary survey is included within the plan set.

Plan Set

A plan set containing the required information is included with this application.

The project proposes developing twelve residential units and an office/professional unit which meets the definition of a subdivision. The following narrative discusses the subdivision requirements of the City of Portland Land Use Ordinance.

Section 14-496 Plat Requirements

1. The Plat is at an appropriate scale and contains the required information.
2. One-foot contours are shown. No existing structure is to remain.
3. No streets are proposed. A typical pavement section is included on the detail sheets for the project.
4. No new rights of way or easements are proposed.
5. A baseline with curve information is provided on the site plan.
6. Existing utilities are shown on the plans.
7. The parcel boundary and the proposed condominium lines are shown on the Plat.
8. Abutting parcel owners are shown on the plans.
9. The project is not located within a flood zone.
10. There are no existing historic sites or structures on the parcel.
11. Proposed utilities are shown on the Utility Plan.
12. A sanitary sewer and storm drain exist within the existing onsite easement. Proposed sanitary sewer service and storm drains are shown on the plans with inverts and rim elevations.
13. A lighting plan is included in the plan set.
14. No trees are proposed for preservation.
15. Grading and drainage is shown on the Grading, Drainage, and Erosion Control plan within the plan set.
16. The zoning boundaries are shown on the plans.
17. No future phases are proposed.

18. No public space is proposed.
19. The plans contain the required contact information.
20. The application submittal contains written information.
21. Required monuments are shown on the Plat.
22. The vicinity sketch is included in the plan set.
23. The site data is included on the site plan.
24. Additional submission items are included in the Level III Site Plan submission.

Section 14-497 General Requirements

1. The project is a residential and small office development which is not anticipated to result in air pollution. The project will utilize the public sewer system and will not result in water pollution. The site is not within a flood plain and has a proposed stormwater management plan.
2. An ability to serve letter to the Portland Water District is included in Attachment 9.
3. An ability to serve letter to the Portland Water District is included in Attachment 9.
4. An erosion and sedimentation control report is included in Attachment 6.
5. The proposed development does not warrant a traffic study because no more than 100 passenger car equivalents (PCE) are anticipated.
6. Attachment 9 contains a letter to the Public Works Department requesting their ability to provide sanitary sewer service to the project. The stormwater management report contained in Attachment 7 limits the post development runoff to predevelopment levels, therefore the project will not have an adverse impact on municipal services.
7. Attachment 9 contains a letter to the Public Works Department requesting their ability to provide sanitary sewer service to the project. A dumpster is proposed at the northwestern corner of the site for soil waste disposal. Attachment 9 contains a letter to Pine Tree Waste requesting their ability to serve the project.
8. The project will not have an undue adverse effect on historical sites and will not have an undue impact to scenic or natural beauty beyond any typical development of vacant land.
9. It is believed that the project is in conformance with the land development plan.
10. The Applicant has hired Professional Engineers to prepare permitting plans for this project, therefore the Applicant possesses sufficient technical capacity. A financial and technical capacity letter is included in Attachment 5.
11. The project is not within the watershed of a pond or lake, or within 250' of a wetland defined in Title 38.
12. The connection to the municipal sewer, and the stormwater management plan for the project will ensure that the project does not adversely affect groundwater.
13. The site is not within a flood prone area.
14. Wetlands are shown on the plans.
15. There are no river, streams, or brooks abutting the project.

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DocuSign Envelope ID E2893310-BF8D-4FDA-9F0E-DE94EF70E883

AGREEMENT FOR THE PURCHASE AND SALE OF REAL ESTATE

AGREEMENT made and entered into this 19th day of June, 2017, by and between HARLEQUIN LLC, a Maine limited liability company with its principal place of business in Portland, County of Cumberland and State of Maine (the "Seller") and ESTELLE ESTATES, LLC, a Maine limited liability company with its principal place of business in South Portland, County of Cumberland and State of Maine (the "Buyer").

WITNESSETH AS FOLLOWS:

1. PURCHASE AND SALE. Seller agrees to sell, and Buyer agrees to buy, on and subject to the terms and conditions hereinafter set forth certain real estate, together with the buildings and improvements located thereon and also owned by the Seller located at 300 Allen Avenue, in Portland, County of Cumberland and State of Maine, as more particularly described in a Warranty Deed from Robert L. Adam to the Seller dated August 11, 2004 and recorded at the Cumberland County Registry of Deeds in Book 21661, Page 282, a copy of which is attached hereto as Exhibit A and made a part hereof (such real estate and personal property being referred to herein collectively as the "Premises").

2. PURCHASE PRICE. Subject to any adjustments and prorations hereinafter described, Buyer agrees to pay for the Premises the sum of [redacted] (the "Purchase Price"), which shall be payable as follows:

(a) The sum of [redacted], being paid simultaneously with the execution of this Agreement, as earnest money deposit (the "Deposit"), which shall be held by Magnusson Balfour, (the "Escrow Agent"), in its non-interest bearing trust account pending Closing (defined below) and shall be credited towards the purchase price at Closing;

(b) The sum of [redacted] shall be paid to Seller at the Closing in the form of a Promissory Note (the "Promissory Note") bearing interest at the rate of six percent (6%) per annum simple interest, payable interest only on a monthly basis until the eighteen (18) month anniversary date of the Closing (the "Maturity Date"), when the balance of principal and any accrued but unpaid interest at said rate shall then be paid in full. In the event that the Buyer shall assign the contract to an entity, the Buyer shall personally guaranty the payment pursuant to the terms of the Promissory Note; and

(c) The remaining amount of the Purchase Price, after application of the Deposit and the delivery of the Promissory Note and all applicable closing prorations, shall be paid in full in immediately available funds at Closing.

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3. TITLE. Seller shall convey the Premises to the Buyer at Closing in fee simple with good, marketable and insurable title, free and clear of all mortgages, security interests, liens, encroachments and encumbrances, except such encumbrances (such as for utilities) as shall be acceptable to Buyer in Buyer's sole discretion (the "Permitted Encumbrances"). Buyer shall have until July 15, 2017 to complete its examination of the title to the Premises.

In the event that Buyer determines upon examining title to the Premises that Seller would be unable to convey title as aforesaid, Seller shall be given a reasonable period of time after notice from Buyer, not to exceed sixty (60) days, in which to remedy any title defects. Seller agrees to take reasonable steps to remedy any such title defects, including, without limitation, by payment of any amounts necessary to cause the correction of any such defects. In the event that said defects cannot be corrected or remedied within said time period this Agreement shall terminate unless further extended by agreement of Buyer and Seller in writing. Buyer may, however, elect to close notwithstanding such defects as may exist and, in that case, there shall be no offset or reduction in the Purchase Price and Seller shall have no liability to the Buyer for any such title defects.

Seller agrees and represents that it will not further encumber or permit to be encumbered the Premises by any liens, mortgages, attachments, covenants, restrictions or easements after the date of this Agreement.

4. CLOSING.

(a) The closing shall take place at the offices of Norman, Hanson and DeTroy, LLC, Two Canal Plaza, Fourth Floor, Portland, Maine, no later than February 28, 2018 at a mutually convenient time (the "Closing" or "Closing Date"), or at some other time and place that the Buyer and the Seller shall mutually agree in advance and in writing, except that the Buyer may extend the date of Closing for up to an additional sixty (60) days in the event that despite Buyer's reasonable commercial efforts to obtain all required land-use permits and approvals for the development of the Project (as defined in this Agreement) Buyer has not obtained all such required permits and approvals by December 31, 2017. Buyer shall provide Seller written notice of the extension on or before January 10, 2018.

(b) At Closing, Seller shall execute and deliver to Buyer, against payment of the purchase price, a Quitclaim Deed with Covenant, conveying good, marketable and insurable title to the Premises, free and clear of all mortgages, liens, encroachments or other encumbrances in accordance with the Short Form Deeds Act, 33 M.R.S. §§ 761 et seq., (the "Deed"). Seller further agrees to execute and deliver to the Company at Closing the following documents: (i) a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations); (ii) a title insurance "Seller's Affidavit" regarding mechanics liens and persons in possession; (iii) an affidavit

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regarding underground storage tanks (as required by Maine law); (iv) documents demonstrating Seller's authority to convey and good standing as evidenced by a copy of Seller's resolution authorizing the transaction contemplated herein and a copy of the relevant portions of its Operating Agreement; (v) such other documents as may be required to issue an owner's policy of title insurance in form reasonably acceptable to Buyer's counsel; (vi) such other documents as may be reasonably necessary to effect the transfers described in this Purchase and Sale Agreement; and (vii) such other documents as are reasonably required by Buyer's counsel at closing. The Seller shall also assign any leases or tenancies in the Premises and provide a rent roll and tender delivery of all security deposits for all leases or tenancies in the Premises.

5. RISK OF LOSS, DAMAGE AND INSURANCE.

(a) All risk of loss to the Premises prior to the Closing Date shall be borne by Seller, except and unless the loss was caused by Buyer or Buyer's employees, agents, or contractors. Seller shall keep the Premises insured against fire and other extended coverage risks up to and including the Closing Date.

(b) In the event that the improvements that are part of the Premises are destroyed prior to Closing, Seller shall have the right to terminate this Agreement and refund the Deposit and, in that case, it shall be solely entitled to any insurance proceeds payable for or on account of any such destruction. In the event Seller shall not so elect, Buyer shall be entitled to elect to (1) terminate this Agreement by written notice to Seller, or (2) receive any and all insurance proceeds payable for or on account of any such destruction.

(c) If, prior to the Closing, all or any material portion of the Premises shall be taken for any public use (other than minor takings for street widening) or access to or from the Premises shall be permanently taken or materially impaired, or any change(s) to public way(s) or the grade(s) thereof shall be made which materially and adversely affects or is likely to materially and adversely affect the commercial value of the Premises, then Seller shall be required to notify Buyer of the same by written notice the earlier of five (5) days after receipt of such notice or one (1) business day prior to closing. Additionally, if notice of any of the foregoing shall be made public or otherwise come to Buyer's attention Buyer shall have the election either (i) to terminate this Agreement, in which event this Agreement shall terminate, the Deposit shall be refunded to Buyer, and the parties shall have no further liability or responsibility to each other, or (ii) to consummate the sale without reduction of the Purchase Price on account of same, in which event Seller shall assign to Buyer all claims and rights, if any, on account of or arising out of any of the foregoing.

6. INSPECTIONS; DUE DILIGENCE.

(a) The Buyer may enter into any part of the Premises at all reasonable

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times prior to 5:00 PM on December 31, 2017 in order to inspect the Premises, conduct surveys, building studies, inspections and assessments and to undertake zoning, land-use and environmental compliance assessments and to do such things and may conduct such investigations as Buyer shall elect. Buyer shall also be entitled to review all plans, specifications, studies, assessments (including environmental assessments) and all other documents in Seller's possession relating to the Premises, all of which shall be provided to Buyer by Seller within five (5) business days of request.

(b) Seller acknowledges that Buyer shall have the right in its sole and absolute discretion, either based on Buyer's disapproval of any of the reports or information received by Buyer relating to the Premises or to the feasibility of the Project (as defined in this Agreement) or based on Buyer's dissatisfaction with any inspection or investigation or for any other reason whatsoever to terminate this Agreement by delivering notice thereof to Seller at any time after execution of this Agreement and prior to 5:00 PM, December 31, 2017 (the "Due Diligence Period,") which delivery shall be complete upon mailing or transmission by telefax. In the event Buyer so elects to terminate this Agreement within the Due Diligence Period, the Deposit shall be refunded to Buyer within three (3) business days of such notice and this Agreement shall terminate without further recourse or liability to the parties at law or in equity. In the event that Buyer fails to provide the Seller with any such termination notice on a timely basis, the Buyer shall have no right to terminate this Agreement for or on account of any matter pertaining to the condition of the Premises or their suitability for any particular purpose.

7. FINANCING CONTINGENCY; SECURITY FOR SELLER-FINANCING.

(a) Seller's and Buyer's obligations under this Agreement are subject to Buyer obtaining a financing commitment for [redacted] (the "Senior Debt") for the purchase of the Premises and the construction of the Project, as defined in Paragraph 8 of this Agreement, from a conventional bank or commercial lender (the "Project Lender") at prevailing rates, terms and conditions and also subject to the conditions set forth in Paragraph 7(b) of this Agreement. Buyer shall provide Seller with written evidence of its application for a financing commitment for such loan on or before July 15, 2017 and shall use reasonable commercial efforts to obtain the commitment for such acquisition and construction loan on or before October 15, 2017. In the event that despite Buyer's timely application and reasonable commercial efforts to obtain a financing commitment for such loan on or before October 15, 2017 Buyer is unable to do so, then either Buyer may terminate this Agreement by written notice to Seller on or before October 15, 2017, whereupon any payments made under this Agreement shall be forthwith refunded and Seller shall no longer have any obligation to sell the Premises to Buyer, and this Agreement shall be void and without recourse to the parties hereto.

(b) Seller agrees that the mortgage from Buyer to the Project Lender securing the Senior Debt (the "Senior Mortgage") shall be senior in priority to the

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mortgage to Seller from Buyer securing the Promissory Note (the "Junior Mortgage") and the Junior Mortgage (or related Subordination Agreement between Seller, Project Lender and Buyer) shall contain such other and further standby and subordination requirements as the Project Lender may require as a condition of its commitment to lend the Senior Debt to Buyer. Buyer's mortgage to Seller securing the Promissory Note shall contain a lot or unit release provision pursuant to which the Seller will grant and execute partial releases of the mortgage securing the Promissory Note in exchange for partial release payments in the amount of $52,000.00 per lot or unit, such partial releases to be in recordable form so as to accommodate sales of lots or units from the Premises.

(c) Peter R. Bouchard, a member of Buyer ("Bouchard"), shall provide Seller with personal financial statements within five (5) days of the execution of this Agreement. Seller shall have five (5) days to review the financial statements and terminate this Agreement if the financial statements do not meet its approval. Bouchard shall be personally liable with Buyer on the Promissory Note.

8. THE PROJECT; CONTINGENCY FOR PERMITS AND APPROVALS.

(a) Buyer shall diligently prosecute all required land-use, permitting and approval applications required by the City of Portland (and any other regulatory authority having jurisdiction) for the development of the Premises into seven (7) lots or condominium units (the "Project"), such lots or units to be in conformity with all applicable land-use, permitting and approval requirements. Buyer shall use reasonable commercial efforts to obtain all required land-use permits and approvals for the Project on or before December 31, 2017, at which time the Deposit shall become fully non-refundable. In the event that Buyer shall not have obtained all required permits and approvals for the Project by December 31, 2017, Buyer may extend the date of Closing for up to an additional sixty (60) days for payment of an additional non-refundable deposit of $10,000.00 to the Seller. Buyer shall provide Seller written notice of the extension on or before January 10, 2018.

(b) If Buyer shall not have obtained all required permits and approvals for the development of the Project on or before the date for Closing (or the extended date for Closing as the case may be), then this Agreement shall terminate and the parties shall have no further liability or responsibility to one another. The refund of the Deposit in that case shall depend on whether the termination of the Agreement for any failure to obtain required permits and approvals occurred on or before December 31, 2017 (in which case the Deposit shall be refunded) or afterwards (in which case the Seller shall be entitled to retain the Deposit).

9. POSSESSION OF THE PREMISES. The Premises shall be delivered to the Buyer at Closing free and clear of all tenancies or occupancies by any other person or entity.

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10. REPRESENTATIONS OF SELLER. Seller represents to the Buyer (as the sole representations made by it or its members relating to the subject matter of this Agreement) the following:

(a) Seller has received no written notice from the City of Portland of any alleged violation at the Premises respecting any zoning ordinances or laws.

(b) All outstanding bills and/or accounts payable concerning or otherwise relating to the Premises are either paid or will be paid prior to or at Closing, including without limitation all utility charges, all municipal assessments and all charges for services rendered or materials furnished with respect to the Premises, including, without limitation, regarding any services or materials for which a mechanic's lien could be claimed.

(c) There are no leases affecting the Premises as of the date hereof.

(d) Seller has received no written notice from any governmental entity or agency, nor does it have any knowledge of any special wastes, underground storage tanks, waste oil, petroleum and any other hazardous substances, materials or wastes in or on the Premises. The terms used in the foregoing sentence shall include, without limitation, all substances, materials, etc., designated by such terms under any laws, ordinances or regulations, whether federal, state or local.

(e) There are no outstanding or pending liens, claims, rights of first refusal, mortgages, encroachments or other encumbrances (other than utility easements) against the Premises.

(f) The Seller has taken all corporate actions necessary to authorize the execution and delivery of this Agreement and to perform all of its obligations due to the Buyer hereunder and it has the full right and power to consummate all of the transactions contemplated for it to be performed under this Agreement.

11. DEFAULT AND REMEDIES. In the event that Seller fails to close hereunder for a reason other than default of Buyer, Buyer shall have the right to specific performance or any other legal or equitable remedies and also may seek to recover damages, as well as the refund of the Deposit. In the event that Buyer defaults in the performance of its obligations hereunder, Seller shall retain the Deposit and shall have all other legal or equitable remedies.

12. CONDITIONS PRECEDENT TO BUYER'S OBLIGATION TO CLOSE. The obligation of Buyer to close is subject to the satisfaction at or before Closing of all of the following conditions:

(a) All representations of Seller contained in this Agreement shall be true

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in all material aspects as of the Closing.

(b) The due diligence, financing and permitting and approval contingencies set forth in Paragraphs 6, 7 and 8 of this Agreement shall have been satisfied to Seller's reasonable satisfaction or, alternatively, Seller shall have waived any such unsatisfied contingency or contingencies.

13. BROKERAGE. Seller and the Buyer represent and warrant to each other that neither party has engaged the services of any real estate broker with respect to this transaction, other than Magnuson Balfour for Seller and Keller Williams for Buyer. Each party agrees to indemnify and hold harmless the other party from any claim made by any broker claiming by or through them. The foregoing indemnity shall include all legal fees and costs incurred in defending any claim therefor.

14. ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.

(a) Real estate taxes, assessments and rental charges shall be prorated as of the Closing Date.

(b) Metered utilities, such as water and sewer, shall be paid by the Seller through the date of closing.

(c) The Maine real estate transfer tax shall be paid by the Seller and Buyer (or at their election, the Company), in accordance with 36 M.R.S. § 4641-A.

(d) The recording fee for the Deed will be paid by the Buyer. The recording fee for the Mortgage, and any related documents shall be paid by the Seller.

15. GENERAL PROVISIONS.

(a) Time. Time shall be of the essence of this Agreement. Despite the foregoing, however, the parties shall cooperate with one another for commercially reasonable extensions of time in the event that the request for the extension is made no fewer than ten (10) days before the expiration of the then applicable deadline.

(b) Notices. Any notice or communication given pursuant to this Agreement by either of the parties to the other shall be in writing and delivered in person or mailed by overnight courier, registered or certified mail, postage prepaid (mailed notices shall be deemed given on the third day after they are duly mailed), or telefax with record of transmission as follows:

TO SELLER: Estate of Robert L. Adam
159 Lincoln Street #10
Westbrook, ME 04092

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WITH A COPY TO: Alan E. Wolf, Esq.
Law Office of Alan E. Wolf
P.O. Box 1292
Portland, ME 04104-1292

TO BUYER: Mr. Peter R. Bouchard
25 Ledge Road
Cumberland Foreside, ME 04110

WITH A COPY TO: Paul F. Driscoll, Esq.
Norman, Hanson & DeTroy, LLC
Two Canal Plaza
P.O. Box 4600
Portland, ME 04112-4600

Either party may change its address for the purposes of this subparagraph by giving the other party notice of the new address in accordance with this Paragraph 13.

(c) Binding Effect. This Agreement will inure to the benefit of, and bind, the respective successors and assigns of the Seller and the Buyer.

(d) Construction. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof. It is hereby agreed that all provisions and representations set forth in this Agreement shall survive Closing.

(e) Counterparts/Facsimile Signatures. This Agreement may be simultaneously executed in any number of counterparts, each of which when so executed and delivered shall be an original, but such counterparts shall constitute one and the same instrument. This Agreement may be transmitted between the parties by facsimile and signatures appearing on such facsimile documents shall be treated as original signatures.

(f) Effective Date. The Effective Date of this Agreement shall be deemed to be the date first above written herein.

(g) Further Assurances. In addition to the actions recited herein and contemplated to be performed, executed and delivered by each party, each party shall perform, execute and deliver or cause to be performed, executed and delivered at the Closing or thereafter any and all further acts, deeds and assurances as the other party or the Escrow Agent may reasonably require to consummate or evidence the consummation of the transaction contemplated herein.

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(h) Invalid Provision. If any provision of this Agreement is held to be illegal, invalid or unenforceable under present or future laws, and if such provision is not essential to the effectuation of the basic purposes of this Agreement, such provision shall be fully severable, this Agreement shall be construed and enforced as if such illegal, invalid or unenforceable provision had never been a part of this Agreement, and the remaining provisions of this Agreement shall remain in full force and effect.

(i) No Waiver. The waiver by either party of the performance of any covenant, condition or promise shall not invalidate this Agreement, nor shall it be construed as a waiver of any other covenant, condition or promise herein. The waiver by any party of the time for performing any act shall not constitute a waiver of the time for performing any other act or any incidental act required to be performed at a later time. The delay or forbearance by either party in exercising any remedy or right, the time for the exercise of which is not specifically and expressly limited or specified in this Agreement shall not be considered a waiver of or an estoppel against the later exercise of such remedy or right.

16. AGREEMENT OF ESCROW AGENT. By executing this Agreement, Escrow Agent agrees to hold the Deposit in its non-interest bearing client trust account, which Deposit shall be disbursed in accordance with the terms of this Agreement.

17. MEDIATION. Any dispute or claim arising out of or relating to this contract or the property addressed in this contract shall be submitted to non-binding mediation a mutually acceptable mediator, with mediation to take place in Portland, Maine. Buyer and Seller are bound to mediate in good faith and pay their respective mediation fees. If a party does not agree first to go to mediation, then that party will be liable for the other party's legal fees in any subsequent litigation regarding that same matter in which the party who refused to go to mediation loses in that subsequent litigation. This clause shall survive the closing of the transaction.

IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement as of the date first above written.

HARLEQUIN LLC

DocuSigned by:
By: Elisabeth Galtz 6/19/2017
[redacted]
Its _____

DocuSigned by:
Peter Bouchard 6/19/2017
[redacted]
Peter R. Bouchard

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ESCROW AGENT:

Scott Balfour

MAGNUSSON BALFOUR

By: [signature]

Its pres

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DocuSign Envelope ID E2893310-8F8D-4FDA-9F0E-DE94EF70E883

EXHIBIT A – LEGAL DESCRIPTION

A certain lot or parcel of land located at 300 Allen Avenue in Portland, County of Cumberland and State of Maine being the lot of land delineated on the Plan of Existing Conditions and Boundary Survey made by Gorrill-Palmer Consulting Engineers dated June 6, 2003 and recorded in the Cumberland County Registry of Deeds in Plan Book 203, Page 461 and being more particularly described as follows:

Beginning at a ½ inch iron pipe found driven into the earth on the northwesterly sideline of Allen Avenue at the easterly corner of land now or formerly of Bernice E. Knox as described in a deed recorded in the Registry in Book 6312, Page 216; thence:

1. N 29° 52' 27" W a distance of Two Hundred Ninety-Two and 69/100 (292.69) feet by said Knox and land now or formerly of Garry J. Smith and Jane H. Smith as described in a deed recorded in the Registry in Book 18761, Page 72, by Short Street as delineated on a certain plan of The Homesteads dated September 1921 and recorded in Plan Book 14, Page 70, and by land now or formerly of David O. Dulac as described in a deed recorded in the Registry in Book 3274, Page 194 to a ½ inch iron pipe found driven into the earth; thence

2. N 48° 24' 37" E a distance of Sixty-One and 25/100 (61.25) feet by said Dulac and Hennessy Drive as delineated on the aforesaid plan of The Homesteads to a capped 5/8 inch rebar, P.L.S. No. 492, and land now or formerly of Davidson Realty, LLC as described in a deed recorded in the Registry in Book 14746, Page 29; thence

3. N 53° 28' 39" E a distance of Seventy-Two and 07/100 (72.07) feet by said Davidson Realty, LLC to a capped 5/8 inch rebar, P.L.S. No. 492; thence

4. S 27° 48' 17" E a distance of Thirty-Six and 77/100 (36.77) feet by said Davidson Realty, LLC to a capped 5/8 inch rebar, P.L.S. No. 492, and land now or formerly of John Matthews as described in a deed recorded in the Registry in Book 14756, Page 121; thence

5. S 28° 52' 57" E a distance of Thirty-Six and 77/100 (36.77) feet by said John Matthews to a capped 5/8 inch rebar, P.L.S. No. 492; thence

6. S 28° 51' 14" E a distance of Two Hundred and 21/100 (200.21) feet by said John Matthews to a six inch square monument on the northwesterly sideline of Allen Avenue; thence

7. S 47° 43' 50" W a distance of Six and 11/100 (6.11) feet by said Allen Avenue to an angle point on the northwesterly sideline of Allen Avenue; thence

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DocuSign Envelope ID: E2893310-8F8D-4FDA-9F0E-DE94EF70E883

8. S 42° 11' 20" W a distance of One Hundred Twenty-Six and 20/100 (126.20) feet by said Allen Avenue to the point of beginning.

Said premises are conveyed subject to an easement of sewer given by Mary J. Wilson to the Portland Home Building Association by deed recorded in the Registry in Book 1111, Page 300.

The use and enjoyment of said premises are subject to a restrictive covenant which shall remain in effect for a period of ninety-nine (99) years and shall commence on August 22, 2003 and shall terminate on August 22, 2102. Said restrictive covenant shall prevent the operation of a real estate brokerage practice from being conducted on the premises.

Said parcel contains 36, 44 3 sq. ft. and is the same parcel conveyed to Northgate Plaza Associates, LLC by Warranty Deed of OPM, Inc. recorded in the Cumberland County Registry of Deeds in Book 18718, Page 120. Bearings are referenced to Magnetic North.

Being the same premises conveyed by Robert L. Adam to Harlequin LLC by Warranty Deed dated August 11, 2004 and recorded in the Cumberland County Registry of Deeds in Book 21661, Page 282.

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MAINE REAL ESTATE TAX-Paid

DLN:1001840019574

DEED OF SALE BY PERSONAL REPRESENTATIVE

That, **DANIEL A. TIRRELL**, duly appointed and Personal Representative of the **Estate of BERNICE E. KNOX**, deceased (testate), as shown by the probate records of the County of Cumberland, Maine (docket #2017-1417), and having given notice to each person succeeding to an interest in the real property described below at least ten (10) days prior to the sale, by the power conferred by the Maine Probate Code, and every other power, for consideration paid, grants to **ESTELLE ESTATES, LLC,** a Maine Limited Liability Company, whose mailing address is 39 Darling Avenue, South Portland, Maine, all of the decedent's interest in the premises located in the City of Portland, County of Cumberland and State of Maine, being more particularly described in Exhibit A attached hereto and made a part hereof.

WITNESS my hand this 19 day of January, 2018.

Witness

DANIEL A. TIRRELL
Personal Representative of the
Estate of Bernice E. Knox, deceased

State of Maine
County of Cumberland

On January 19, 2018, then personally appeared the above-named **DANIEL A. TIRRELL,** in his capacity as Personal Representative of the Estate of Bernice E. Knox and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Notary Public/Attorney
Name:

Charles H. McLaughlin
Attorney At Law

DOC :3015 BK:34605 PG:339
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
01/19/2018, 12:05:47P
Register of Deeds Nancy A. Lane E-RECORDED

File Number: **17-1129**

EXHIBIT "A"

LEGAL DESCRIPTION

PARCEL ONE

A certain lot or parcel of land situated in Portland, County of Cumberland, State of Maine, being **Lot No. 50** on a plan of "The Holmsteads," made by E. C. Jordan, C.E. dated September, 1921, recorded in the Cumberland County Registry of Deeds in Plan Book 14, Page 70, to which reference may be had for a more particular description.

PARCEL TWO

Also a certain lot or parcel of land with the buildings thereon, situated on the northerly side of Allen Avenue in said Portland, bounded and described as follows:

Commencing at the westerly corner of land now or formerly of Cyrus Abbott; thence westerly along said Allen Avenue seventy-five (75) feet; thence northerly on a line parallel with the westerly line of said Abbott's land one hundred thirty-five (135) feet; thence easterly on a line parallel with said road to said westerly line of said Abbott's land; thence southerly by said Abbott's land to the point of beginning. Containing ten thousand one hundred twenty-five (10,125) square feet.

PARCEL THREE

Also another certain lot or parcel of land situated in said Portland, being **Lot No. 51** on a "Plan of The Holmsteads" made by E. C. Jordan, C. E., dated September, 1921, and recorded in the Cumberland County Registry of Deeds in Plan Book 14, Page 70 to which reference may be had for a more particular description.

Being the same premises conveyed to Bernice E. Knox by deed dated October 29, 1983 and recorded in the Cumberland County Registry of Deeds in Book 6312, Page 216 and by deed dated December 14, 1999 and recorded in said Registry in Book 15223, Page 810. Bernice E. Knox died on September 22, 2017.

Sullivan Bill

From: Craig Church <cchurch@balfourcommercial.com>
Sent: Tuesday, January 9, 2018 3:59 PM
To: Sullivan Bill
Subject: RE: 300 Allen Ave & Hope Ave

Hi Bill,

Thanks for the heads up I had just got off the phone with Alan Wolfe and he suggested that I send you an email stating that I was in receipt of the $10,000 for the extension of closing for up to 60 days for Allen Ave. Good to see great minds think alike.

Look forward to the feedback.

Craig S. Church
Commercial & Business Broker
Cell (207) 318-6498
cchurch@balfourcommercial.com

Magnusson Balfour
COMMERCIAL & BUSINESS BROKERS

95 India Street
Portland, Maine 04101
Office (207) 774-7715 x 102
Fax (207) 879-9102
www.balfourcommercial.com

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From: Sullivan Bill [mailto:bill@sullivanmulti.com]
Sent: Tuesday, January 09, 2018 3:32 PM
To: Craig Church <cchurch@balfourcommercial.com>
Cc: Cindy Kueck <cindy@sullivanmulti.com>
Subject: RE: 300 Allen Ave & Hope Ave

Craig,
I will be meeting with Peter tomorrow and will give you a full report no later than Thursday. I also would like to take the time to put in writing that the $10,000 non-refundable check that I dropped off on Friday was to extend the closing date by 60 days for 300 Allen per the purchase and sale agreement.
Thanks,

Bill Sullivan
Broker

A Division of Keller Williams Realty
50 Sewall Street 2nd Flr
Portland, ME 04102
207-771-5556 Office
207-773-4647 Fax
www.sullivanmulti.com
www.sullivanmgmt.com

From: Craig Church [mailto:cchurch@balfourcommercial.com]
Sent: Tuesday, January 9, 2018 12:11 PM
To: Sullivan Bill <bill@sullivanmulti.com>
Subject: 300 Allen Ave & Hope Ave

Hi Bill,

Can you please detailed feedback as to where we stand on permitting for both properties.

Craig S. Church
Commercial & Business Broker
Cell (207) 318-6498
cchurch@balfourcommercial.com

Magnusson Balfour
COMMERCIAL & BUSINESS BROKERS

95 India Street
Portland, Maine 04101
Office (207) 774-7715 x 102
Fax (207) 879-9102
www.balfourcommercial.com

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Barton Mortgage
CORPORATION

March 1, 2018

Portland Planning Board
389 Congress Street
Portland, ME 04101

To Whom It May Concern,

Please be advised that my office is in the process of underwriting the financing for the acquisition and development of the property located at 300 Allen Ave, Portland, Maine. At the request of the buyers LLC, Managing Partner and principal developer, Peter Bouchard, I am writing to inform you that through our underwriting due diligence we have documented and confirmed that Mr. Bouchard has the financial and technical ability to amend the 300 Allen Ave Mixed Use Development. Mr. Bouchard has been involved in the development of subdivisions containing over 250 units in the Portland area since 2005.

Please feel free to call with any questions.
Sincerely,

Deron Barton
President/Owner

CC: File
P. Bouchard

70 Center Street, Penthouse Suite 401, Portland ME 04101 • 207.775.2620 • Toll-Free: 866-523-8111 • Fax: 207.775.2622 www.bartonmortgage.com

March I, 2018

Portland Planning Board

389 Congress Street

Portland, Maine 0410I

RE: 300 Allen Ave

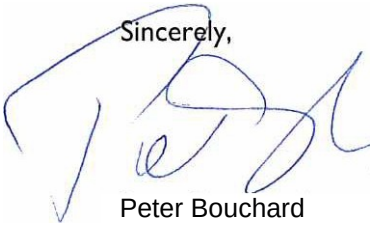
Mixed Use Development

To Whom It May Concern,

Peter Bouchard, ESTELLE ESTATES, LLC, has the technical ability to complete the 300 Allen Ave Mixed Use Development. Mr. Bouchard has been in involved in the development of a number of subdivisions and condominium developments in the greater Portland area, including the 42-unit Highland Commons in South Portland and a 3-condominium development at I 07 India Street in Portland. Most recently, Mr. Bouchard completed Pond View Woods subdivision in Old Orchard Beach, which is a 32-lot subdivision.

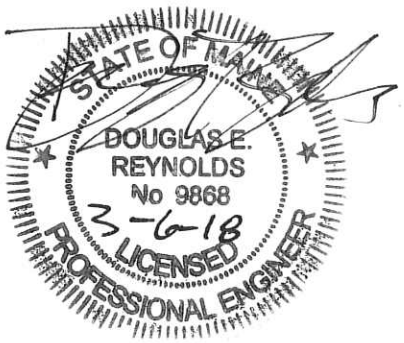
Should you have any questions, please do not hesitate to contact me.

Sincerely,



Peter Bouchard

ESTELLE ESTATES, LLC



EROSION AND SEDIMENTATION CONTROL BASIC STANDARDS

1.1 Overview

This Exhibit demonstrates the developer has made adequate provision for controlling erosion and sedimentation.

1.2 Introduction

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed mixed use development at 300 and 292 Allen Avenue. The site is shown on Assessor's Map 344 E006, E005, E004, E003 and E002. 300 Allen Ave is approximately 36,443 sf (0.84 acres) in size and is located in the Residential R-5 zone and the Residence – Professional Zone. 292 Allen Ave is approximately 18,899 sf (0.43 acres) in size and is locate in the Residential R-5 zone. Figure 1 is a map showing the project location. The developer is currently seeking a Level III Site Plan permit from the City of Portland. Gorrill Palmer has prepared an Erosion and Sedimentation Control Plan for the proposed development. This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project.

1.3 Narrative

1.3.1 Existing Conditions and Soil Types

The development site comprises approximately 48,898 sf at 300 and 292 Allen Avenue in Portland, Maine. 300 Allen Ave is currently vacant with a landcover of brush. 292 Allen Ave currently contains a single family residential structure with developed lawn area. Abutting land uses include:

- North – Residential
- East – Residential
- South – Residential
- West – Residential

Topography in the area of the proposed construction varies from flat slopes of approximately 0.5% to steep slopes of 33%. The steeper slopes are associated with a vegetated soil stockpile at the front of the site.

The Medium Intensity Soil Survey for Cumberland County as prepared by the Natural Resources Conservation Service was utilized in identifying the on-site soils. The soil report for this vicinity follows this page. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The higher values are indicative of the more erodible soils. The following table lists the soils found on site and their K values:

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	3.9	22.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	8.9	51.0%
Sn	Scantic silt loam, 0 to 3 percent slopes	4.7	26.7%
Totals for Area of Interest		**17.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

K VALUE		
Type	Subsurface	Substratum
Belgrade	0.64	0.49
Buxton	0.49	0.49
Scantic	0.49	0.49

Based on a review of the K Values, the on-site soils have moderate to high susceptibility to erosion.

1.3.2 Existing Erosion Problems

Gorrill-Palmer Consulting Engineers, Inc. is not aware of any existing erosion problems on site.

1.3.3 Critical Areas

Critical areas that would require special attention during construction would be side slopes adjacent to offsite wetlands.

1.3.4 Protected Natural Resources

Wetlands on-site at 300 Allen Ave have been delineated by Jones Associates of Auburn, Maine, and wetlands at 292 Allen Ave have been delineated by Boyle Associates. The wetlands are GPS located and are shown on project plans. The total area of wetlands located on the site is approximately 11,121+/- s.f. (0.26 acres). It is anticipated that approximately 9,252 s.f. of wetlands will be impacted during development of the site. Based upon the FEMA maps, the site is not located within a Zone A 100-year floodplain.

1.3.5 Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (hay bales/ stone check dams/silt fence, etc.)

The following temporary and permanent erosion and sediment control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control Practices Field Guide for Contractors.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be

selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Monitoring

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

C. Temporary Erosion Control Measures

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. Crushed stone-stabilized construction entrance shall be placed at the entrance from Allen Avenue.

2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less then 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

4. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

a) Temporary stockpiles shall not be located within 100 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.

c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.

5. All denuded areas that are within 50 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial disturbance of soil. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

7. Allen Avenue shall be swept to control mud and dust as necessary. Additional stone shall be added to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or approved sediment bags (such as Silt Sack). Installation details are provided in the plan set. The barriers shall be inspected after each rainfall and repairs made as necessary. Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to ½ the design depth of the barrier. The barrier shall be removed when the tributary drainage area has been stabilized.

12. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

13. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in **Temporary Erosion Control Measures** paragraph 3 of this report. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

2. All storm drain pipe outlets shall have riprap aprons at their outlet to protect the outlet and receiving channel from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized to the extent practicable prior to directing runoff to the tributary pipe or culvert.

3. Catch basins shall be provided with sediment sumps and inlet hoods (the Snout) for all outlet pipes that are 18" in diameter or less.

1.4 Implementation Schedule

The following construction sequence shall be required to insure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction of the Mixed Use Development and related infrastructure will commence in Summer 2018 and be completed by Winter of 2018.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area.

1. Install stabilized construction entrance at the intersection of the access drive and Allen Avenue.
2. Install perimeter silt fence and/or wood waste berms prior to grubbing respective areas.
3. Clear and grub site. Install stone check dams at any evident concentrated flow discharge points.
4. Foundation preparation area shall be excavated for installation of the building footings. Building work will be on going through the remainder of the project.

5. Commence installation of drainage appurtenances.

6. Commence construction of the bioretention pond and grassed underdrain soil filters. The filter media shall not be installed until the tributary area has been stabilized.

7. Commence earthwork and grading to subgrade.

8. Commence installation of water and sewer lines.

9. Continue earthwork and grading to subgrade as necessary for construction.

10. Complete installation of underground utilities to within 5' of the buildings.

11. Install light pole foundations and light poles.

12. Complete remaining earthwork operations.

13. Complete installation of catch basins and appurtenances.

14. Install sub-base and base gravel within parking fields, walkways, and all driveways.

15. Install curbing in parking fields, driveways, and along the streets as needed.

16. Install base course paving for access drive and parking area as well as concrete surfaces.

17. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.

18. Install surface course paving for access drive and parking areas. Stripe per plan.

19. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.

20. Touch up loam and seed.

    Note: All denuded areas not subject to final paving, riprap, or gravel shall be revegetated.

Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

2. The work shall be conducted in sections which shall:

    a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.

b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 50 feet of an undisturbed wetland and 7 days for all other areas. Areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.

c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

1.5 Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control Plan is included in the plan set.

1.6 Details and Specifications

The Erosion Control details and specifications are included in the plan set.

1.7 Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to those areas in which work is expected to be under taken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway/parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

1. Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 100 feet from any natural resources.

2. Natural Resource Protection

Any areas within 100 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 100 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

3. Sediment Barriers

During frozen conditions, sediment barriers shall consist of woodwaste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

4. Mulching

An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

5. Mulching on Slopes and Ditches

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

6. Seeding

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and

fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

Standards for Timely Stabilization of Construction Sites During Winter

1. Standard for the timely stabilization of ditches and channels -- The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the applicant fails to stabilize a ditch or channel to be grass-lined by September 1, then the applicant will take one of the following actions to stabilize the ditch for late fall and winter.

Install a sod lining in the ditch -- The applicant shall line the ditch with properly installed sod by October 1. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.

Install a stone lining in the ditch --The applicant shall line the ditch with stone riprap by November 15. The applicant shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the applicant shall regrade the ditch prior to placing the stone lining so to prevent the stone lining from reducing the ditch's cross-sectional area.

2. Standard for the timely stabilization of disturbed slopes -- The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope. If the applicant fails to stabilize any slope to be vegetated by September 1, then the applicant shall take one of the following actions to stabilize the slope for late fall and winter.

Stabilize the soil with temporary vegetation and erosion control mats -- By September 1 the applicant shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed slope by November 1, then the applicant shall cover the slope with a layer of woodwaste compost as described in item iii of this standard or with stone riprap as described in item iv of this standard.

Stabilize the slope with sod -- The applicant shall stabilize the disturbed slope with properly installed sod by September 1. Proper installation includes the applicant pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The applicant shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V).

Stabilize the slope with woodwaste compost -- The applicant shall place a six-inch layer of woodwaste compost on the slope by November 15. Prior to placing the woodwaste compost, the applicant shall remove any snow accumulation on the disturbed slope. The applicant shall not use woodwaste

compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

Stabilize the slope with stone riprap -- The applicant shall place a layer of stone riprap on the slope by November 15. The applicant shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

3. Standard for the timely stabilization of disturbed soils -- By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

Stabilize the soil with temporary vegetation -- By September 1 the applicant shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. The applicant shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or cover at least 75% of the disturbed soil before November 1, then the applicant shall mulch the area for over-winter protection as described below.

Stabilize the soil with sod -- The applicant shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

Stabilize the soil with mulch -- By November 15 the applicant shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the applicant shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the applicant will anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

1.8 Maintenance of facilities

The stormwater facilities will be maintained by the Applicant, ESTELLE ESTATES, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report. Long-term operation/maintenance recommended for the stormwater facilities is presented below.

The responsible party may contract with such professionals, as may be necessary in order to comply with this provision and may rely on the advice of such professionals in carrying out its duty hereunder, provided, that the following operation and maintenance procedures are hereby established as a minimum for compliance with this section. A maintenance log of the inspections shall be kept by the responsible party.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

Culverts:
Inspect culverts 2 times per year (preferably in Spring and Fall) to ensure that the culverts are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit and repair any erosion damage at the culvert's inlet and outlet.

Inlet/Outlet Control Structures:
Inspect structures and piping 2 times per year (preferably in Spring and Fall) to ensure that the structures are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris within the structure.

Soil Filter – Bio-Filtration:
Inspect all upstream pre-treatment measures 2 times per year (preferably in Spring and Fall) for sediment and floatables accumulation. Remove and dispose of any sediments or debris.

Soil Filter – Vegetated Underdrained Soil Filter:
Inspect all upstream pre-treatment measures 2 times per year (preferably in Spring and Fall) for sediment and floatables accumulation. Remove and dispose of any sediments or debris.

Surface (Underdrain Pond, Swale or Bio-Filter):
The soil filter will be inspected within the first three months after construction; thereafter the filter will be inspected 2 times per year (preferably in Spring and Fall) to ensure that the filter is draining within 24 to 48 hours of a rain event equivalent to 1" or more. Adjustments will be made to the outlet valve to ensure that the Bioretention Cell drains within 24 to 48 hours. Failure to drain in 72 hours will require part or all of the soil filter media to be removed and replaced with new material meeting the soil filter gradation. The facilities will be inspected after major storms and any identified deficiencies will be corrected. Harvesting and weeding of excessive growth shall be performed as needed. Inspect for unwanted or invasive plants and remove as necessary.

Roofline Drip Strip:
The drip strip will be inspected within the first three months after construction; thereafter the filter will be inspected 2 times per year (preferably in Spring and Fall) to ensure that the filter is draining within 24 to 48 hours of a rain event equivalent to 1" or more. Failure to drain in 72 hours will require part or all of the soil filter media to be removed and replaced with new material meeting the soil filter gradation. The facilities will be inspected after major storms and any identified deficiencies will be corrected. Inspect for unwanted or invasive plants and remove as necessary. Remove debris from the surface. Since the Roofline Drip edge is a part of the approved stormwater management plan, it cannot be paved over or altered in any way. Gutters shall not be installed along the roofline.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Ditches, Swales and other Open Stormwater Channels:
Inspect 2 times per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sideslopes. The facilities shall be inspected after major storms and any identified deficiencies shall be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Housekeeping

The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to MDEP Chapter 500 rules – Appendix C.

Spill Prevention:
Appropriate spill prevention, containment, and response planning/implementation shall be used to prevent pollutants from being discharged from materials on site.

Groundwater Protection:
During construction, hazardous materials with the potential to contaminate groundwater shall not be stored or handled in areas of the site which drain to an infiltration area.

Fugitive Sediment and Dust:
Appropriate measures shall be taken to ensure that activities do not result in noticeable erosion of the soils and water and/or calcium chloride shall be used to ensure that activities do not result in fugitive dust emissions during or after construction.

Debris and Other Materials:
Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench or Foundation De-watering:
Water collected through the process of trenching and/or de-watering must be removed from the ponded area, and must be spread through natural wooded buffers or other areas that are specifically designed to collect the maximum amount of sediment possible.

Non-stormwater Discharges:
Identify and prevent contamination by non-stormwater discharges.

Conclusion

The Applicant has provided temporary and permanent erosion control measures as well as specifying a sequence of construction as measures to minimize erosion and sedimentation.

Attachments

Attachment A - Seeding Plan

Attachment B - Inspection Report

ATTACHMENT A
Seeding Plan

SEEDING PLAN

Project: Mixed Use Development

Site Location: 300 Allen Avenue, Portland, ME

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   50% Winter Rye

   50% Annual Rye

6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	13.8	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: Mixed Use Development

Site Location: 300 Allen Avenue, Portland, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   40% Creeping Red Fescue

   30% Charger II Perennial Ryegrass

   20% KenBlue Kentucky Bluegrass

   10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	18.4	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

ATTACHMENT B
Inspection Report

STORMWATER POLLUTION PREVENTION PLAN

INSPECTION REPORT

PROJECT INFORMATION

Project Name: Mixed Use Development

Address: 300 Allen Avenue
Portland, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN
(MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____
Signature

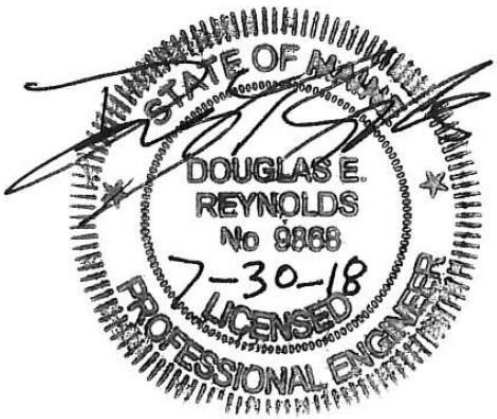
_____
Typed Name

_____
Title

_____
Date

STORMWATER MANAGEMENT

12.1 Overview



Section 5 of the City of Portland Technical Manual states that applications for a Level III Site Plan Application shall submit a stormwater management plan pursuant to the regulations of MDEP Chapter 500 Stormwater Management Rules including General and Flooding Standards.

All development is required to comply with the Urban Impaired Stream Standard pursuant to MDEP Chapter 500 if located within the watershed of Capisic Brook, Fall Brook, or Nason's Brook.

12.2 Introduction

ESTELLE ESTATE, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed mixed use development at 300 and 292 Allen Avenue. The site is shown on Assessor's Map 344 E006, E005, E004, E003 and E002. 300 Allen Ave is approximately 36,443 sf (0.84 acres) in size and is located in the Residential R-5 zone and the Residence – Professional Zone. 292 Allen Ave is approximately 18,899 sf (0.43 acres) in size and is located in the Residential R-5 zone. Figure 1 is a map showing the project location. The developer is currently seeking a Level III Site Plan permit from the City of Portland. The plans, prepared by Gorrill Palmer, include the infrastructure necessary to serve the project. This narrative contains the Stormwater Management measures which are appropriate for the site.

12.3 Development Description

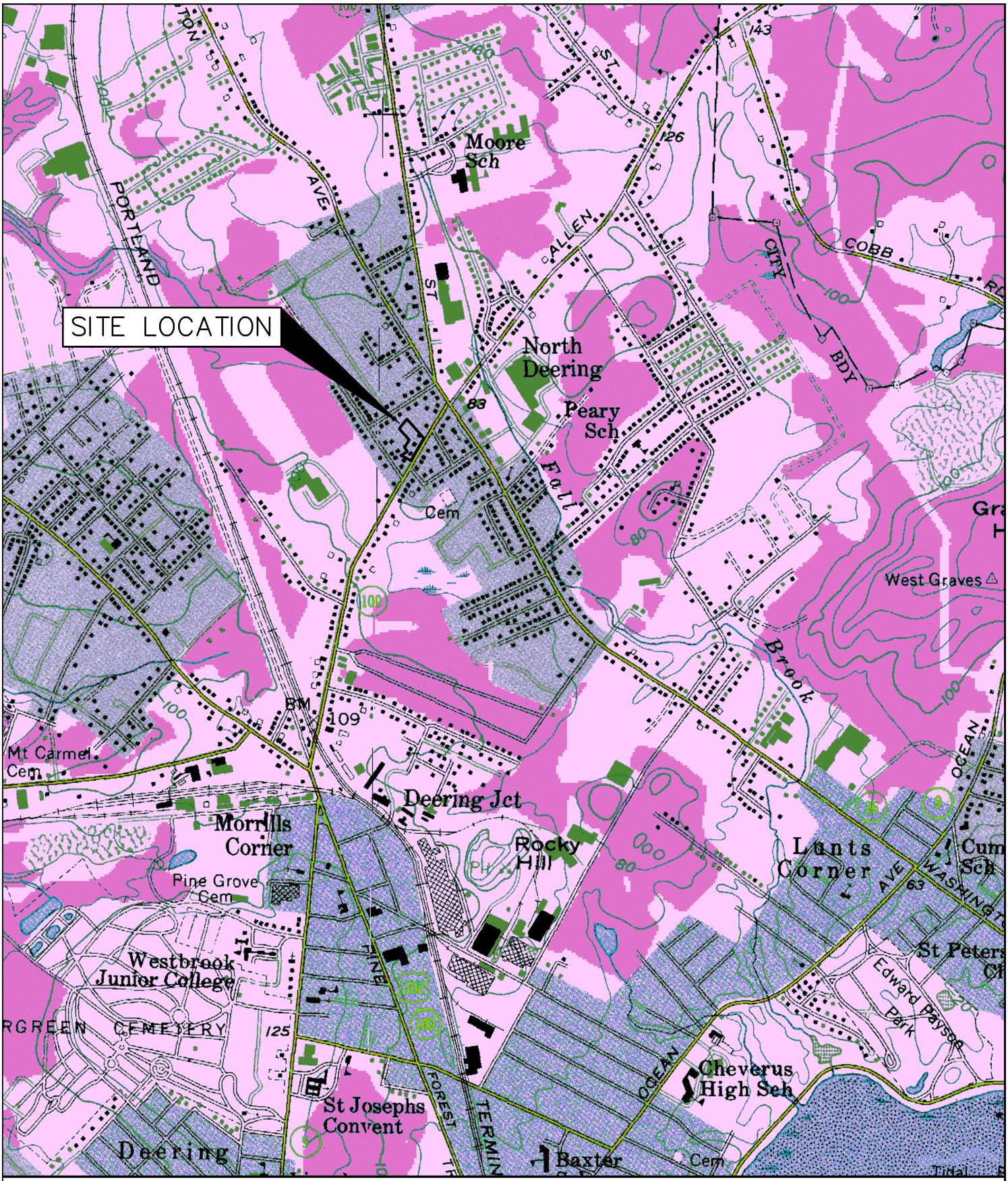
The project is a proposed mixed use development consisting of a 2,360 sf footprint office/professional services building, three 1,224 sf footprint duplex residential structures, two 1,944 sf footprint triplex residential structures, associated parking, and infrastructure at 300 and 292 Allen Avenue in Portland, Maine.

300 Allen Ave is currently vacant with a landcover of brush. 292 Allen Ave contains a single family residence with a paved driveway and the remaining land is vegetated. Topography in the area of the proposed construction varies from flat slopes of approximately 0.5% to steep slopes of 33%. The steeper slopes are associated with a vegetated soil stockpile at the front of the site. Abutting land uses include:

- North – Residential
- West – Residential
- South – Residential
- East – Residential

The site is located within the Fall Brook watershed which is listed as an urban impaired stream.

The development of the site will create approximately 26,925 sf (0.62 acres) of impervious area with a total disturbed area of approximately 1.1 acres.



U.S.G.S. Location Map

300 Allen Ave - Portland, Maine

U.S.G.S. Portland West, State-7.5 Minute Series (Topographic)

Design: DJV	Date: FEB 2018
Draft: CG	Job No.: 801.06
Checked: DER	Scale: None
File Name: 801-06-LocMap.dwg	

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Figure 1

12.4 Surface Water

There are no lakes located on, adjacent to or downstream of the project site.

12.5 General Topography

Topography in the area of the proposed construction is flat except for a vegetated soil stockpile with flat slopes of approximately 0.5% to steep slopes of 33%. Elevations on- site range from 80' at the center of the site to 90' at the top of the stockpile.

12.6 Flooding

Based upon the FEMA maps, no part of the site is located within a Zone A 100-year floodplain.

12.7 Natural Drainage Ways

The project as currently proposed does not include alteration of any natural drainage ways.

12.8 Alterations to Land Cover

Changes in land cover will include removal of grassed areas through portions of the project site as well as a residential structure and the addition of paved surfaces, buildings, lawn, and landscaped areas.

12.9 Stormwater Management Control

As required by the City Ordinance, the project is required to meet the Basic, General, Flooding, and Urban Impaired Stream standards of MDEP Chapter 500.

The Basic Standard is presented in the Erosion and Sedimentation Control report included with this permit application. The General, Flooding, and Urban Impaired Stream Standards are presented as follows.

The development will utilize a Bioretention pond, Grassed Underdrained Soil Filters, a FocalPoint, and Drip Strips to provide water quality and quantity treatment.

The Maine Department of Environmental Protection rules and regulations regarding stormwater concentrate on four stormwater management objectives:

- Effective Pollutant Removal
- Cooling
- Channel Protection
- Flood Control

These objectives may be met either directly by providing BMP's that manage and treat the runoff after it has been created, or indirectly by incorporating low impact development site planning concepts to minimize production and contamination of runoff by maximizing infiltration and evapotranspiration.

12.9.1 Current Treatment Methods

Under the General Standard, the project is required to meet the BMP Standards as the development site is not tributary to a lake watershed. The BMP Standard requires no less than

95% of the impervious area and no less than 80% of the developed area associated with a project to be controlled. The four treatment measures listed in Chapter 500 and described in Volume III of the Stormwater BMP Manual are:

- Wetpond with detention above the permanent pool
- Filters
- Infiltration
- Buffers

Below is a brief description of each treatment method.

Wetpond with detention above the permanent pool:

Wet ponds are stormwater detention impoundments that have a permanent pool of water and have the capacity to temporarily store storm water runoff while it is released at a controlled rate. They can be designed to provide flood control as well as water quality treatment. Properly sized and maintained, wet ponds can achieve high rates of removal for a number of urban pollutants, including sediment and the pollutants associated with sediment, such as trace metals, hydrocarbons, BOD, nutrients, and pesticides. The addition of an underdrained gravel trench in the bench area around the permanent pool allows for slow, extended release of stormwater without risk of blockage and effective cooling to avoid thermal impacts. This BMP treatment method is generally used to treat runoff from large drainage areas.

Filters

Filtration BMPs have shown to be very effective at removing a wide range of pollutants from stormwater runoff, particularly organic soil filter medias. They can be constructed in combination with infiltration practices, or with an underdrain filter, where infiltration is not feasible. Soil filters can be designed and constructed using common materials. Underdrained soil filters control stormwater quality by capturing and retaining runoff and passing it through a filter bed comprised of a specific soil media. Various filter medias may be used, the most common including sand filters and organic filters. Once through the soil media, the runoff is collected in a perforated underdrain pipe and discharged to the receiving water. The filter and underdrain provides for slow release of smaller storm events, minimizing stream channel erosion, as well as cooling the discharge. Vegetated underdrain soil filters can also be designed to provide detention above the channel protection volume.

Infiltration

Infiltration measures control stormwater quantity and quality, by retaining all or part of runoff on-site and discharging it into the ground. Infiltration is designed to occur at the surface (as in infiltration basins and to a degree vegetated swales and buffers), or in subsurface systems (e.g., infiltration trenches and infiltrators). The basic function of an infiltration system is to remove a portion of runoff from the total runoff volume of the site and treatment comes about through absorption, straining, microbial decomposition in the soil and trapping of particulate matter within pretreatment areas. Pretreatment to remove sediments, grease and oils is required prior to discharge to the infiltration measure. Possible pretreatment measures include filter strips, swales with check dams, sand filters, sediment traps, grease and oil traps, and sediment basins.

Buffers

Buffer strips are natural, undisturbed strips of natural vegetation or planted strips of close growing vegetation adjacent to and downslope of developed areas. As stormwater runoff travels over the buffer area, vegetation slows the runoff and traps particulate pollutants. They are also effective for phosphorus removal when designed in accordance with the volume III BMP technical design manual. The buffers are preceded by a level lip spreader which allows for thermal cooling of the runoff and a distribution of the flow to a sheet flow rather than direct discharge. The effectiveness of buffers for pollutant removal depends on the flow path length and slope, the buffer berm length, the soil permeability, the size of drainage area, and the type and density of vegetation. Buffers are used to treat runoff from relatively small amounts of impervious area, as typically found in residential developments and small commercial and industrial sites. This type of BMP requires minimal maintenance and provides an aesthetically pleasing area.

12.9.2 Approach and Analysis for Quality and Quantity

The proposed development will be required to meet the BMP Standard under the General Standard, the Flooding Standard, and the Urban Impaired Stream standard. Based upon review of the four recommended and approved methods for mitigating the increased frequency and duration of channel erosive flows, as required by the BMP Standards, the developer is proposing to use a Bioretention pond, Grassed Underdrained Soil Filters, a FocalPoint, and Drip Strips to provide water quality and quantity control. A payment will be made to City of Portland Compensation Fee Utilization Plan to satisfy the Urban Impaired Stream requirements.

12.9.3 Water Quality Sizing Requirements

Under BMP standards the development is required to treat the runoff from 95% of the project's impervious area and from 80% of the project's developed area.

Bioretention Pond

Subcatchment 3 is tributary to the proposed Bioretention Pond #1. The tributary area consists of the landscaped area between the office and pond, the sidewalk in front and to the side of the office building and the pond itself.

Test pits have not been excavated at the pond locations, but given the soil type, it is assumed that the seasonal high groundwater is less than one foot below the pond bottom therefore an impermeable liner is proposed under the pond.

Bioretention ponds are defined in Volume III, Section 7 of the Stormwater Management Best Management Practices Manual published by the Maine Department of Environmental Protection. The development will be required to provide the treatment volume for 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped developed area. The surface area of the filter is required to be no less than the sum of 7% of the impervious area and 3% of the landscaped area draining to the filter. The channel protection volume is allowed to pond up to 6" deep within the bioretention pond. An additional 6" of storage within the soil filter is permitted. The pond outlet will be set at the channel protection volume elevation. A valve will be placed on the soil filter underdrain to regulate the outflow through the soil media. The valve will be field adjusted to maintain the outflow time between 24 and 48 hours for the channel protection volume. Yearly maintenance

of the bioretention pond will include monitoring the outflow after a rainfall event to ensure the outflow time is within the required parameters. The filter media will be a layered system consisting of 12" of sand and 6" of loamy topsoil with a transition layer of 2" of the topsoil rototilled into the sand layer.

The following table presents the Bioretention Pond information:

Table 1		
Bioretention Pond #1		
	Required	**Provided**
Impervious Area		472 sq. ft.
Developed Area (non-impervious)		963 sq. ft.
Treatment Volume	72.0 cu. ft.	217 cu. ft.
Filter Surface Area		184 sq. ft.
7%(imp. Area) +3%(landscaped Area)	62 sq. ft.	184 sq. ft.
Cell Base Elevation		83.5 ft.

Given the small tributary area to bioretention pond #1, there is no formal overflow structure. The depth of ponding for the water quality volume is elevation 83.38 which is within the soil media.

Roof Dripline Filtration

Subcatchment 4 is tributary to the drip strips at the rear of the residential duplex units. The tributary area consists of the adjacent roof area.

Roof dripline filtration will be utilized at parts of the rear of the residential duplex units. The dripline provides treatment for the tributary roof area. The reservoir layer is 12" deep and the width varies to provide storage for 1" of runoff from the impervious surface assuming a 40% void ratio in the stone reservoir layer. The drip strips run adjacent to the tributary roof area that requires treatment as shown on the Water Quality Map. Each drip strip is sized independently based on the tributary roof area. The largest drip strip, located to the rear of the middle duplex, provides a minimum of 51.1 cf of storage, which is the required storage based upon 1" of runoff over the 17'x18' roof area.

Grassed Underdrained Soil Filter

Subcatchment 1A is tributary to the proposed Grassed Underdrain Soil #1. The tributary area consists of the roof areas of the triplex residential units, parking area, and the soil filter itself.

Subcatchment 1B is tributary to the proposed Grassed Underdrain Soil #2. The tributary area consists of the adjacent access drive, parking area, and the soil filter itself.

Subcatchment 2A is tributary to the proposed Grassed Underdrain Soil #3. The tributary area the roof of the office-professional building, the parking area, and the soil filter itself.

Subcatchment 2B is tributary to the proposed Grassed Underdrain Soil #4. The tributary area consists of the front roof half of the northern residential duplex unit, the adjacent parking area, and the soil filter itself.

Grassed Underdrains are defined in Volume III, Section 7.1 of the Stormwater Management Best Management Practices Manual published by the Maine Department of Environmental Protection. The development will be required to provide the treatment volume for 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped developed area. The surface area of the filter is required to be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the filter. The proposed grassed underdrain soil filter sizes are less than the 3,000 square foot maximum size with a watershed less than 2.5 acres in accordance with Section 7 of the BMP Manual.

The channel protection volume is allowed to pond up to 18" deep within the grassed underdrain. Runoff from storms producing the water quality volume will be conveyed from the pond through the soil media and underdrain system. A valve will be placed on the soil filter underdrain to regulate the outflow through the soil media. The valve will be field adjusted to maintain the outflow time between 24 and 48 hours. Yearly maintenance of the grassed underdrain will include monitoring the outflow after a rainfall event to ensure the outflow time is within the required parameters. The filter media will be a layered system consisting of 12" of loamy coarse sand and 6" of loamy topsoil with a transition layer of 2" of the topsoil rototilled into the sand layer.

Runoff from larger storms will be conveyed from the filter by the spillway. The pond provides 1' of freeboard for the 25 year storm passing over the spillway. See attachment B. The following tables present information for the Soil Filters.

The following table presents the Grassed Underdrain Soil Filters information:

Table 2		
Grassed Underdrain Soil Filter #1		
	Required	**Provided**
Impervious Area		7,034 sq. ft.
Developed Area (non-impervious)		1,834 sq. ft.
Treatment Volume	648 cu. ft.	649 cu. ft.
Filter Surface Area	3,000 sq. ft. max	469 sq. ft.
5%(imp. Area) +2%(landscaped Area)	389 sq. ft.	469 sq. ft.
Pond Base Elevation		81.5 ft.
Channel Protection Volume elevation		82.55 ft.
Release Time	24-48 Hours	24 Hours
Overflow Elevation		83.25 ft.

Table 3		
Grassed Underdrain Soil Filter #2		
	Required	**Provided**
Impervious Area		2,434 sq. ft.
Developed Area (non-impervious)		1,108 sq. ft.
Treatment Volume	240 cu. ft.	915 cu. ft.
Filter Surface Area	3,000 sq. ft. max	184 sq. ft.
5%(imp. Area) +2%(landscaped Area)	144 sq. ft.	184 sq. ft.
Pond Base Elevation		81.0 ft.
Channel Protection Volume elevation		81.97 ft.
Release Time	24-48 Hours	24 Hours
Overflow Elevation		83.36 ft.

Table 4		
Grassed Underdrain Soil Filter #3		
	Required	**Provided**
Impervious Area		4,846 sq. ft.
Developed Area (non-impervious)		2,734 sq. ft.
Treatment Volume	495 cu. ft.	497 cu. ft.
Filter Surface Area	3,000 sq. ft. max	417 sq. ft.
5%(imp. Area) +2%(landscaped Area)	297 sq. ft.	417 sq. ft.
Pond Base Elevation		81.0 ft.
Channel Protection Volume elevation		81.91 ft.
Release Time	24-48 Hours	24 Hours
Overflow Elevation		82.73 ft.

Table 5		
Grassed Underdrain Soil Filter #4		
	Required	**Provided**
Impervious Area		2,782 sq. ft.
Developed Area (non-impervious)		2,835 sq. ft.
Treatment Volume	327 cu. ft.	330 cu. ft.
Filter Surface Area	3,000 sq. ft. max	278 sq. ft.
5%(imp. Area) +2%(landscaped Area)	196 sq. ft.	278 sq. ft.
Pond Base Elevation		80.75 ft.
Channel Protection Volume elevation		81.58 ft.
Release Time	24-48 Hours	24 Hours
Overflow Elevation		82.13 ft.

Watershed Maps are included in Attachment A. Stage/storage tables for the soil filter is included in Attachment B.

FocalPoint

Subcatchment 2C is tributary to the proposed FocalPoint #1. The tributary area consists of the front roof half of two residential duplex units, the adjacent parking area, and the FocalPoint itself.

FocalPoint's are defined in Volume III Appendix B (Proprietary Systems). Proprietary systems are defined as a system or practice designed for stormwater runoff treatment from a development that has to meet all the stormwater requirements of Maine's Stormwater Law, and the Chapter 500 Stormwater Management Rule to be considered equivalent to any of the suggested structures found in the BMP Manual. A proprietary system must be live-tested for a variety of storm lengths and intensities. The system must remove at least 60% total phosphorus, with at least similar removals metals (zinc and copper), and hydrocarbons; it must provide temperature reduction and channel protection storage detention either independently or in combination with another measure; and it must also be maintainable.

Filtration systems that store and treat a volume of water must be sized to store and treat 1.0 inch of runoff from the contributing impervious area and 0.4 inches of runoff from contributing landscaped areas. If channel protection storage and cooling are required, they must be provided independently, and the stored volume must be released slowly over a 24 to 48-hour period and cooled. Flow-through or hybrid systems that do not store the water quality volume prior to treatment must be sized so that they treat the entire volume of the 0.95-inch Type III 24-hour storm without bypass. Sizing of proposed systems that do not fit these two categories will be determined on a case-by-case basis with the goal of providing treatment for at least 90% of the annual runoff volume.

The FocalPoint system received approval by the MDEP in February 2017. The proposed system was designed in accordance with the MDEP approval letter dated February 2, 2017. The FocalPoint's are designed to treat 1 inch times the subcatchments impervious area plus 0.4 inch times the subcatchments landscaped area. The elevation of the bypass overflow such that the water quality volume a 0.95 inch type III 24 hour storm is treated prior to activation was determined using a HydroCAD model. The filter media has an exfiltration rate of 100 inches/hour. The surface media must be 174 sq. ft./acre of impervious plus 174 sq. ft./acre of vegetated area multiplied by 0.4. The filter media depth shall be 1.5 feet. The ratio of the media to the runoff volume stored above it is no less than 1 to 5. The runoff from the FocalPoint will enter a subsurface chamber storage system.

Runoff will enter the subsurface chamber storage system through an Isolator Row. The Isolator Row is required to convey the peak runoff from the 1 year type III 24 hour storm, without overflowing, at a rate of 0.227 cfs per chamber. The chamber system will provide storage for the water quality volume and release the flow over a 24-48 hour period. The subsurface chambers will be installed within a stone bed assumed to have 40% porosity.

Runoff from storms producing the water quality volume will be conveyed from the subsurface chambers through the underdrain system. A valve will be placed on the underdrain to regulate the outflow through the underdrain. The valve will be field adjusted to maintain the outflow time between 24 and 48 hours. Yearly maintenance of the FocalPoint system will include monitoring the outflow after a rainfall event to ensure the outflow time is within the required parameters and inspecting the system for accumulation of sediment within the Isolator Row. Prior to construction, the applicant will enter into an inspection and maintenance contract that will cover a five year time period. Larger storms will be conveyed from the subsurface system though an Outlet Control Structure with a weir set at the water quality elevation.

The following table presents information for the FocalPoint:

Table 6		
FocalPoint I		
	REQUIRED	**PROVIDED**
Impervious Area		6,837 sq. ft.
Vegetated Developed Area		956 sq. ft.
Water Quality Treatment Volume	602 cu. ft.	606 cu. ft.
Runoff 0.95 inch Type III Storm	0.12 cfs	
FocalPoint mulch bed elevation		83.06
Max. stage over filter for 0.95" storm		80.91
Rim of overflow structure		83.56
Filter surface area	29 sq. ft.	55 sq. ft.
Temporary Volume stored over filter (0.95" storm)		0 cu. ft.
Filter media ratio	> 1 to 5	> 1 to 5
1-Year Storm Peak Flow		0.43 cfs
Cultec Recharger 330XLHD Treatment Row Chambers required	2	2
Cultec Recharger 330XLHD required for Water Quality Volume	8	24
Total Cultec Recharger 330XLHD Chambers		24
Treatment Volume	602 cu. ft.	606 cu. ft.
Storage Base Elevation		77.9
Water Quality Volume Elevation		78.42

12.9.4 Conclusion – Overall Treatment

The following table summarizes the proposed treatment for the project. The total developed area does not include side slopes that will be mowed less than 2 times per year.

Table 7 – Overall Treatment		
	IMPERVIOUS	**DEVELOPED** (Impervious + Landscaped)
Area treated by Bioretention Pond #1 (sf)	472	1,435
Area treated by Drip Strips(sf)	1,224	1,566
Area treated by Grassed Underdrain Soil Filter #1 (sf)	7,034	8,868
Area treated by Grassed Underdrain Soil Filter #2 (sf)	2,434	3,542
Area treated by Grassed Underdrain Soil Filter #3 (sf)	4,846	7,580
Area treated by Grassed Underdrain Soil Filter #4 (sf)	2,782	5,617
Area treated by FocalPoint 1 (sf)	6,837	7,793
Total Area Treated (sf)	25,629	36,401
Area Untreated (sf)	1,296	7,271
Total Area of Project (sf)	26,925	43,672
Percent Treated	95%	83%
Percent Required	95%	80%

The proposed development of 300 and 292 Allen Avenue will utilize a Bioretention Pond, Grassed Underdrain Soil Filters, a FocalPoint and Roof Dripline Filtration to mitigate the development as required by the BMP Standards. The development is required to control runoff from no less than 95% of the impervious area and no less than 80% of the developed area. As proposed, the development is controlling approximately 95% of the created impervious area, and approximately 85% of the developed area.

A Water Quality Map is included in attachment A.

12.9.5 Water Quantity Sizing Requirements

The stormwater management study provides an analysis of predevelopment and post development stormwater runoff rates.

The Natural Resource Conservation Service Medium Intensity Soil Survey was used to identify onsite and offsite soils. The project site is comprised of hydrologic soil types B and D. The off-site areas were modeled as hydrologic soil type B and D based on the Medium Intensity Soil Survey. An excerpt from the Medium Intensity Soil Survey follows this page.

The SCS TR-20 methodology, using the HydroCad program, was employed by Gorrill Palmer to analyze predevelopment and post-development conditions. A 24-hour, SCS Type III storm distribution for the two, ten, and twenty-five year storm frequencies was used. The corresponding rainfall amounts for these storms are 3.1", 4.6", and 5.8" respectively.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	3.9	22.3%
BuB	Lamoine silt loam, 3 to 8 percent slopes	8.9	51.0%
Sn	Scantic silt loam, 0 to 3 percent slopes	4.7	26.7%
Totals for Area of Interest		**17.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

Land use cover, delineations of watershed hydraulic flow paths, and hydrologic soils data were obtained using the following data:

1. Cumberland 7.5 Minute Quadrangle Maps prepared by the U.S.G.S.
2. On-site topographic survey with 2' contour intervals from an existing conditions plan of the site.
3. Aerial Photography of the project site, obtained from the Maine Office of GIS.
4. Natural Resource Conservation Service Medium Intensity Soil Survey
5. Field Reconnaissance.

Predevelopment Conditions

The drainage study analyzes the watersheds in the predevelopment condition as depicted on the Predevelopment Watershed Map.

The predevelopment was analyzed as two subcatchments. Two points of interest (POI) were analyzed.

Subcatchment 1 consists of the southwestern portion of the site. The subcatchment contains the area on site within the City of Portland easement and off-site area to the west. The off-site area consists of house lots and a gravel access drive. The subcatchment is tributary to a 12" culvert entering the existing stormdrain system crossing the site. The point of the culvert entering the storm drain system is designated as POI 1.

Subcatchment 2 is the site area tributary to the existing stormdrain crossing the site within the City of Portland easement. The subcatchment also contains an off-site area to the southeast of the site. The point of entry on the stormdrain system is designated as POI 2.

A watershed map for the predevelopment conditions is attached to this section as drawing number W1 in Attachment A. Table 8 presents the peak flow rates at the point of interest in the predevelopment condition.

Table 8 – Predevelopment Peak Flow Rates (cfs)

Point of Interest	Peak Flow (cfs)		
	2 Year	10 Year	25 Year
	Pre	Pre	Pre
POI # 1	2.1	4.0	5.7
POI # 2	0.3	0.7	1.1

Copies of the calculations for the predevelopment conditions are included in Attachment B.

Postdevelopment Conditions

Analysis for the post development condition consists of determining post development peak flows and limiting the post development flows to predevelopment levels. Detention will be

provided within the Grassed Underdrain Soil Filters and subsurface chambers and by restricting the outflow of Soil Filters #1, #3, #4 and the chambers.

The two subcatchments described in the predevelopment section of the report change slightly in size in the post development condition. Both pre development subcatchments are split to differentiate area receiving stormwater treatment and areas left at the predevelopment condition. The overall subcatchment areas tributary to POI 1 and POI 2 remains the same as in the predevelopment condition.

Subcatchment 1 decreases in size due to the differentiation of areas receiving stromwater treatment. Subcatchment 1 is split into three subcatchments for the post development condition.

Subcatchment 1A is the area tributary to Grassed Underdrain Soil Filter #1 and contains impervious roof and parking lot areas as well as lawn area.

Subcatchment 1B is the area tributary to Grassed Underdrain Soil Filter #2 and includes the adjacent parking area and lawn area.

These subcatchments are routed to the existing stormdrain inlet on the west side of the pipe, POI 1.

Subcatchment 2 decreases in size due to the differentiation of areas receiving stromwater treatment. Subcatchment 2 is split into six subcatchments for the post development condition.

Subcatchment 2A is the area tributary to Grassed Underdrain Soil Filter #3 and contains impervious roof and parking area as well as lawn area.

Subcatchment 2B is the area tributary to Grassed Underdrain Soil Filter #4 and contains impervious roof and parking area as well as lawn area.

Subcatchment 2C is the area tributary to the FocalPoint and subsurface chambers and contains impervious roof and parking area as well as lawn area.

Subcatchment 3 is the area tributary to Bio Retention Cell #1 and contains impervious sidewalk area as well as lawn area.

Subcatchment 4 is the area tributary to the Roof Dripline Filtration System and contains impervious roof areas.

These subcatchments are routed to the existing stormdrain inlet on the east side of the pipe, POI 2.

A watershed map for the postdevelopment conditions is attached to this section as drawing number W2 in Attachment A, Attachment B includes the TR-20 calculations.

A comparison of predevelopment and post development peak flow at the POI location without detention is presented in the following table.

Table 9 – Comparison of Peak flows without detention (cfs)						
Point of Interest	Peak Flow (cfs)					
	2 Year		10 Year		25 Year	
	Pre	Post	Pre	Post	Pre	Post
POI # 1	2.1	2.2	4.0	4.1	5.7	5.7
POI # 2	0.3	1.6	0.7	2.6	1.1	3.4

As can be seen from Table 9, detention is required to reduce the peak flow at POI 1 and POI 2 to at or below predevelopment levels.

The impervious area of the site is increased in the post development condition. Subcatchments 1A, 1B, 2A, 2B, 2C, 3, and 4 are routed through ponds. Subcatchments 1 and 2 are undetained.

The stormwater runoff from subcatchment 1A is routed through Grassed Underdrain Soil Filter #1. The outlet of the pond is the underdrain below the soil filter. The outflow was modeled as a constant exfiltration of 0.01 cfs. Runoff from larger storms enters the overflow catch basin which has its rim set at the water quality volume stage. The flow from the catch basin enters an outlet control structure where the outflow is regulated by an orifice. A weir within the structure will be set at the 25-year storm stage and will provide an overflow to the stormdrain system. The following table presents the pond performance.

Table 10 – Grassed Underdrain Soil Filter #1			
	Storm Event		
	2 Year	10 Year	25 Year
Peak Inflow (cfs)	0.56	0.88	1.13
Peak Outflow (cfs)	0.26	0.35	0.35
Stage (Max. Elevation)	82.62	82.98	83.25
Storage (cf)	708	1,014	1,280
Depth above base (ft)	1.12	1.48	1.75

The stormwater runoff from subcatchment 1B is routed through Grassed Underdrain Soil Filter #2. The Water Quality outlet of the pond is the underdrain below the soil filter. The outflow was modeled as a constant exfiltration of 0.01 cfs. No formal outlet control is proposed due to the small subcatchment area associated with Soil Filter #2. Runoff from larger storms will flow over an emergency spillway that is set at the 25-YR storm elevation. The following table presents the pond performance.

Table 11 – Grassed Underdrain Soil Filter #2			
	Storm Event		
	2 Year	10 Year	25 Year
Peak Inflow (cfs)	0.21	0.34	0.44
Peak Outflow (cfs)	0.01	0.01	0.01
Stage (Max. Elevation)	82.23	82.91	83.36
Storage (cf)	330	642	915
Depth above base (ft)	1.23	1.91	2.36

The stormwater runoff from subcatchment 2A is routed through Grassed Underdrain Soil Filter #3. The Water Quality outlet of the pond is the underdrain below the soil filter. The outflow was modeled as a constant exfiltration of 0.01 cfs. Runoff from larger storms enters the overflow catch basin which has its rim set at the water quality volume stage. The flow from the catch basin enters an outlet control structure where the outflow is regulated by an orifice. A weir within the structure will be set at the 25-year storm stage and will provide an overflow to the stormdrain system. Due to the small storage capacity of Soil Filter #3, the embankment berm has been reduced to a minimum of 2 ft in width in order to fit on the site. The following table presents the pond performance.

Table 12 – Grassed Underdrain Soil Filter #3			
	Storm Event		
	2 Year	10 Year	25 Year
Peak Inflow (cfs)	0.45	0.72	0.94
Peak Outflow (cfs)	0.18	0.22	0.22
Stage (Max. Elevation)	81.98	82.41	82.73
Storage (cf)	544	882	1,182
Depth above base (ft)	0.98	1.41	1.73

The stormwater runoff from subcatchment 2B is routed through Grassed Underdrain Soil Filter #4. The Water Quality outlet of the pond is the underdrain below the soil filter. The outflow was modeled as a constant exfiltration of 0.01 cfs. Runoff from larger storms enters the overflow catch basin which has its rim set at the water quality volume stage. The flow from the catch basin enters an outlet control structure where the outflow is regulated by an orifice. A weir within the structure will be set at the 25-year storm stage and will provide an overflow to the stormdrain system. Due to the small storage capacity of Soil Filter #4, the embankment berm has been reduced to a minimum of 5 ft in width in order to fit on the site. The following table presents the pond performance.

Table 13 – Grassed Underdrain Soil Filter #4			
	Storm Event		
	2 Year	10 Year	25 Year
Peak Inflow (cfs)	0.3	0.5	0.66
Peak Outflow (cfs)	0.11	0.21	0.21
Stage (Max. Elevation)	81.62	81.87	82.13
Storage (cf)	351	502	681
Depth above base (ft)	0.87	1.12	1.38

The stormwater runoff from subcatchment 2C is routed through subsurface Cultech Chambers. The subsurface storage chamber has been analyzed to determine its performance for the 2-, 10-, and 25-year storms. The stormwater runoff will enter the subsurface storage chamber treatment row through a stormdrain outlet pipe from FocalPoint 1. The smaller storms which generate runoff volume equal to or less than the channel protection volume will be conveyed through the crushed stone pad and underdrain system. Larger storms will be conveyed through the underdrain, through the orifice and through the overflow weir. The weir has been modeled as a broad crested weir. The following table presents the pond performance.

Table 14 - Cultech Chambers			
	Storm Event		
	2-Year	10-Year	25-Year
Peak Inflow (cfs)	0.52	0.79	1.01
Peak Outflow (cfs)	0.03	0.05	0.07
Stage (Max. Elevation)	78.88	79.72	80.72
Storage (cf)	915	1,482	1,961
Depth above pond bottom (ft)	0.98	1.82	2.82

The stormwater runoff from subcatchment 3 is routed through Bioretention Pond #1. The outlet of the pond is the underdrain below the soil filter. The outflow was modeled as a constant exfiltration of 0.01 cfs. The following table presents the pond performance.

Table 15 – Bioretention Pond #1			
	Storm Event		
	2 Year	10 Year	25 Year
Peak Inflow (cfs)	0.07	0.12	0.16
Peak Outflow (cfs)	0.01	0.01	0.01
Stage (Max. Elevation)	83.35	83.75	84.01
Storage (cf)	64	144	220
Depth above base (ft)	0	0.25	0.51

The drip strip was modeled as a composite pond providing a total storage volume of the three drip strip treatment areas. The maximum stage for the 25 year storm is 1.74' below the surface of the drip strip. The outflow from the ponds is routed to POI 2.

The following table presents a comparison of peak flow with detention.

Table 16 – Comparison of Peak flows with detention (cfs)						
Point of Interest	Peak Flow (cfs)					
	2 Year		10 Year		25 Year	
	Pre	Post	Pre	Post	Pre	Post
POI # 1	2.1	2.1	4.0	3.9	5.7	5.4
POI # 2	0.3	0.4	0.7	0.9	1.1	1.2

As can be seen from Table 16 above, the peak post development flow at POI #1 is at or below predevelopment levels. The peak post development flow at POI #2 is slightly higher at the 2-year, 10-year, and 25-year storms. The 0.2 cfs increase in peak flows for the 10-year storm and the 0.1 CFS increase in peak flows for the 2 and 25-year storms is believed to be insignificant.

12.9.6 Conclusion – Overall Water Quantity

The peak flow to the Point of Interests has been reduced to be at or below predevelopment peak levels with the exception of 2-year.10-year, and 25-year storms for POI #2. The slight increase is believed to be insignificant given the small tributary areas and low flows.

12.9.7 Urban Impaired Stream Standard

The project is within the Fall Brook watershed and is therefore required to meet the Chapter 500 urban impaired stream standard. The City of Portland has a Compensation Fee Utilization Plan. The following table presents the required compensation fee for this project based upon MDEP Chapter 501.

Table 17 – Urban Impaired Stream Compensation Fee			
Type of Surface	Area (acres)	Fee Per Acre	Required Fee
Non-Roof Impervious	0.386	$12,500	$4,825
Roof	0.227	$5,000	$1,135
Landscaped Area	0.389	$2,500	$973
		Total	$6,933

A compensation fee of $6,933 will be paid to the City of Portland Compensation Fee Utilization Plan.

12.10 Construction BMPs

Additional water quality treatment will be provided during construction by best management practices (BMP). Standard BMPs to be employed include siltation fencing around the downslope construction perimeter, riprap, stabilized construction entrances, and erosion control fabrics applied to slopes prior to revegetation.

12.11 Maintenance of Facilities

See the Erosion and Sedimentation Control report for this project.

12.12 Conclusion

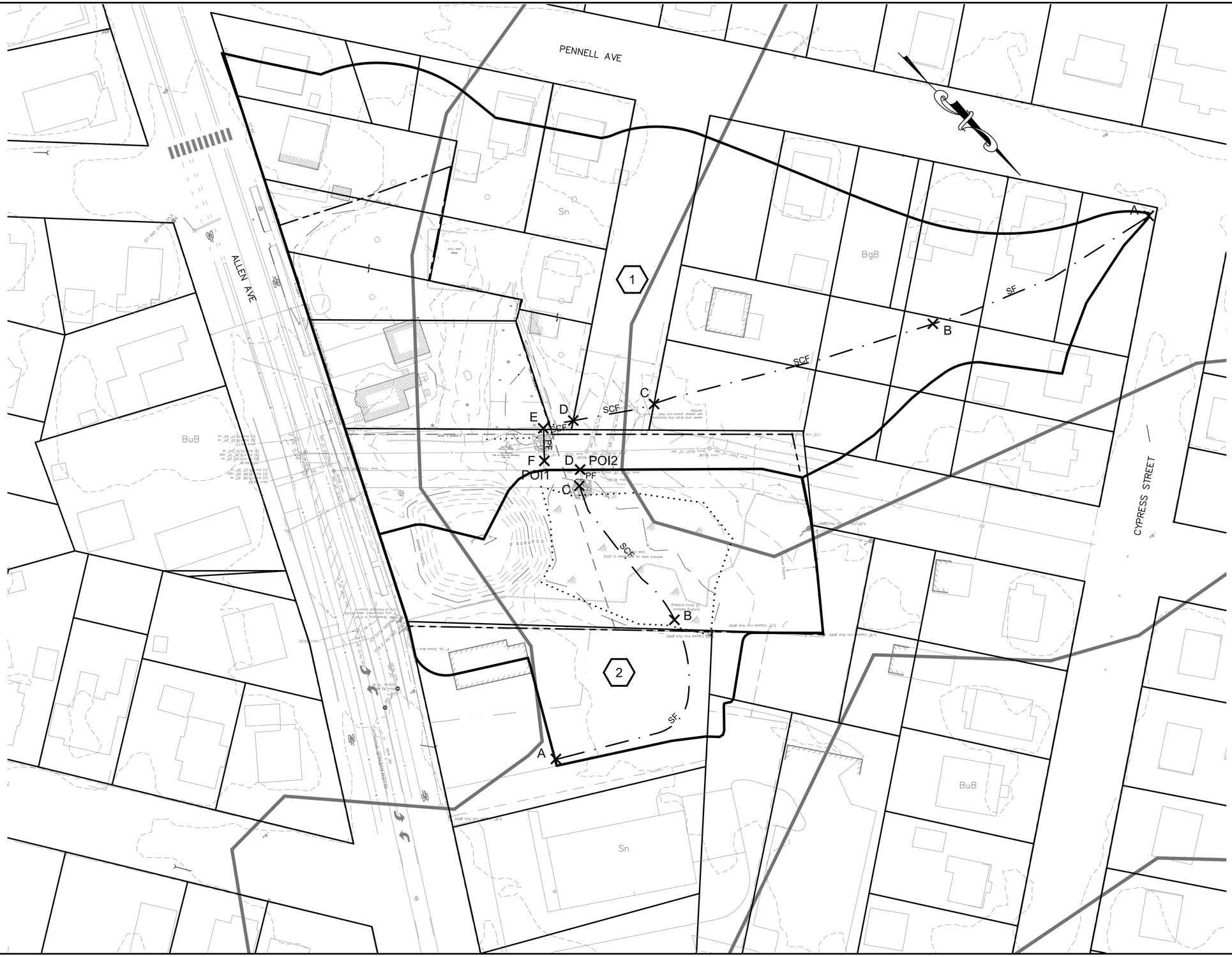
Gorrill Palmer has been retained by ESTELLE ESTATES, LLC, to prepare plans and permit applications for a proposed mixed use development, located at 300 and 292 Allen Avenue in Portland, Maine. The proposed development will include a 2,340 sf footprint office/professional services building, three 1,224 sf footprint duplex residential structures, two 1,944 sf triplex residential structures, associated parking, and infrastructure. A stormwater management plan pursuant to the regulations of MDEP Chapter 500 Stormwater Management Rules including General, Flooding, and Urban Impaired Stream Standards is required by the City of Portland. Based upon the attached calculations, the proposed development meets or exceeds the requirement of the General, Flooding, and Urban Impaired Stream Standard.

12.13 Attachments

Attached to this section are the following items:

Attachment A – Watershed Maps (Pre, Post, Water Quality)
Attachment B – TR-20 Calculations
Attachment C – FocalPoint HydroCAD Calculations

ATTACHMENT A



LEGEND

1	SUBCATCHMENT AREA
A	TIME OF CONCENTRATION FLOW PATH
	WATERSHED BOUNDARY
	WETLAND BOUNDARY
SF	SHEET FLOW
PF	PIPE FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
POI	POINT OF INTEREST
1	REACH
	SOIL BOUNDARY

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

30 0 15 30 60
1 inch = 30 ft.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9856
7-30-18
LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: 1"=30'	Job No.: 801.06

File Name: 801-06-WS-PRE-SITE.dwg

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Drawing Name: **Pre Development Watershed Map**

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. *W1*

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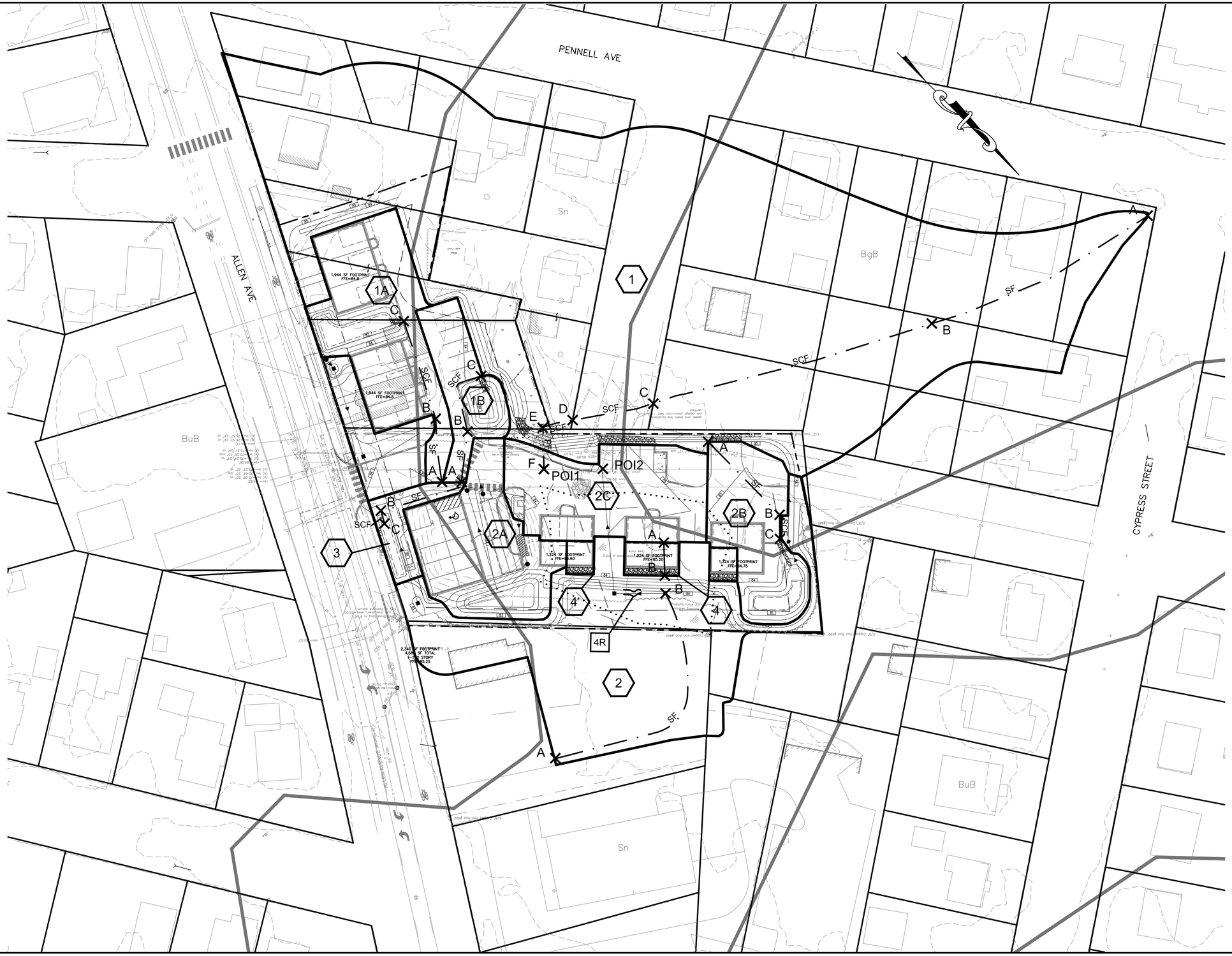

LEGEND

1	SUBCATCHMENT AREA
A	TIME OF CONCENTRATION FLOW PATH
	WATERSHED BOUNDARY
	WETLAND BOUNDARY
SF	SHEET FLOW
PF	PIPE FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
POI	POINT OF INTEREST
1	REACH
	SOIL BOUNDARY

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30 0 15 30 60

1 inch = 30 ft.

STATE OF MAINE
DOUGLAS E REYNOLDS
No. 9888
7-30-18
LICENSED PROFESSIONAL ENGINEER

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PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: 1"=30'	Job No.: 801.06
File Name: 801-06-WS-POST.dwg		

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Drawing Name: **Post Development Watershed Map**

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. W2

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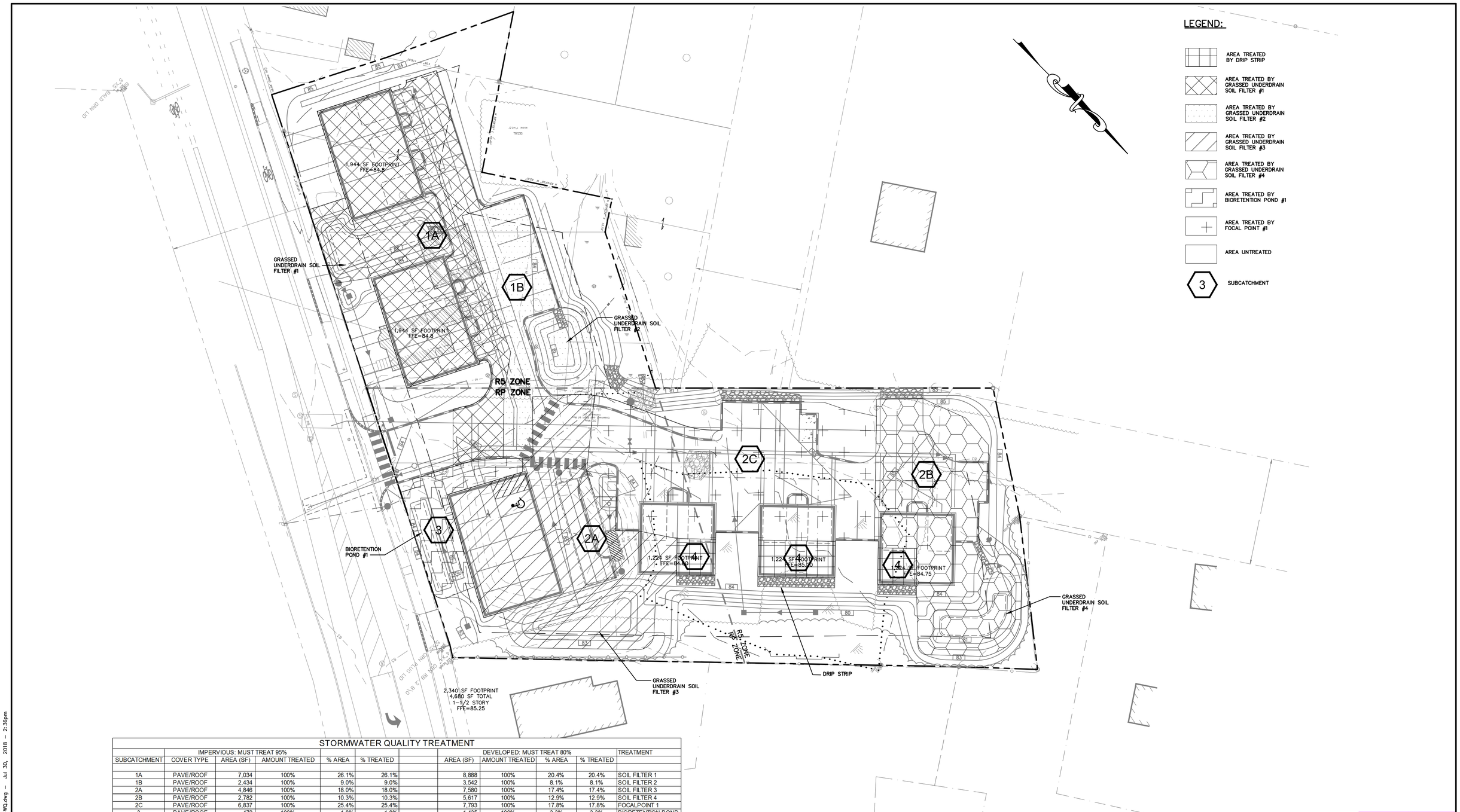

STORMWATER QUALITY TREATMENT

	IMPERVIOUS: MUST TREAT 95%						DEVELOPED: MUST TREAT 80%				TREATMENT
SUBCATCHMENT	COVER TYPE	AREA (SF)	AMOUNT TREATED	% AREA	% TREATED		AREA (SF)	AMOUNT TREATED	% AREA	% TREATED	
1A	PAVE/ROOF	7,034	100%	26.1%	26.1%		8,888	100%	20.4%	20.4%	SOIL FILTER 1
1B	PAVE/ROOF	2,434	100%	9.0%	9.0%		3,542	100%	8.1%	8.1%	SOIL FILTER 2
2A	PAVE/ROOF	4,846	100%	18.0%	18.0%		7,580	100%	17.4%	17.4%	SOIL FILTER 3
2B	PAVE/ROOF	2,782	100%	10.3%	10.3%		5,617	100%	12.9%	12.9%	SOIL FILTER 4
2C	PAVE/ROOF	6,837	100%	25.4%	25.4%		7,793	100%	17.8%	17.8%	FOCALPOINT 1
3	PAVE/ROOF	472	100%	1.8%	1.8%		1,435	100%	3.3%	3.3%	BIORETENTION POND
4	PAVE/ROOF	1,224	100%	4.5%	4.5%		1,566	100%	3.6%	3.6%	DRIP STRIP
UNTREATED	PAVE	1,296	0%	4.8%	0%		7,251	0.0%	16.6%	0%	
	TOTAL AREA	26,925		100%		TOTAL AREA	43,672		100%		
			TOTAL % TREATMENT		95.2%		TOTAL % TREATMENT			83.4%	

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9855 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

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RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA | Draft: CG | Date: AUG 2016
Checked: AMP | Scale: AS NOTED | Job No.: 801.06
File Name: 801-06-WQ.dwg

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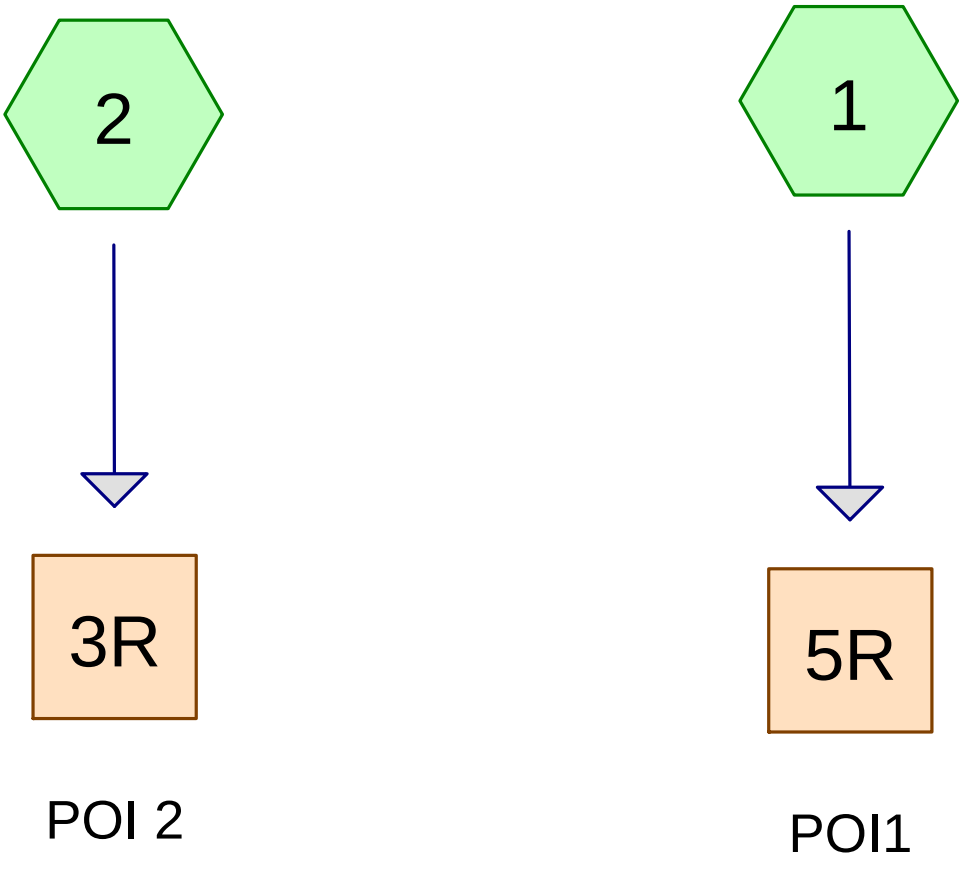
Drawing Name: **Water Quality Map**
Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine
Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. WQ

U:\801.06 Allen Ave - Bouchard\Z - CAD\DWG\801-06-WQ.dwg - Jul 30, 2018 - 2:36pm

ATTACHMENT B

PRE DEVELOPMENT



Subcat Reach Pond Link

Routing Diagram for Pre
Prepared by Gorrill Palmer, Printed 3/1/2018
HydroCAD® 10.00-16 s/n 01265 © 2015 HydroCAD Software Solutions LLC

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=103,170 sf 31.78% Impervious Runoff Depth=1.33"
Flow Length=440' Tc=29.5 min CN=80 Runoff=2.07 cfs 11,396 cf

Subcatchment 2: Runoff Area=37,650 sf 1.75% Impervious Runoff Depth=0.77"
Flow Length=255' Tc=54.0 min CN=70 Runoff=0.29 cfs 2,418 cf

Reach 3R: POI 2 Inflow=0.29 cfs 2,418 cf
Outflow=0.29 cfs 2,418 cf

Reach 5R: POI1 Inflow=2.07 cfs 11,396 cf
Outflow=2.07 cfs 11,396 cf

Total Runoff Area = 140,820 sf Runoff Volume = 13,813 cf Average Runoff Depth = 1.18"
76.24% Pervious = 107,368 sf 23.76% Impervious = 33,452 sf

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=103,170 sf 31.78% Impervious Runoff Depth=2.55"
Flow Length=440' Tc=29.5 min CN=80 Runoff=4.03 cfs 21,898 cf

Subcatchment 2: Runoff Area=37,650 sf 1.75% Impervious Runoff Depth=1.74"
Flow Length=255' Tc=54.0 min CN=70 Runoff=0.72 cfs 5,475 cf

Reach 3R: POI 2 Inflow=0.72 cfs 5,475 cf
Outflow=0.72 cfs 5,475 cf

Reach 5R: POI1 Inflow=4.03 cfs 21,898 cf
Outflow=4.03 cfs 21,898 cf

Total Runoff Area = 140,820 sf Runoff Volume = 27,372 cf Average Runoff Depth = 2.33"
76.24% Pervious = 107,368 sf 23.76% Impervious = 33,452 sf

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=103,170 sf 31.78% Impervious Runoff Depth=3.60"
Flow Length=440' Tc=29.5 min CN=80 Runoff=5.69 cfs 30,962 cf

Subcatchment 2: Runoff Area=37,650 sf 1.75% Impervious Runoff Depth=2.65"
Flow Length=255' Tc=54.0 min CN=70 Runoff=1.11 cfs 8,306 cf

Reach 3R: POI 2 Inflow=1.11 cfs 8,306 cf
Outflow=1.11 cfs 8,306 cf

Reach 5R: POI1 Inflow=5.69 cfs 30,962 cf
Outflow=5.69 cfs 30,962 cf

Total Runoff Area = 140,820 sf Runoff Volume = 39,268 cf Average Runoff Depth = 3.35"
76.24% Pervious = 107,368 sf 23.76% Impervious = 33,452 sf

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=103,170 sf 31.78% Impervious Runoff Depth=3.60"
Flow Length=440' Tc=29.5 min CN=80 Runoff=5.69 cfs 30,962 cf

Subcatchment 2: Runoff Area=37,650 sf 1.75% Impervious Runoff Depth=2.65"
Flow Length=255' Tc=54.0 min CN=70 Runoff=1.11 cfs 8,306 cf

Reach 3R: POI 2 Inflow=1.11 cfs 8,306 cf
Outflow=1.11 cfs 8,306 cf

Reach 5R: POI1 Inflow=5.69 cfs 30,962 cf
Outflow=5.69 cfs 30,962 cf

Total Runoff Area = 140,820 sf Runoff Volume = 39,268 cf Average Runoff Depth = 3.35"
76.24% Pervious = 107,368 sf 23.76% Impervious = 33,452 sf

Summary for Subcatchment 1:

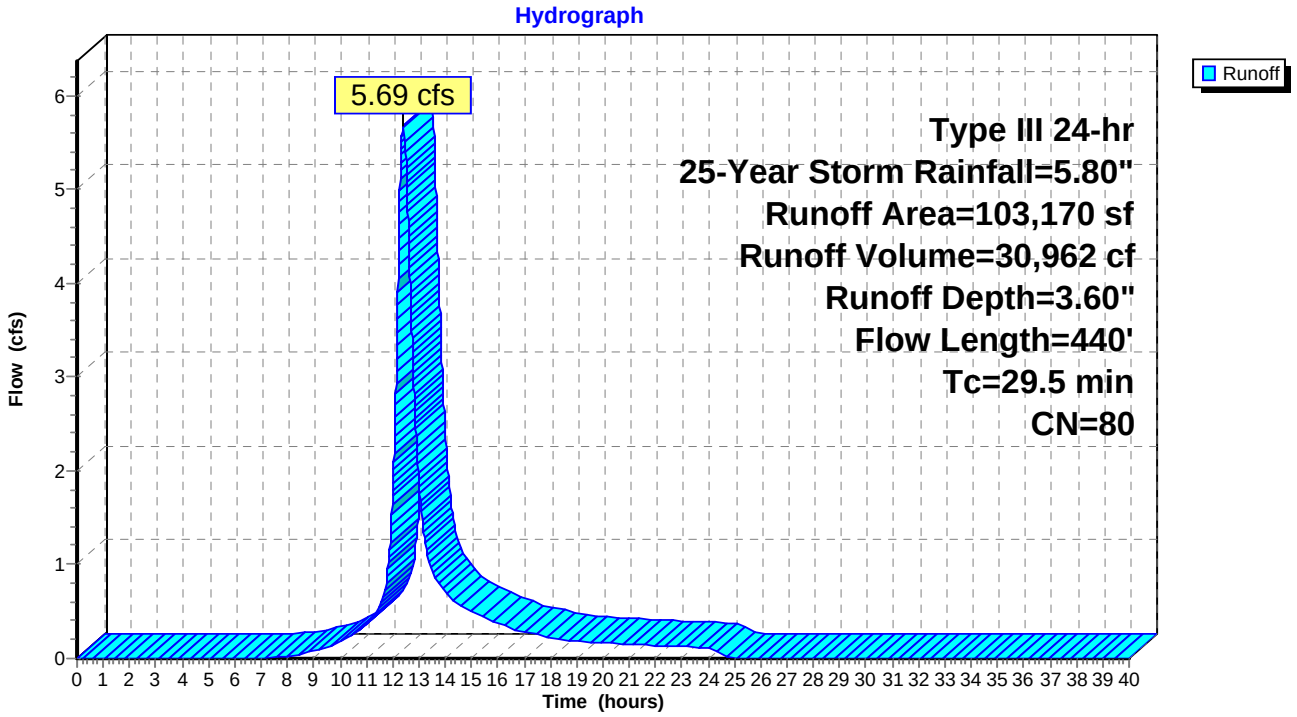
Runoff = 5.69 cfs @ 12.42 hrs, Volume= 30,962 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

Area (sf)	CN	Description
2,750	91	Gravel roads, HSG D
37,329	75	1/4 acre lots, 38% imp, HSG B
48,967	87	1/4 acre lots, 38% imp, HSG D
684	85	Gravel roads, HSG B
4,500	48	Brush, Good, HSG B
8,940	73	Brush, Good, HSG D
103,170	80	Weighted Average
70,378		68.22% Pervious Area
32,792		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	150	0.0067	0.12		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
7.7	200	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	50	0.0300	2.60		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0900	1.50		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.0	20	0.1566	17.95	14.10	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
29.5	440	Total			

Subcatchment 1:



Summary for Subcatchment 2:

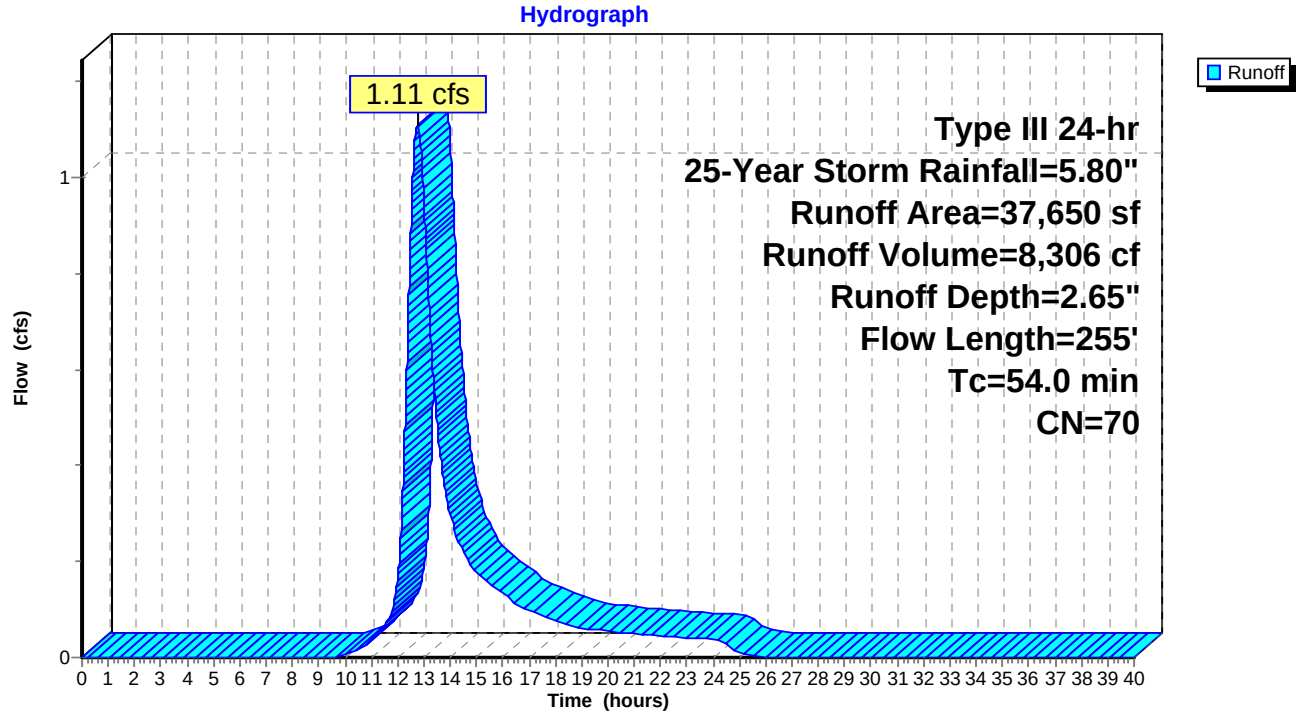
Runoff = 1.11 cfs @ 12.78 hrs, Volume= 8,306 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

Area (sf)	CN	Description
5,121	48	Brush, Good, HSG B
30,690	73	Brush, Good, HSG D
660	98	Paved parking & roofs
1,179	80	>75% Grass cover, Good, HSG D
37,650	70	Weighted Average
36,990		98.25% Pervious Area
660		1.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.5	95	0.0050	1.06		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.0	10	0.1260	16.10	12.65	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
54.0	255	Total			

Subcatchment 2:



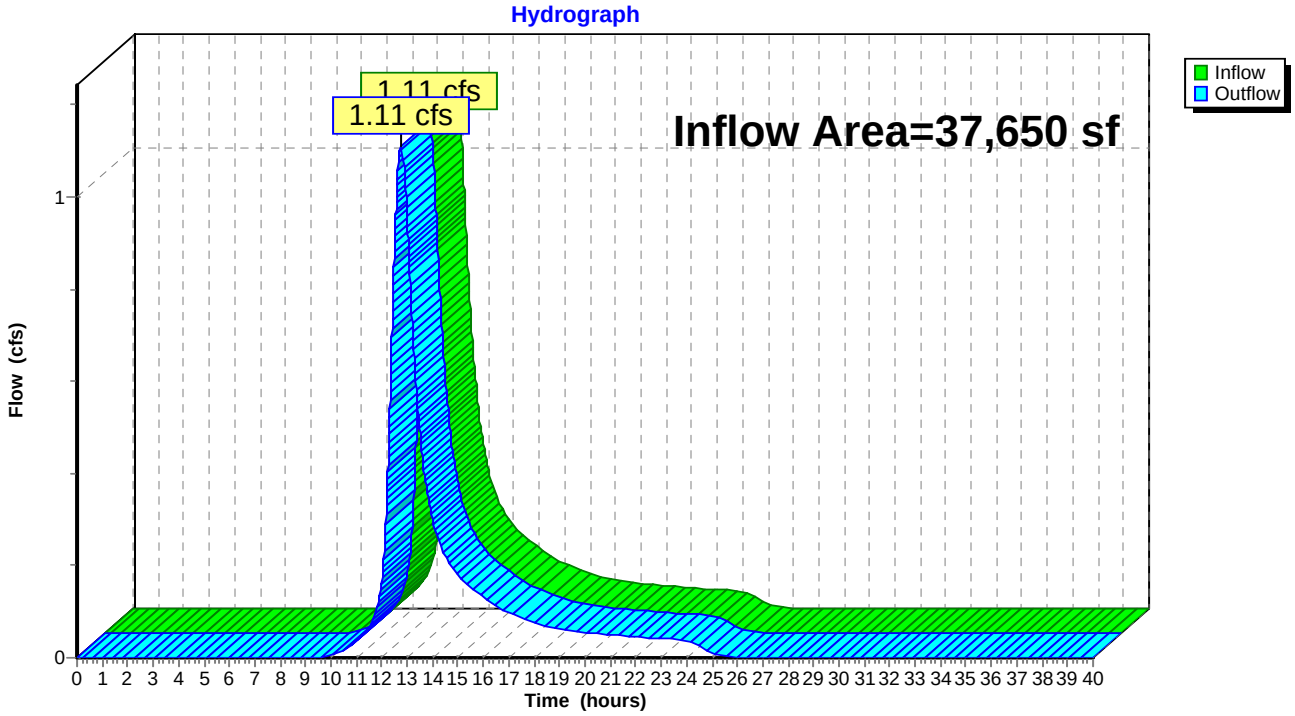
Summary for Reach 3R: POI 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 37,650 sf, 1.75% Impervious, Inflow Depth = 2.65" for 25-Year Storm event
Inflow = 1.11 cfs @ 12.78 hrs, Volume= 8,306 cf
Outflow = 1.11 cfs @ 12.78 hrs, Volume= 8,306 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Reach 3R: POI 2



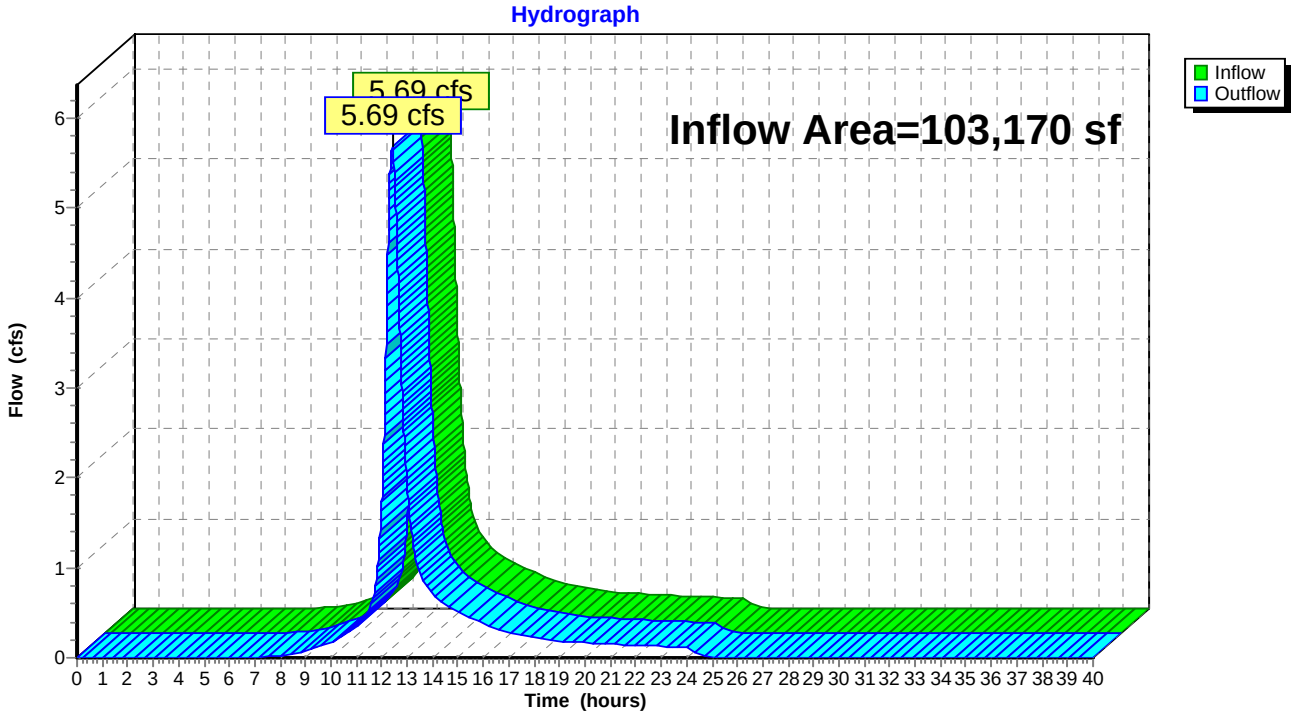
Summary for Reach 5R: POI1

[40] Hint: Not Described (Outflow=Inflow)

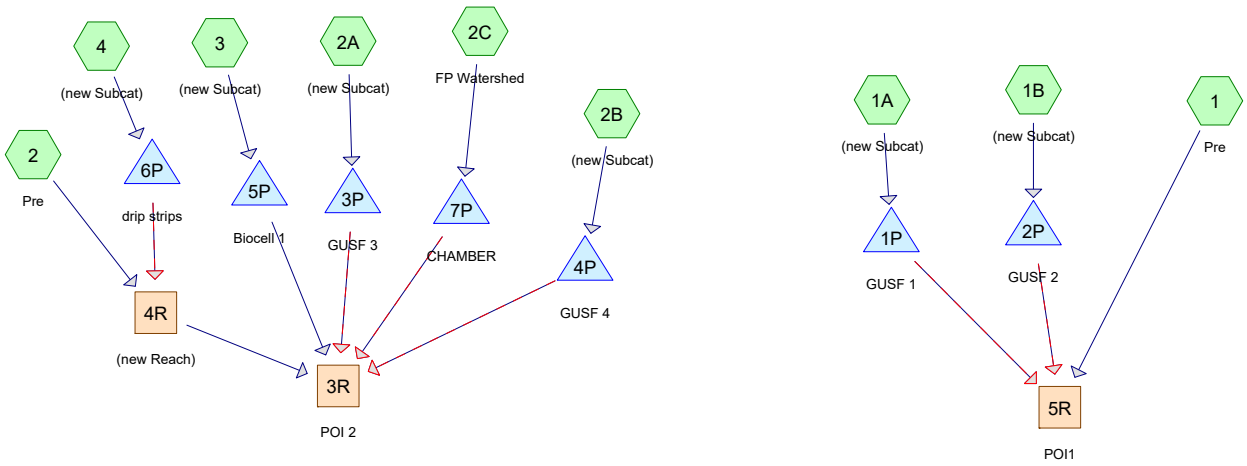
Inflow Area = 103,170 sf, 31.78% Impervious, Inflow Depth = 3.60" for 25-Year Storm event
Inflow = 5.69 cfs @ 12.42 hrs, Volume= 30,962 cf
Outflow = 5.69 cfs @ 12.42 hrs, Volume= 30,962 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Reach 5R: POI1



POST DEVELOPMENT



Subcat Reach Pond Link

Routing Diagram for Post 7-23-18
Prepared by Gorrill Palmer, Printed 7/30/2018
HydroCAD® 10.00-16 s/n 01265 © 2015 HydroCAD Software Solutions LLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Pre Runoff Area=85,852 sf 36.69% Impervious Runoff Depth>1.34"
Flow Length=440' Tc=29.5 min CN=82 Runoff=1.90 cfs 0.220 af

Subcatchment 1A: (new Subcat) Runoff Area=8,868 sf 79.32% Impervious Runoff Depth>2.31"
Tc=5.0 min CN=94 Runoff=0.56 cfs 0.039 af

Subcatchment 1B: (new Subcat) Runoff Area=3,542 sf 68.72% Impervious Runoff Depth>2.13"
Tc=5.0 min CN=92 Runoff=0.21 cfs 0.014 af

Subcatchment 2: Pre Runoff Area=18,567 sf 3.53% Impervious Runoff Depth>0.97"
Flow Length=150' Slope=0.0050 '/' Tc=52.5 min CN=76 Runoff=0.22 cfs 0.034 af

Subcatchment 2A: (new Subcat) Runoff Area=7,580 sf 63.93% Impervious Runoff Depth>2.13"
Tc=5.0 min CN=92 Runoff=0.45 cfs 0.031 af

Subcatchment 2B: (new Subcat) Runoff Area=5,617 sf 49.53% Impervious Runoff Depth>1.87"
Tc=5.0 min CN=89 Runoff=0.30 cfs 0.020 af

Subcatchment 2C: FP Watershed Runoff Area=7,793 sf 87.73% Impervious Runoff Depth>2.50"
Tc=5.0 min CN=96 Runoff=0.52 cfs 0.037 af

Subcatchment 3: (new Subcat) Runoff Area=1,435 sf 32.89% Impervious Runoff Depth>1.63"
Tc=5.0 min CN=86 Runoff=0.07 cfs 0.004 af

Subcatchment 4: (new Subcat) Runoff Area=1,566 sf 78.16% Impervious Runoff Depth>2.31"
Tc=5.0 min CN=94 Runoff=0.10 cfs 0.007 af

Reach 3R: POI 2 Inflow=0.44 cfs 0.102 af
Outflow=0.44 cfs 0.102 af

Reach 4R: (new Reach) Avg. Flow Depth=0.18' Max Vel=2.04 fps Inflow=0.23 cfs 0.041 af
15.0" Round Pipe n=0.013 L=138.0' S=0.0057 '/' Capacity=4.89 cfs Outflow=0.23 cfs 0.041 af

Reach 5R: POI1 Inflow=2.10 cfs 0.253 af
Outflow=2.10 cfs 0.253 af

Pond 1P: GUSF 1 Peak Elev=82.62' Storage=708 cf Inflow=0.56 cfs 0.039 af
Primary=0.01 cfs 0.010 af Secondary=0.25 cfs 0.014 af Outflow=0.26 cfs 0.025 af

Pond 2P: GUSF 2 Peak Elev=82.23' Storage=330 cf Inflow=0.21 cfs 0.014 af
Primary=0.01 cfs 0.009 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.009 af

Pond 3P: GUSF 3 Peak Elev=81.98' Storage=544 cf Inflow=0.45 cfs 0.031 af
Primary=0.01 cfs 0.010 af Secondary=0.17 cfs 0.010 af Outflow=0.18 cfs 0.020 af

Pond 4P: GUSF 4 Peak Elev=81.62' Storage=351 cf Inflow=0.30 cfs 0.020 af
Primary=0.01 cfs 0.009 af Secondary=0.10 cfs 0.005 af Outflow=0.11 cfs 0.014 af

Pond 5P: Biocell 1 Peak Elev=83.35' Storage=64 cf Inflow=0.07 cfs 0.004 af
Outflow=0.01 cfs 0.004 af

Pond 6P: drip strips Peak Elev=81.85' Storage=116 cf Inflow=0.10 cfs 0.007 af
Primary=0.01 cfs 0.007 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond 7P: CHAMBER Peak Elev=78.88' Storage=0.021 af Inflow=0.52 cfs 0.037 af
Primary=0.01 cfs 0.011 af Secondary=0.02 cfs 0.012 af Outflow=0.03 cfs 0.023 af

Total Runoff Area = 3.233 ac Runoff Volume = 0.408 af Average Runoff Depth = 1.51"
58.96% Pervious = 1.906 ac 41.04% Impervious = 1.327 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Pre Runoff Area=85,852 sf 36.69% Impervious Runoff Depth>2.53"
Flow Length=440' Tc=29.5 min CN=82 Runoff=3.58 cfs 0.415 af

Subcatchment 1A: (new Subcat) Runoff Area=8,868 sf 79.32% Impervious Runoff Depth>3.70"
Tc=5.0 min CN=94 Runoff=0.88 cfs 0.063 af

Subcatchment 1B: (new Subcat) Runoff Area=3,542 sf 68.72% Impervious Runoff Depth>3.50"
Tc=5.0 min CN=92 Runoff=0.34 cfs 0.024 af

Subcatchment 2: Pre Runoff Area=18,567 sf 3.53% Impervious Runoff Depth>2.01"
Flow Length=150' Slope=0.0050 '/' Tc=52.5 min CN=76 Runoff=0.47 cfs 0.071 af

Subcatchment 2A: (new Subcat) Runoff Area=7,580 sf 63.93% Impervious Runoff Depth>3.50"
Tc=5.0 min CN=92 Runoff=0.72 cfs 0.051 af

Subcatchment 2B: (new Subcat) Runoff Area=5,617 sf 49.53% Impervious Runoff Depth>3.20"
Tc=5.0 min CN=89 Runoff=0.50 cfs 0.034 af

Subcatchment 2C: FP Watershed Runoff Area=7,793 sf 87.73% Impervious Runoff Depth>3.89"
Tc=5.0 min CN=96 Runoff=0.79 cfs 0.058 af

Subcatchment 3: (new Subcat) Runoff Area=1,435 sf 32.89% Impervious Runoff Depth>2.91"
Tc=5.0 min CN=86 Runoff=0.12 cfs 0.008 af

Subcatchment 4: (new Subcat) Runoff Area=1,566 sf 78.16% Impervious Runoff Depth>3.70"
Tc=5.0 min CN=94 Runoff=0.16 cfs 0.011 af

Reach 3R: POI 2 Inflow=0.95 cfs 0.191 af
Outflow=0.95 cfs 0.191 af

Reach 4R: (new Reach) Avg. Flow Depth=0.26' Max Vel=2.53 fps Inflow=0.48 cfs 0.081 af
15.0" Round Pipe n=0.013 L=138.0' S=0.0057 '/' Capacity=4.89 cfs Outflow=0.47 cfs 0.080 af

Reach 5R: POI1 Inflow=3.94 cfs 0.473 af
Outflow=3.94 cfs 0.473 af

Pond 1P: GUSF 1 Peak Elev=82.98' Storage=1,014 cf Inflow=0.88 cfs 0.063 af
Primary=0.01 cfs 0.012 af Secondary=0.34 cfs 0.036 af Outflow=0.35 cfs 0.048 af

Pond 2P: GUSF 2 Peak Elev=82.91' Storage=642 cf Inflow=0.34 cfs 0.024 af
Primary=0.01 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.010 af

Pond 3P: GUSF 3 Peak Elev=82.41' Storage=882 cf Inflow=0.72 cfs 0.051 af
Primary=0.01 cfs 0.011 af Secondary=0.21 cfs 0.028 af Outflow=0.22 cfs 0.039 af

Pond 4P: GUSF 4 Peak Elev=81.87' Storage=502 cf Inflow=0.50 cfs 0.034 af
Primary=0.01 cfs 0.010 af Secondary=0.20 cfs 0.017 af Outflow=0.21 cfs 0.027 af

Pond 5P: Biocell 1 Peak Elev=83.75' Storage=144 cf Inflow=0.12 cfs 0.008 af
Outflow=0.01 cfs 0.008 af

Pond 6P: drip strips Peak Elev=82.58' Storage=216 cf Inflow=0.16 cfs 0.011 af
Primary=0.01 cfs 0.009 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.009 af

Pond 7P: CHAMBER Peak Elev=79.72' Storage=0.034 af Inflow=0.79 cfs 0.058 af
Primary=0.01 cfs 0.012 af Secondary=0.04 cfs 0.024 af Outflow=0.05 cfs 0.036 af

Total Runoff Area = 3.233 ac Runoff Volume = 0.735 af Average Runoff Depth = 2.73"
58.96% Pervious = 1.906 ac 41.04% Impervious = 1.327 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Pre Runoff Area=85,852 sf 36.69% Impervious Runoff Depth>3.55"
Flow Length=440' Tc=29.5 min CN=82 Runoff=4.98 cfs 0.582 af

Subcatchment 1A: (new Subcat) Runoff Area=8,868 sf 79.32% Impervious Runoff Depth>4.80"
Tc=5.0 min CN=94 Runoff=1.13 cfs 0.081 af

Subcatchment 1B: (new Subcat) Runoff Area=3,542 sf 68.72% Impervious Runoff Depth>4.60"
Tc=5.0 min CN=92 Runoff=0.44 cfs 0.031 af

Subcatchment 2: Pre Runoff Area=18,567 sf 3.53% Impervious Runoff Depth>2.94"
Flow Length=150' Slope=0.0050 '/' Tc=52.5 min CN=76 Runoff=0.68 cfs 0.105 af

Subcatchment 2A: (new Subcat) Runoff Area=7,580 sf 63.93% Impervious Runoff Depth>4.60"
Tc=5.0 min CN=92 Runoff=0.94 cfs 0.067 af

Subcatchment 2B: (new Subcat) Runoff Area=5,617 sf 49.53% Impervious Runoff Depth>4.29"
Tc=5.0 min CN=89 Runoff=0.66 cfs 0.046 af

Subcatchment 2C: FP Watershed Runoff Area=7,793 sf 87.73% Impervious Runoff Depth>4.99"
Tc=5.0 min CN=96 Runoff=1.01 cfs 0.074 af

Subcatchment 3: (new Subcat) Runoff Area=1,435 sf 32.89% Impervious Runoff Depth>3.98"
Tc=5.0 min CN=86 Runoff=0.16 cfs 0.011 af

Subcatchment 4: (new Subcat) Runoff Area=1,566 sf 78.16% Impervious Runoff Depth>4.80"
Tc=5.0 min CN=94 Runoff=0.20 cfs 0.014 af

Reach 3R: POI 2 Inflow=1.20 cfs 0.261 af
Outflow=1.20 cfs 0.261 af

Reach 4R: (new Reach) Avg. Flow Depth=0.32' Max Vel=2.81 fps Inflow=0.69 cfs 0.114 af
15.0" Round Pipe n=0.013 L=138.0' S=0.0057 '/' Capacity=4.89 cfs Outflow=0.69 cfs 0.114 af

Reach 5R: POI1 Inflow=5.35 cfs 0.660 af
Outflow=5.35 cfs 0.660 af

Pond 1P: GUSF 1 Peak Elev=83.25' Storage=1,280 cf Inflow=1.13 cfs 0.081 af
Primary=0.01 cfs 0.012 af Secondary=0.35 cfs 0.055 af Outflow=0.36 cfs 0.067 af

Pond 2P: GUSF 2 Peak Elev=83.36' Storage=915 cf Inflow=0.44 cfs 0.031 af
Primary=0.01 cfs 0.011 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.011 af

Pond 3P: GUSF 3 Peak Elev=82.73' Storage=1,182 cf Inflow=0.94 cfs 0.067 af
Primary=0.01 cfs 0.012 af Secondary=0.21 cfs 0.044 af Outflow=0.22 cfs 0.055 af

Pond 4P: GUSF 4 Peak Elev=82.13' Storage=681 cf Inflow=0.66 cfs 0.046 af
Primary=0.01 cfs 0.011 af Secondary=0.20 cfs 0.028 af Outflow=0.21 cfs 0.039 af

Pond 5P: Biocell 1 Peak Elev=84.01' Storage=220 cf Inflow=0.16 cfs 0.011 af
Outflow=0.01 cfs 0.009 af

Pond 6P: drip strips Peak Elev=83.26' Storage=310 cf Inflow=0.20 cfs 0.014 af
Primary=0.01 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.010 af

Pond 7P: CHAMBER Peak Elev=80.72' Storage=0.045 af Inflow=1.01 cfs 0.074 af
Primary=0.01 cfs 0.012 af Secondary=0.06 cfs 0.033 af Outflow=0.07 cfs 0.045 af

Total Runoff Area = 3.233 ac Runoff Volume = 1.012 af Average Runoff Depth = 3.76"
58.96% Pervious = 1.906 ac 41.04% Impervious = 1.327 ac

Summary for Subcatchment 1: Pre

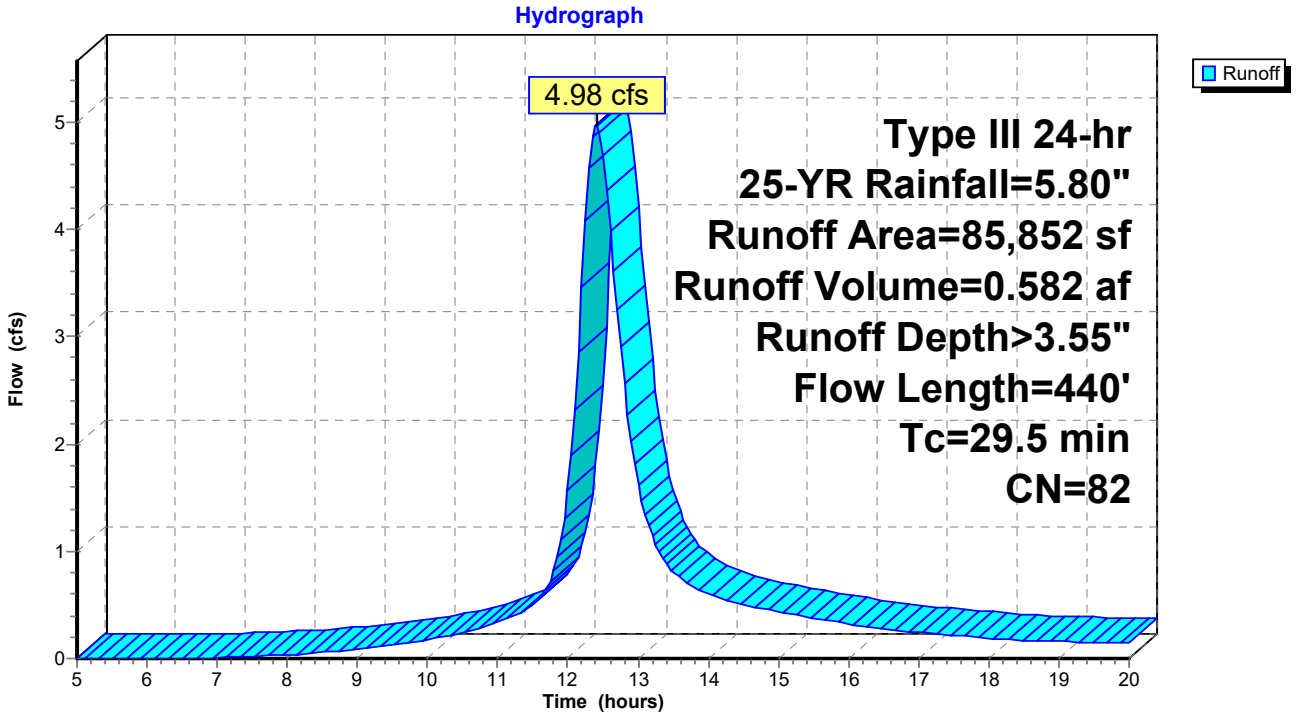
Runoff = 4.98 cfs @ 12.40 hrs, Volume= 0.582 af, Depth> 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,750	91	Gravel roads, HSG D
37,329	75	1/4 acre lots, 38% imp, HSG B
42,413	87	1/4 acre lots, 38% imp, HSG D
1,200	98	Paved parking, HSG D
684	85	Gravel roads, HSG B
1,476	80	>75% Grass cover, Good, HSG D
85,852	82	Weighted Average
54,350		63.31% Pervious Area
31,502		36.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.3	150	0.0067	0.12		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
7.7	200	0.0075	0.43		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.3	50	0.0300	2.60		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
0.2	20	0.0900	1.50		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.0	20	0.1566	17.95	14.10	**Pipe Channel, E-F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
29.5	440	Total			

Subcatchment 1: Pre



Summary for Subcatchment 1A: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

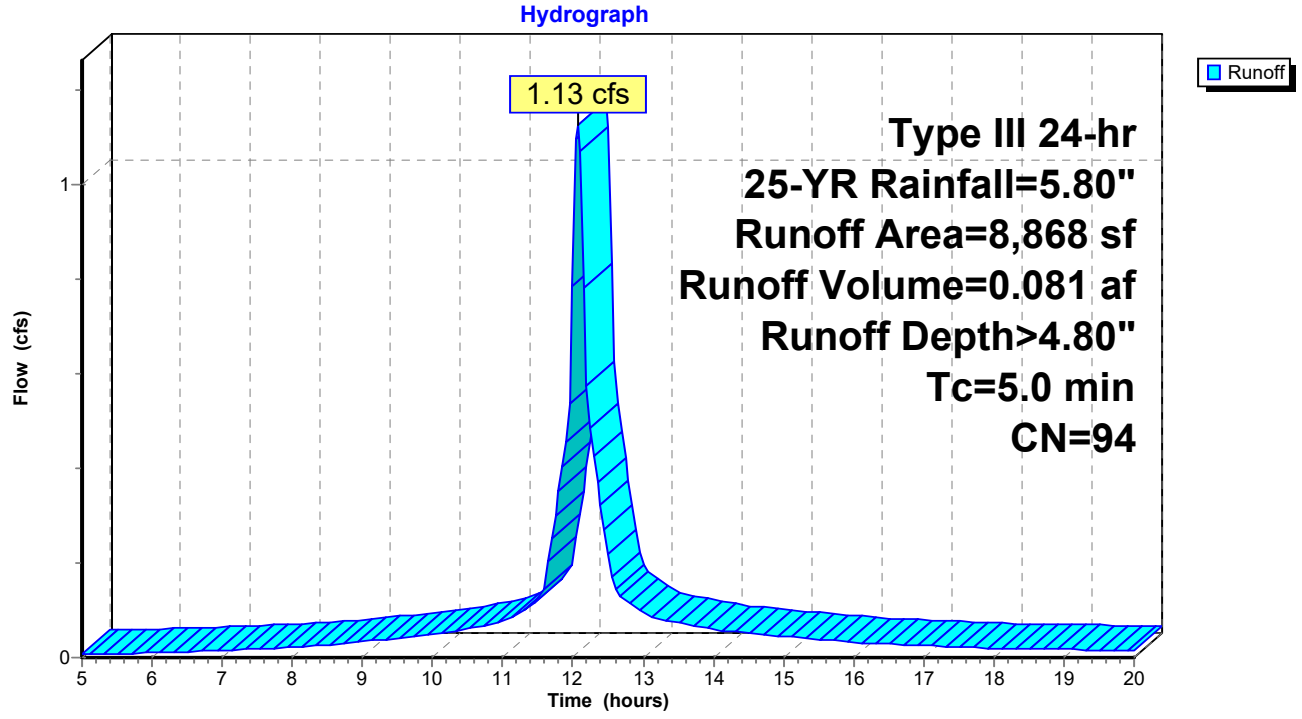
Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.081 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
7,034	98	Paved parking, HSG D
1,834	80	>75% Grass cover, Good, HSG D
8,868	94	Weighted Average
1,834		20.68% Pervious Area
7,034		79.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, A-B**

Subcatchment 1A: (new Subcat)



Summary for Subcatchment 1B: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

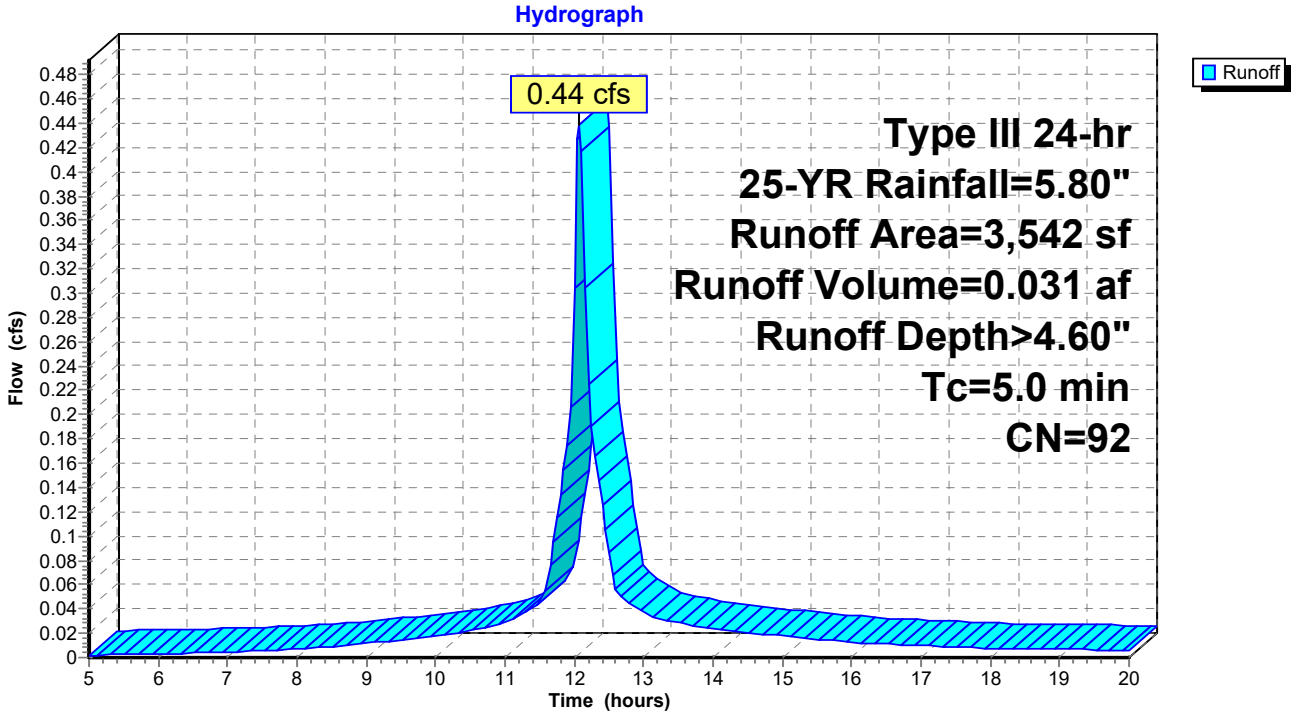
Runoff = 0.44 cfs @ 12.07 hrs, Volume= 0.031 af, Depth> 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,434	98	Paved parking, HSG D
1,108	80	>75% Grass cover, Good, HSG D
3,542	92	Weighted Average
1,108		31.28% Pervious Area
2,434		68.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, A-B**

Subcatchment 1B: (new Subcat)



Summary for Subcatchment 2: Pre

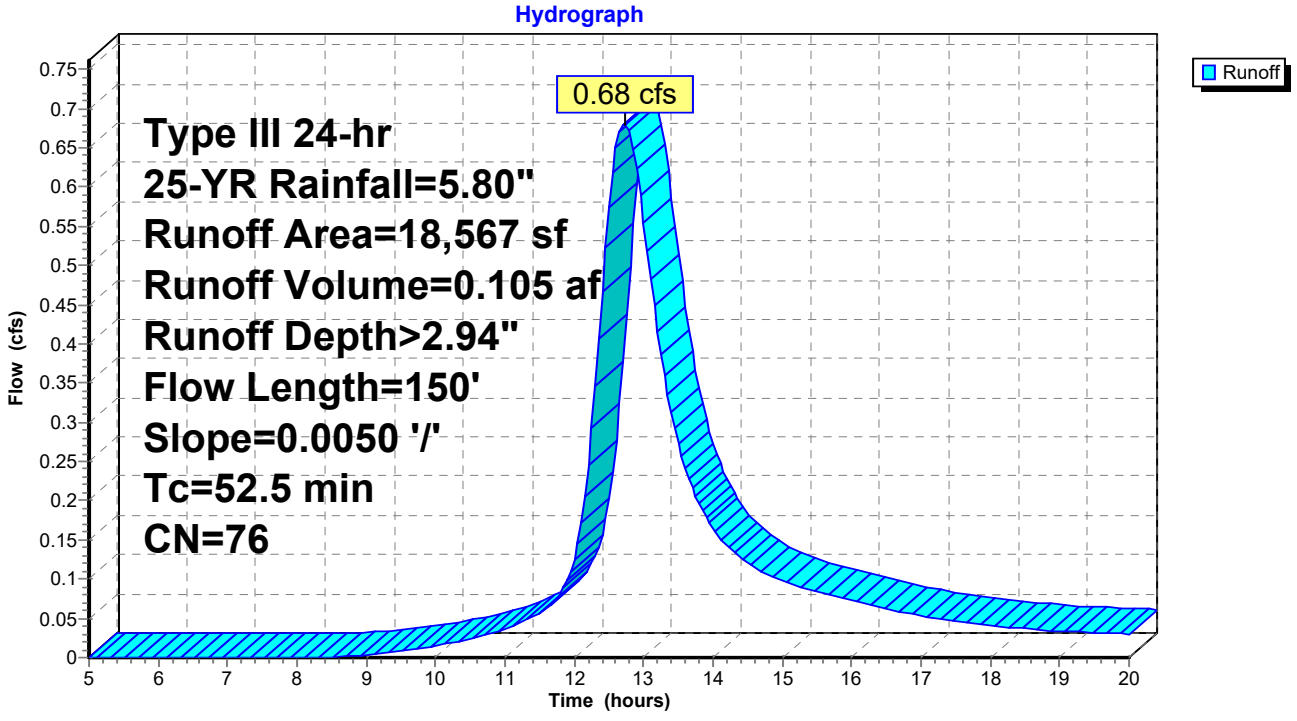
Runoff = 0.68 cfs @ 12.72 hrs, Volume= 0.105 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
12,320	73	Brush, Good, HSG D
5,592	80	>75% Grass cover, Good, HSG D
655	98	Paved parking, HSG D
18,567	76	Weighted Average
17,912		96.47% Pervious Area
655		3.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.5	150	0.0050	0.05		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"

Subcatchment 2: Pre



Summary for Subcatchment 2A: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

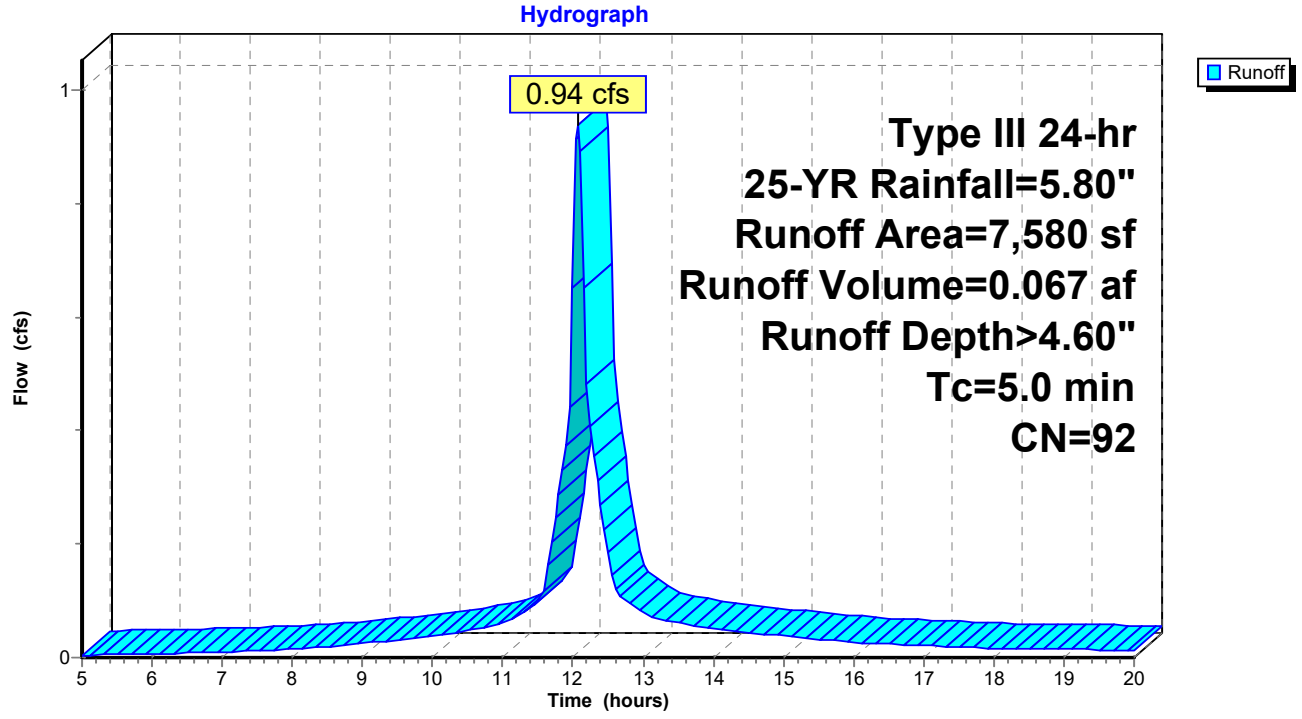
Runoff = 0.94 cfs @ 12.07 hrs, Volume= 0.067 af, Depth> 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,846	98	Paved parking, HSG D
2,734	80	>75% Grass cover, Good, HSG D
7,580	92	Weighted Average
2,734		36.07% Pervious Area
4,846		63.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, A-B**

Subcatchment 2A: (new Subcat)



Summary for Subcatchment 2B: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

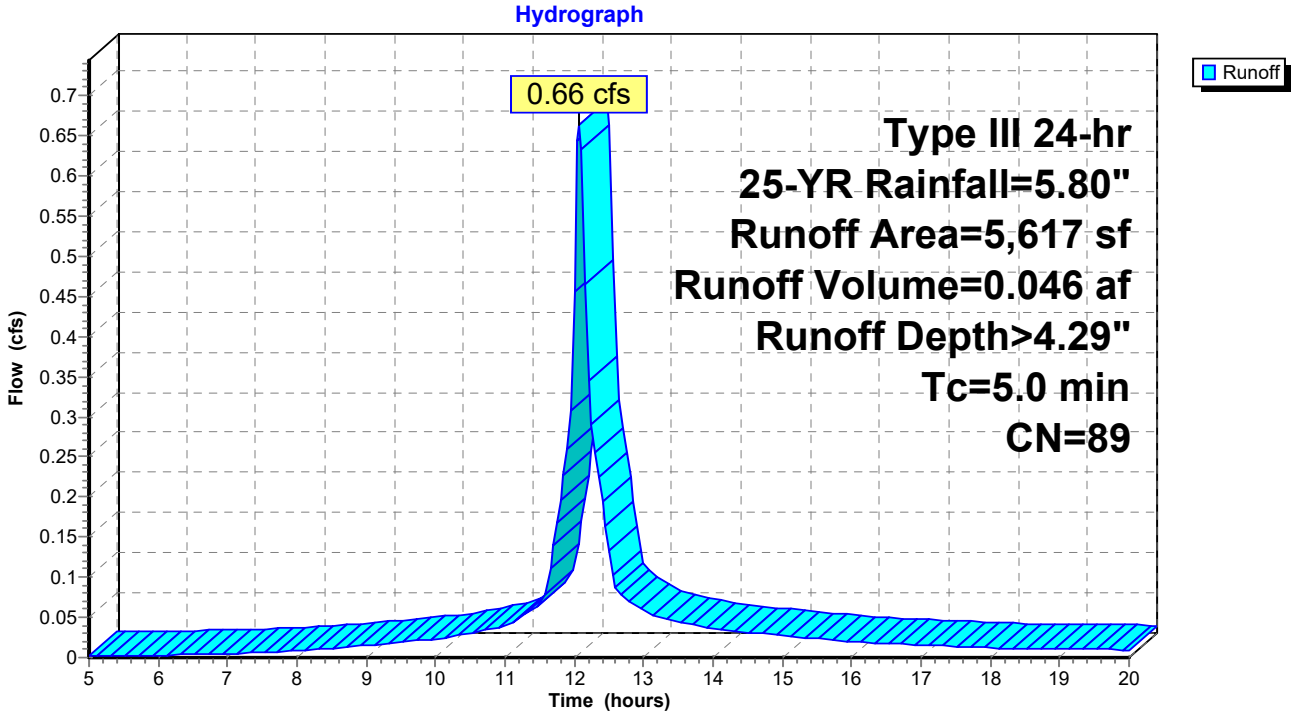
Runoff = 0.66 cfs @ 12.07 hrs, Volume= 0.046 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,782	98	Paved parking, HSG D
2,835	80	>75% Grass cover, Good, HSG D
5,617	89	Weighted Average
2,835		50.47% Pervious Area
2,782		49.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, A-B**

Subcatchment 2B: (new Subcat)



Summary for Subcatchment 2C: FP Watershed

[49] Hint: Tc<2dt may require smaller dt

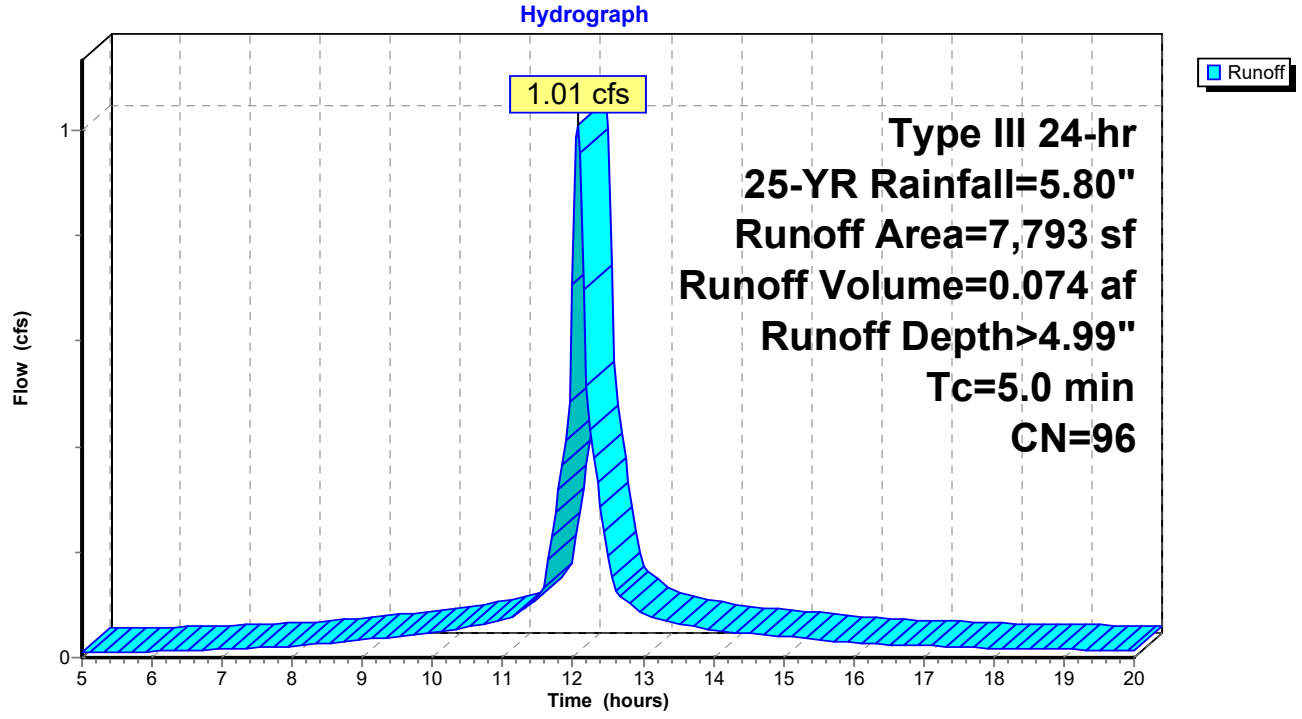
Runoff = 1.01 cfs @ 12.07 hrs, Volume= 0.074 af, Depth> 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,837	98	Paved parking, HSG D
956	80	>75% Grass cover, Good, HSG D
7,793	96	Weighted Average
956		12.27% Pervious Area
6,837		87.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2C: FP Watershed



Summary for Subcatchment 3: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

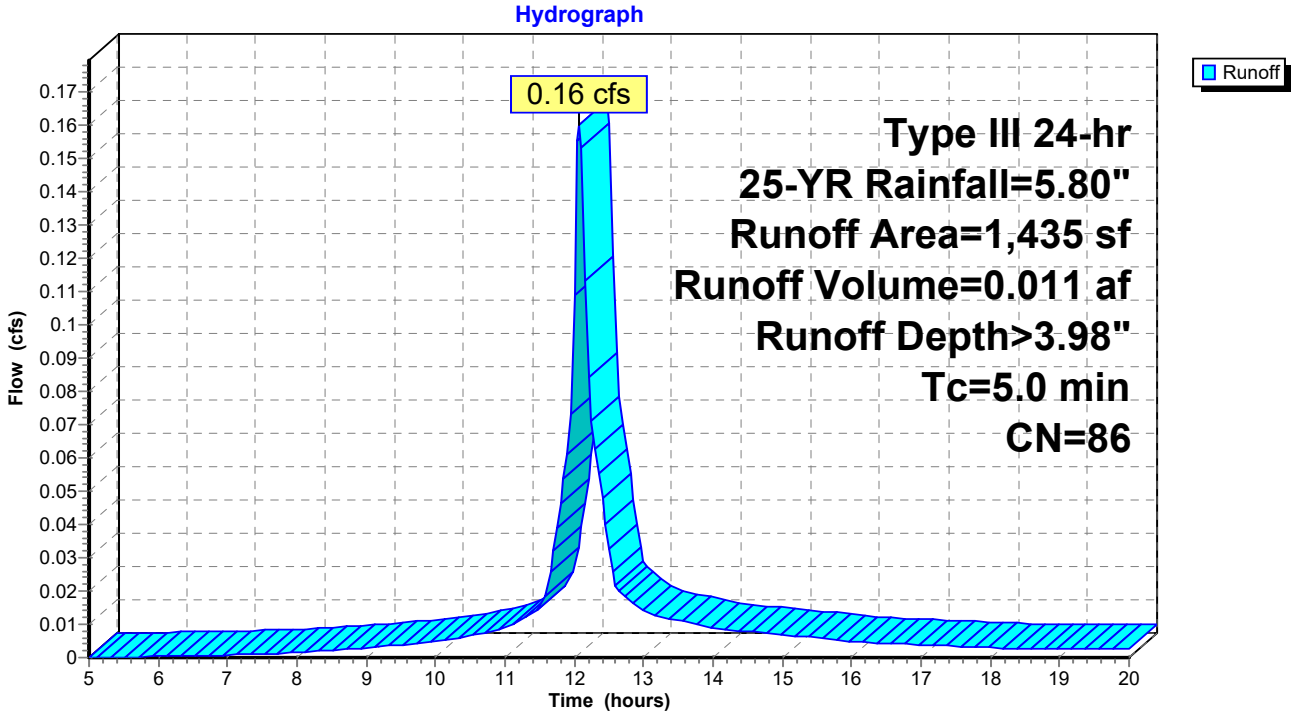
Runoff = 0.16 cfs @ 12.07 hrs, Volume= 0.011 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
472	98	Paved parking, HSG D
963	80	>75% Grass cover, Good, HSG D
1,435	86	Weighted Average
963		67.11% Pervious Area
472		32.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, A-B**

Subcatchment 3: (new Subcat)



Summary for Subcatchment 4: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

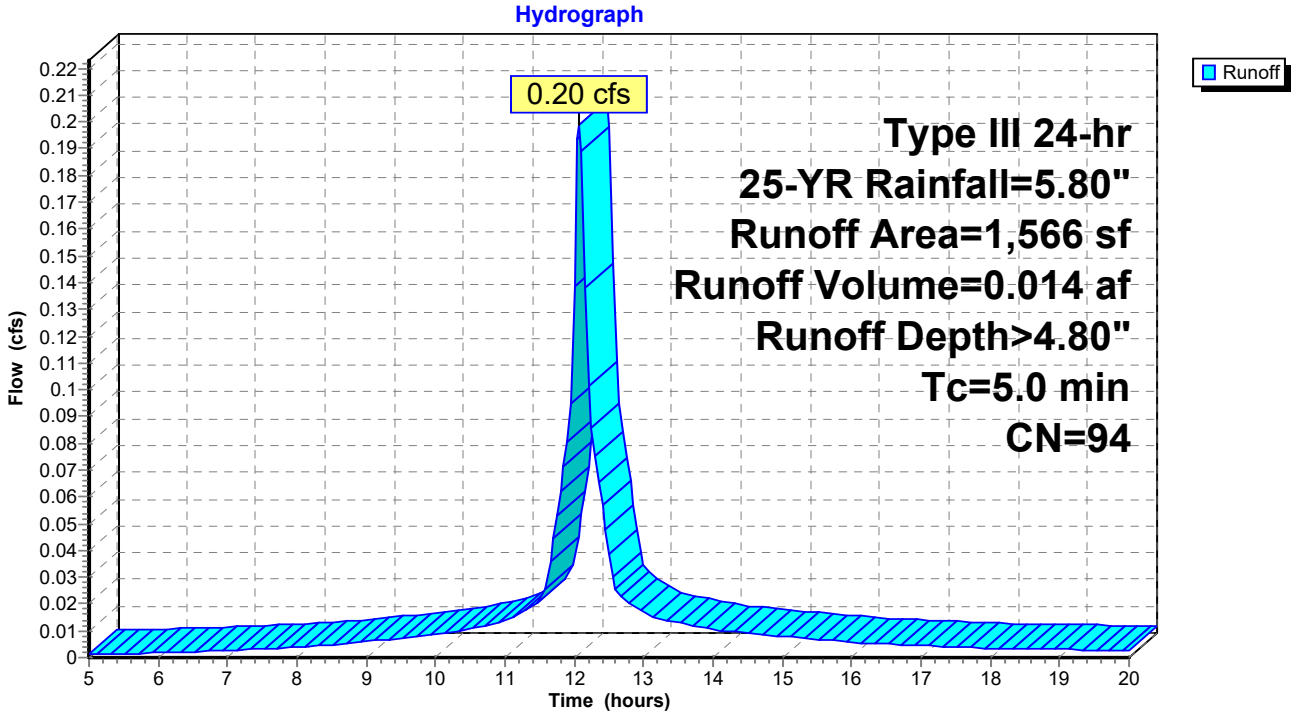
Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,224	98	Paved parking, HSG D
342	80	>75% Grass cover, Good, HSG D
1,566	94	Weighted Average
342		21.84% Pervious Area
1,224		78.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, A-B**

Subcatchment 4: (new Subcat)



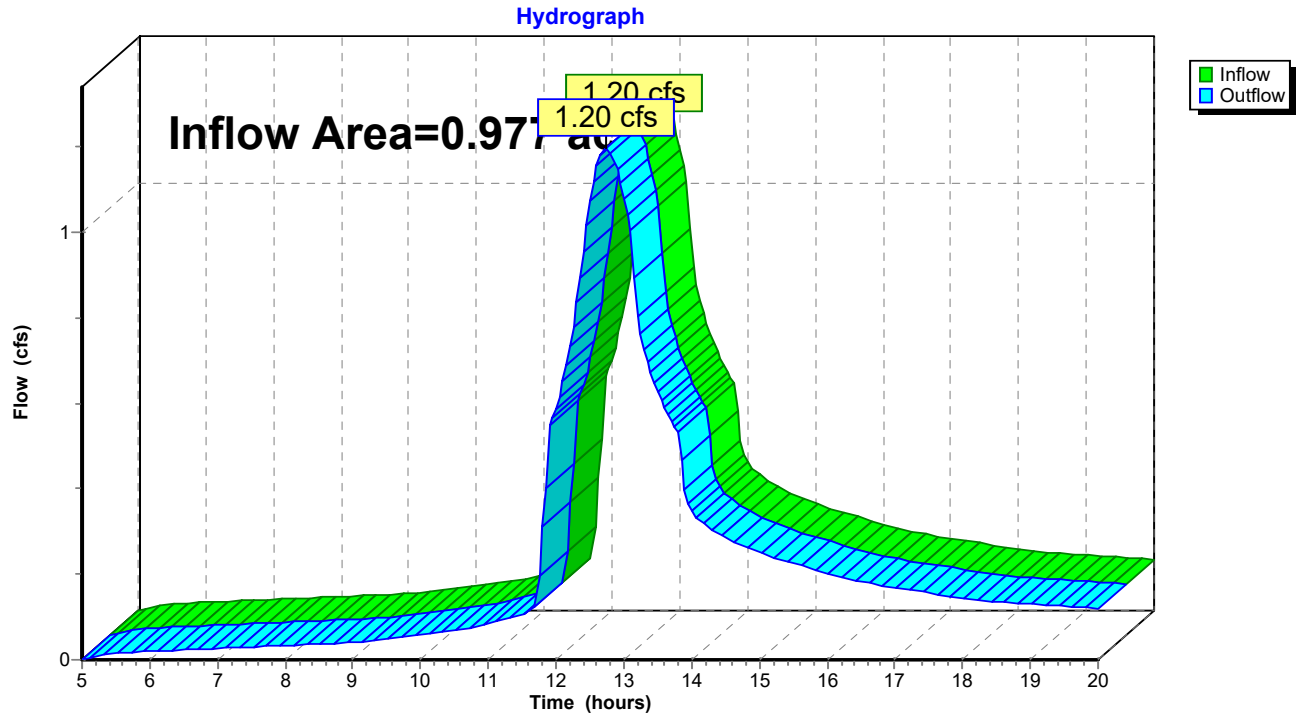
Summary for Reach 3R: POI 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.977 ac, 39.51% Impervious, Inflow Depth > 3.21" for 25-YR event
Inflow = 1.20 cfs @ 12.74 hrs, Volume= 0.261 af
Outflow = 1.20 cfs @ 12.74 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: POI 2



Summary for Reach 4R: (new Reach)

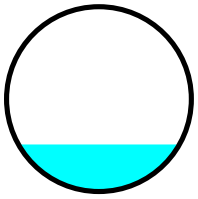
[52] Hint: Inlet/Outlet conditions not evaluated

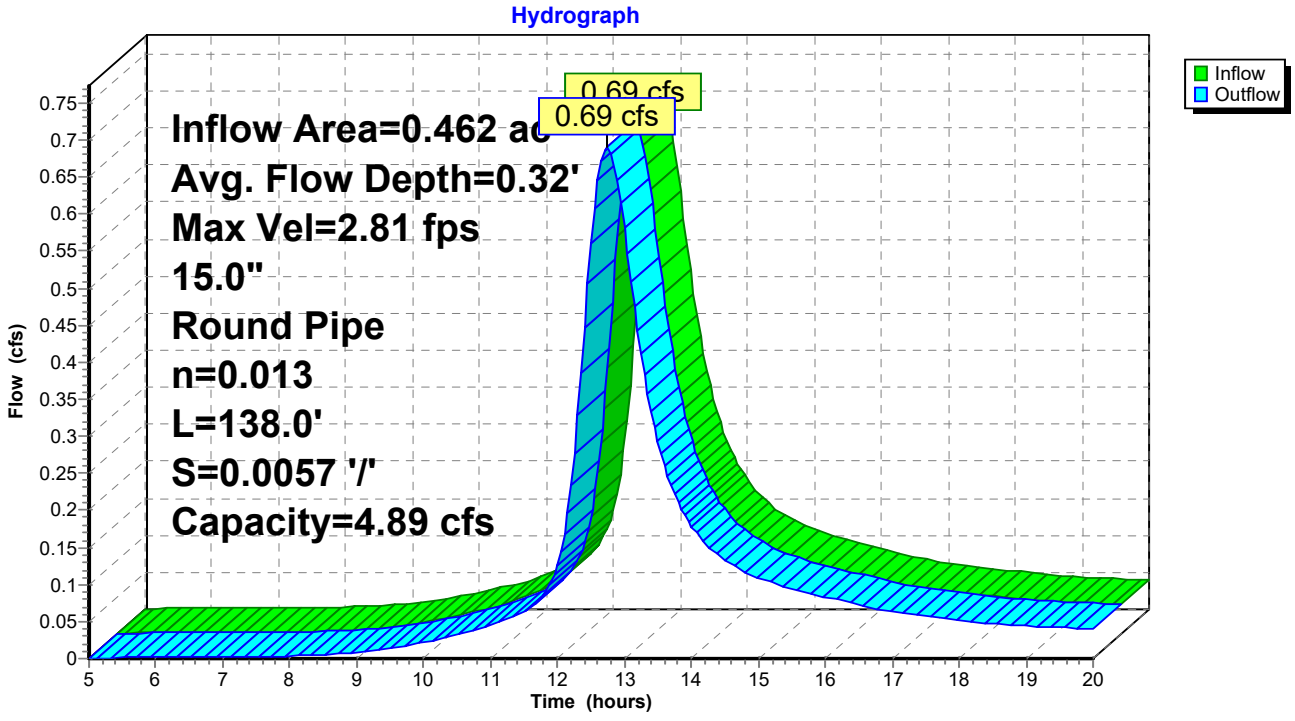
Inflow Area = 0.462 ac, 9.33% Impervious, Inflow Depth > 2.97" for 25-YR event
Inflow = 0.69 cfs @ 12.72 hrs, Volume= 0.114 af
Outflow = 0.69 cfs @ 12.74 hrs, Volume= 0.114 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.81 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 1.8 min

Peak Storage= 34 cf @ 12.73 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.89 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 138.0' Slope= 0.0057 '/'
Inlet Invert= 77.23', Outlet Invert= 76.44'



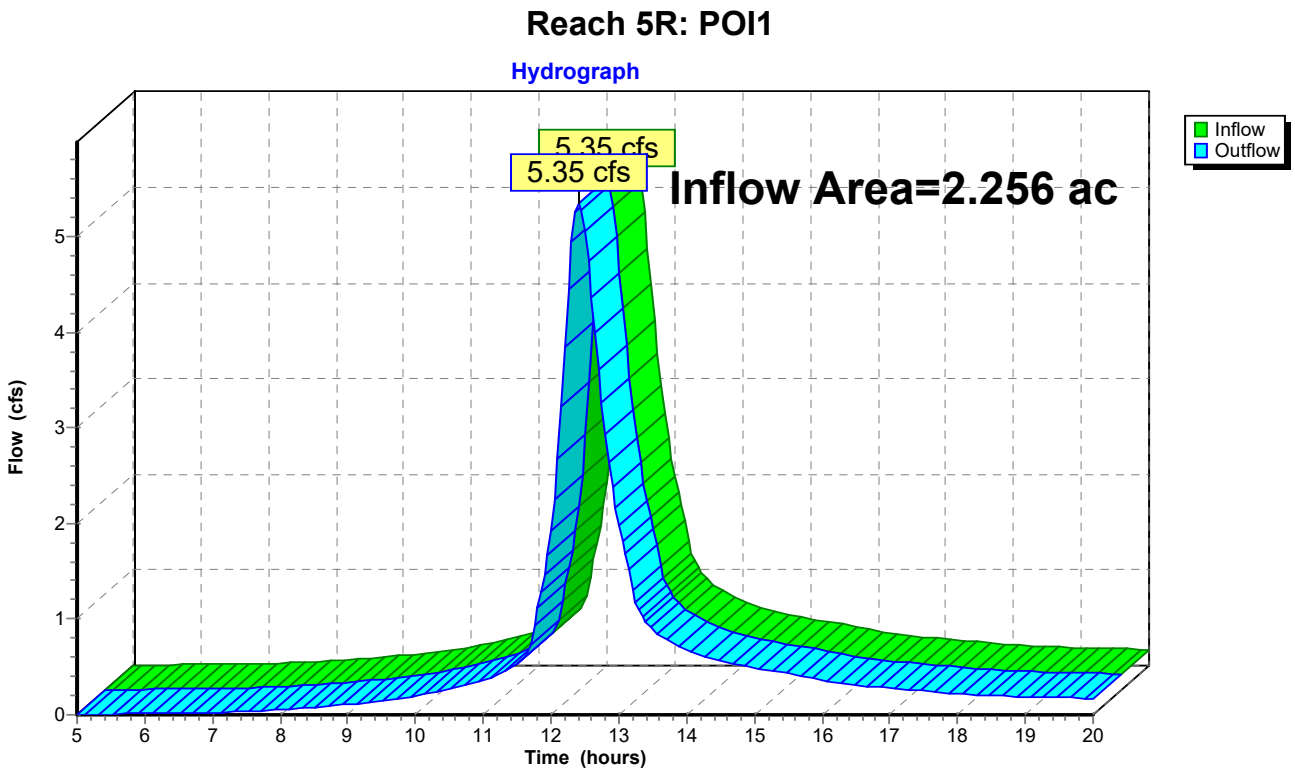


Summary for Reach 5R: POI1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.256 ac, 41.69% Impervious, Inflow Depth > 3.51" for 25-YR event
Inflow = 5.35 cfs @ 12.40 hrs, Volume= 0.660 af
Outflow = 5.35 cfs @ 12.40 hrs, Volume= 0.660 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Pond 1P: GUSF 1

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.204 ac, 79.32% Impervious, Inflow Depth > 4.80" for 25-YR event
Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.081 af
Outflow = 0.36 cfs @ 12.36 hrs, Volume= 0.067 af, Atten= 68%, Lag= 17.3 min
Primary = 0.01 cfs @ 6.45 hrs, Volume= 0.012 af
Secondary = 0.35 cfs @ 12.36 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 83.25' @ 12.36 hrs Surf.Area= 1,037 sf Storage= 1,280 cf

Plug-Flow detention time= 92.5 min calculated for 0.067 af (82% of inflow)
Center-of-Mass det. time= 41.1 min (786.0 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	81.50'	2,914 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

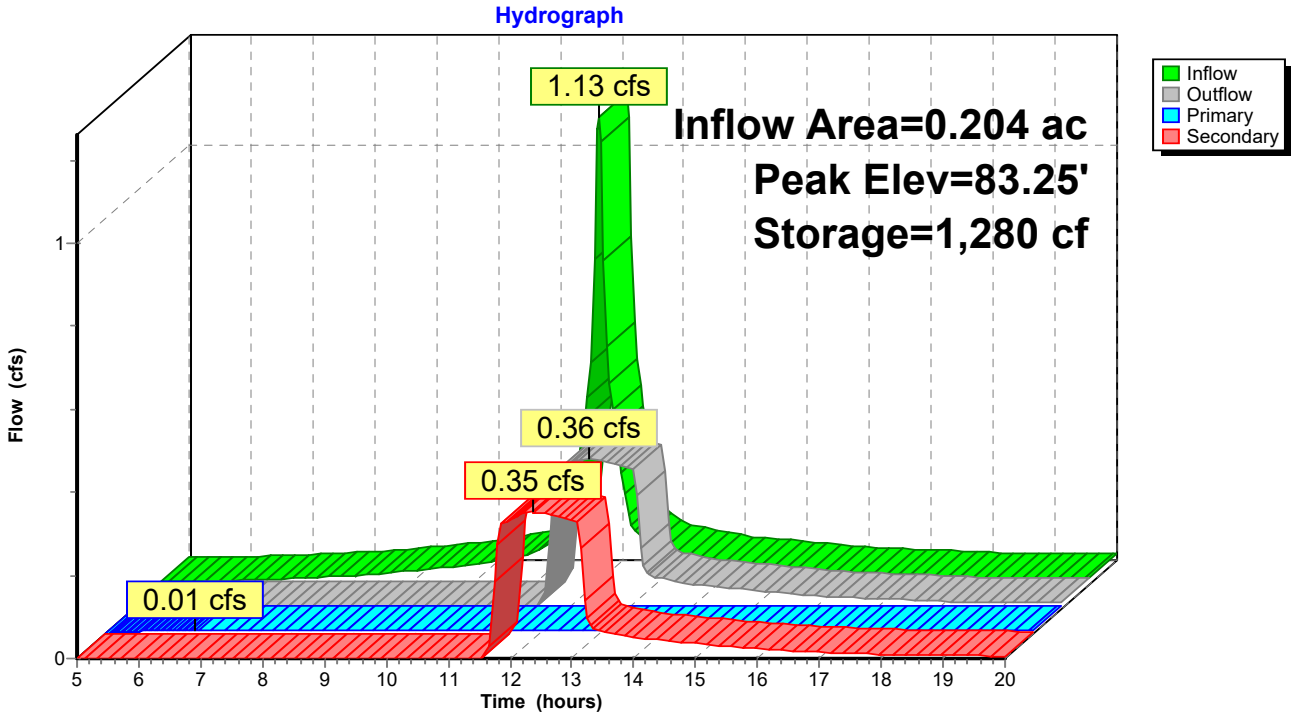
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
81.50	469	87.0	0	0	469
82.00	607	96.0	268	268	608
83.00	943	120.0	769	1,037	1,034
84.50	1,587	161.0	1,877	2,914	1,975

Device	Routing	Invert	Outlet Devices
#1	Primary	81.50'	**0.01 cfs Exfiltration at all elevations**
#2	Device 3	82.55'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	79.19'	**2.6" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.01 cfs @ 6.45 hrs HW=81.53' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.35 cfs @ 12.36 hrs HW=83.25' (Free Discharge)
└**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 9.57 fps)
└**2=Orifice/Grate** (Passes 0.35 cfs of 4.93 cfs potential flow)

Pond 1P: GUSF 1



Summary for Pond 2P: GUSF 2

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.081 ac, 68.72% Impervious, Inflow Depth > 4.60" for 25-YR event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 0.031 af
Outflow = 0.01 cfs @ 16.29 hrs, Volume= 0.011 af, Atten= 97%, Lag= 252.9 min
Primary = 0.01 cfs @ 8.80 hrs, Volume= 0.011 af
Secondary = 0.00 cfs @ 16.29 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 83.36' @ 16.29 hrs Surf.Area= 672 sf Storage= 915 cf

Plug-Flow detention time= 173.7 min calculated for 0.011 af (35% of inflow)
Center-of-Mass det. time= 58.1 min (808.7 - 750.6)

Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	1,012 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

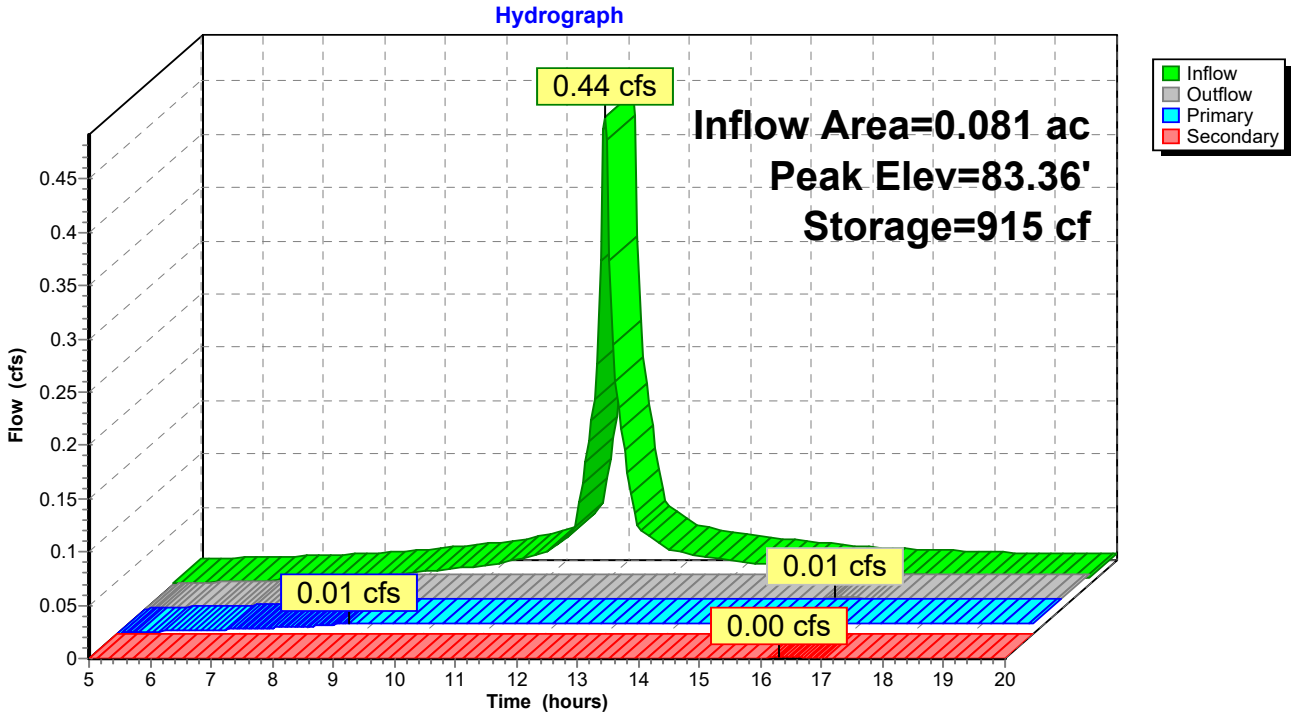
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
81.00	184	54.0	0	0	184
82.00	325	74.0	251	251	398
83.00	568	92.0	441	692	649
83.50	715	103.0	320	1,012	827

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	**0.01 cfs Exfiltration at all elevations**
#2	Secondary	83.36'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.01 cfs @ 8.80 hrs HW=81.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 16.29 hrs HW=83.36' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.06 fps)

Pond 2P: GUSF 2



Summary for Pond 3P: GUSF 3

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.174 ac, 63.93% Impervious, Inflow Depth > 4.60" for 25-YR event
Inflow = 0.94 cfs @ 12.07 hrs, Volume= 0.067 af
Outflow = 0.22 cfs @ 12.45 hrs, Volume= 0.055 af, Atten= 76%, Lag= 22.9 min
Primary = 0.01 cfs @ 7.30 hrs, Volume= 0.012 af
Secondary = 0.21 cfs @ 12.45 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.73' @ 12.45 hrs Surf.Area= 987 sf Storage= 1,182 cf

Plug-Flow detention time= 93.9 min calculated for 0.055 af (83% of inflow)
Center-of-Mass det. time= 45.8 min (796.4 - 750.6)

Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	2,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

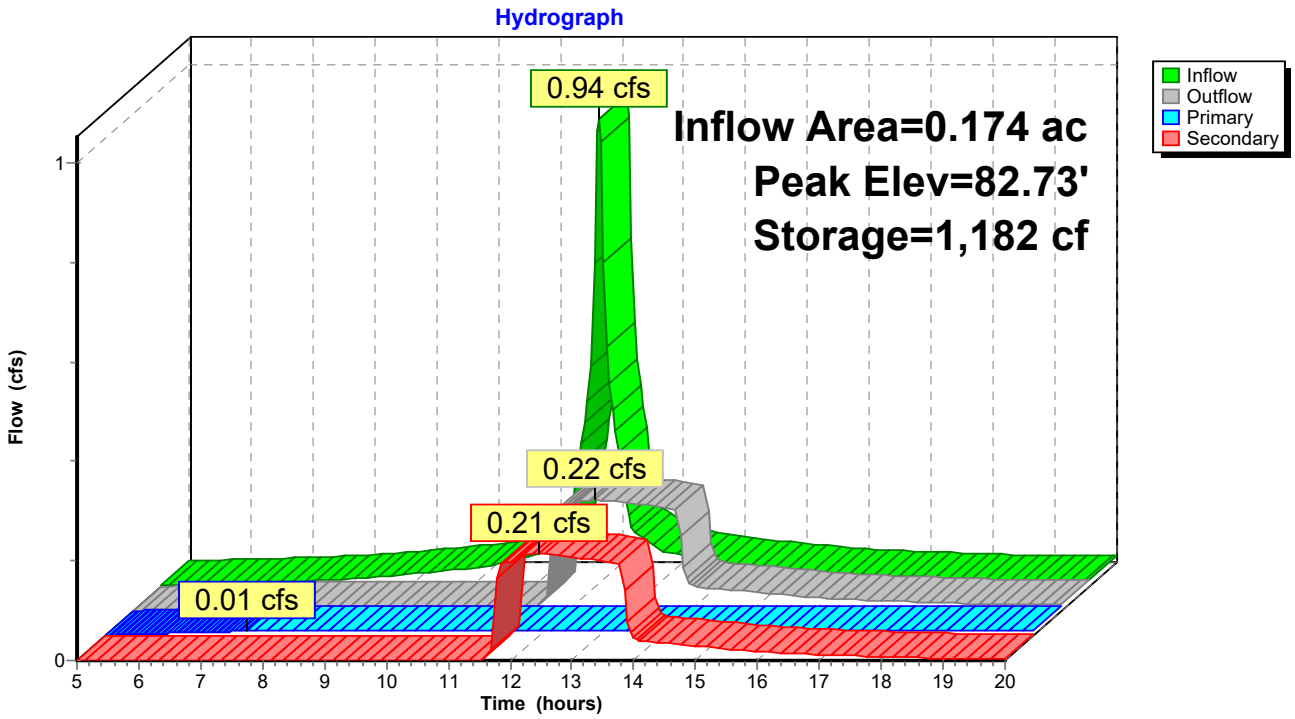
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
81.00	417	103.0	0	0	417
82.00	717	122.0	560	560	775
83.00	1,096	146.0	900	1,460	1,304
84.00	1,547	169.0	1,315	2,775	1,902

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	**0.01 cfs Exfiltration at all elevations**
#2	Device 3	81.91'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	78.51'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.01 cfs @ 7.30 hrs HW=81.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.21 cfs @ 12.45 hrs HW=82.73' (Free Discharge)
└**3=Orifice/Grate** (Orifice Controls 0.21 cfs @ 9.80 fps)
└**2=Orifice/Grate** (Passes 0.21 cfs of 5.36 cfs potential flow)

Pond 3P: GUSF 3



Summary for Pond 4P: GUSF 4

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.129 ac, 49.53% Impervious, Inflow Depth > 4.29" for 25-YR event
Inflow = 0.66 cfs @ 12.07 hrs, Volume= 0.046 af
Outflow = 0.21 cfs @ 12.37 hrs, Volume= 0.039 af, Atten= 68%, Lag= 17.7 min
Primary = 0.01 cfs @ 8.55 hrs, Volume= 0.011 af
Secondary = 0.20 cfs @ 12.37 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 82.13' @ 12.37 hrs Surf.Area= 749 sf Storage= 681 cf

Plug-Flow detention time= 76.8 min calculated for 0.038 af (83% of inflow)
Center-of-Mass det. time= 30.3 min (789.2 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1	80.75'	2,121 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

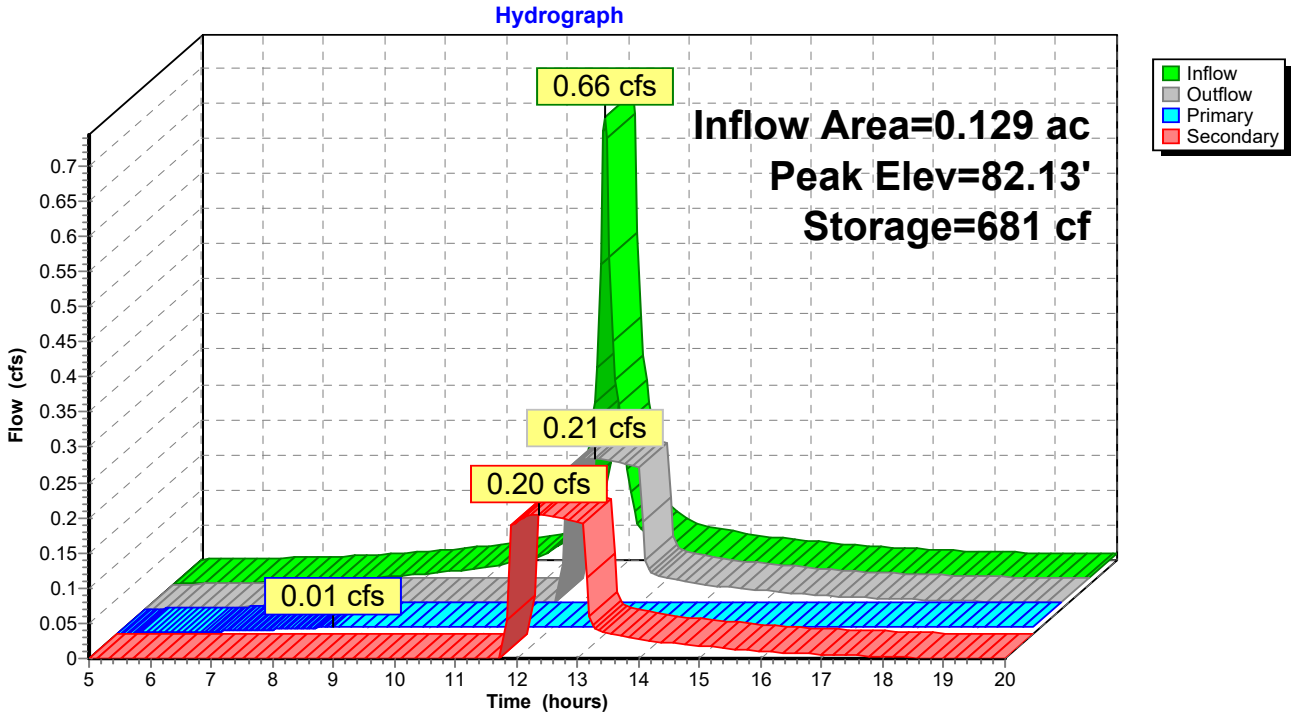
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.75	278	86.0	0	0	278
82.00	690	125.0	586	586	946
83.00	1,195	160.0	931	1,517	1,752
83.45	1,497	184.0	604	2,121	2,414

Device	Routing	Invert	Outlet Devices
#1	Primary	80.75'	**0.01 cfs Exfiltration at all elevations**
#2	Device 3	81.58'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	78.28'	**2.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.01 cfs @ 8.55 hrs HW=80.78' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.20 cfs @ 12.37 hrs HW=82.13' (Free Discharge)
└**3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 9.35 fps)
└**2=Orifice/Grate** (Passes 0.20 cfs of 4.39 cfs potential flow)

Pond 4P: GUSF 4



Summary for Pond 5P: Biocell 1

Inflow Area = 0.033 ac, 32.89% Impervious, Inflow Depth > 3.98" for 25-YR event
Inflow = 0.16 cfs @ 12.07 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 11.20 hrs, Volume= 0.009 af, Atten= 94%, Lag= 0.0 min
Primary = 0.01 cfs @ 11.20 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 84.01' @ 13.78 hrs Surf.Area= 330 sf Storage= 220 cf

Plug-Flow detention time= 169.0 min calculated for 0.009 af (79% of inflow)
Center-of-Mass det. time= 114.9 min (881.9 - 766.9)

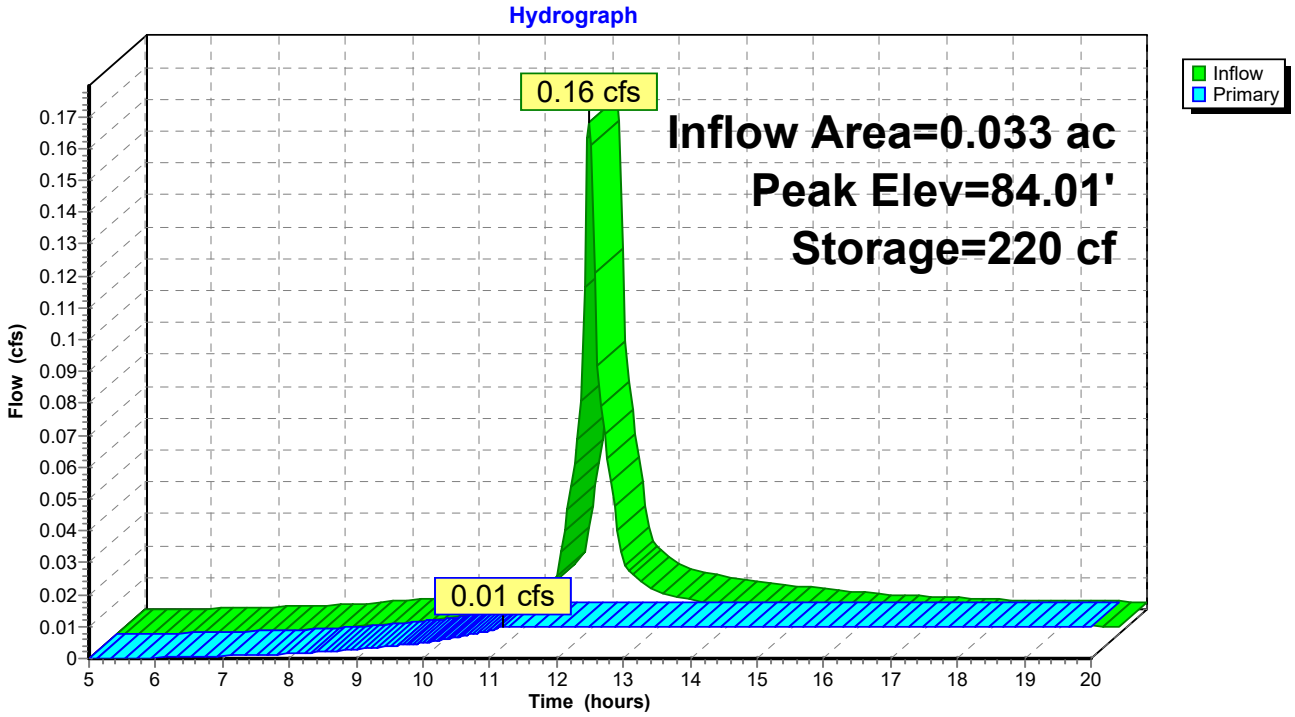
Volume	Invert	Avail.Storage	Storage Description
#1	83.00'	419 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
83.00	184	90.0	0.0	0	0	184
83.01	184	90.0	33.4	1	1	185
83.50	184	90.0	100.0	90	91	229
84.00	327	102.0	100.0	126	217	419
84.50	488	114.0	100.0	202	419	632

Device	Routing	Invert	Outlet Devices
#1	Primary	83.00'	**0.01 cfs Exfiltration at all elevations**

Primary OutFlow Max=0.01 cfs @ 11.20 hrs HW=83.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Pond 5P: Biocell 1



Summary for Pond 6P: drip strips

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.036 ac, 78.16% Impervious, Inflow Depth > 4.80" for 25-YR event
Inflow = 0.20 cfs @ 12.07 hrs, Volume= 0.014 af
Outflow = 0.01 cfs @ 10.50 hrs, Volume= 0.010 af, Atten= 95%, Lag= 0.0 min
Primary = 0.01 cfs @ 10.50 hrs, Volume= 0.010 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 83.26' @ 14.14 hrs Surf.Area= 342 sf Storage= 310 cf

Plug-Flow detention time= 167.0 min calculated for 0.010 af (67% of inflow)
Center-of-Mass det. time= 96.7 min (841.5 - 744.9)

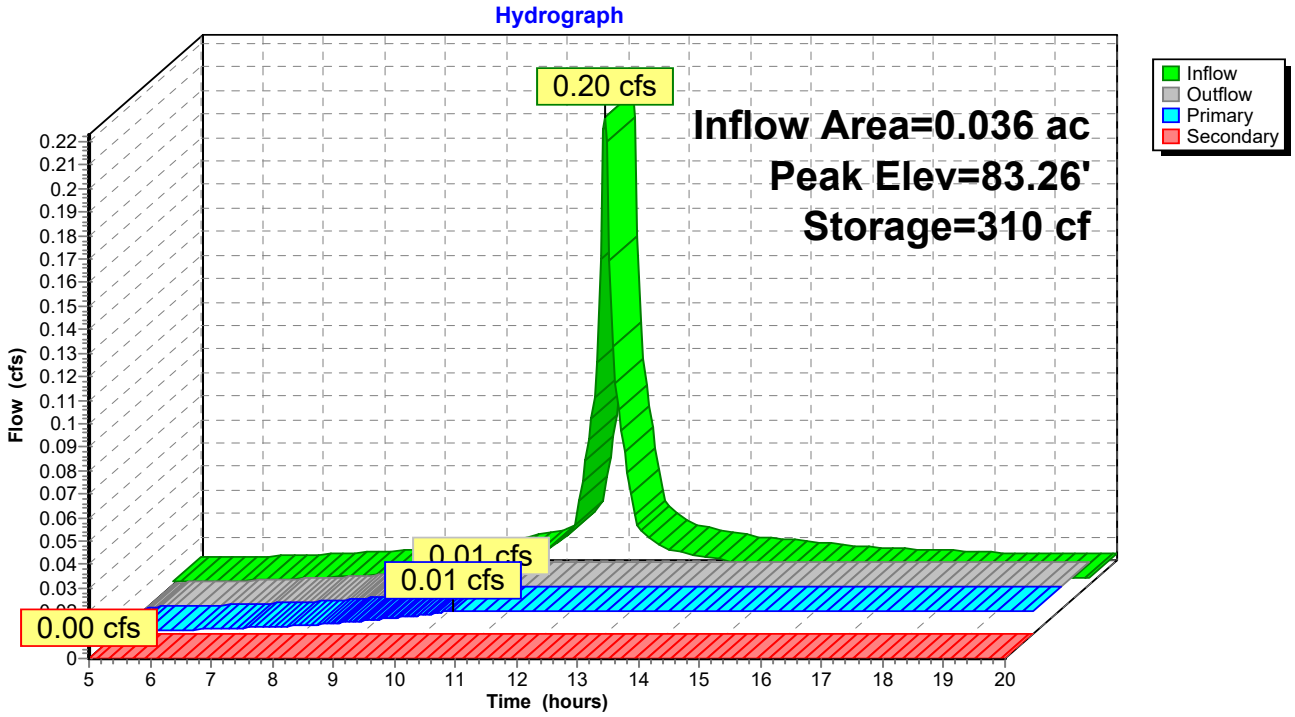
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	547 cf	**4.75'W x 72.00'L x 4.00'H Prismatoid** 1,368 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	81.00'	**0.01 cfs Exfiltration at all elevations**
#2	Secondary	85.00'	**72.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.01 cfs @ 10.50 hrs HW=81.04' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=81.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: drip strips



Summary for Pond 7P: CHAMBER

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.179 ac, 87.73% Impervious, Inflow Depth > 4.99" for 25-YR event
Inflow = 1.01 cfs @ 12.07 hrs, Volume= 0.074 af
Outflow = 0.07 cfs @ 13.43 hrs, Volume= 0.045 af, Atten= 93%, Lag= 81.8 min
Primary = 0.01 cfs @ 6.00 hrs, Volume= 0.012 af
Secondary = 0.06 cfs @ 13.43 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.72' @ 13.43 hrs Surf.Area= 0.021 ac Storage= 0.045 af

Plug-Flow detention time= 232.8 min calculated for 0.045 af (60% of inflow)
Center-of-Mass det. time= 153.9 min (893.0 - 739.1)

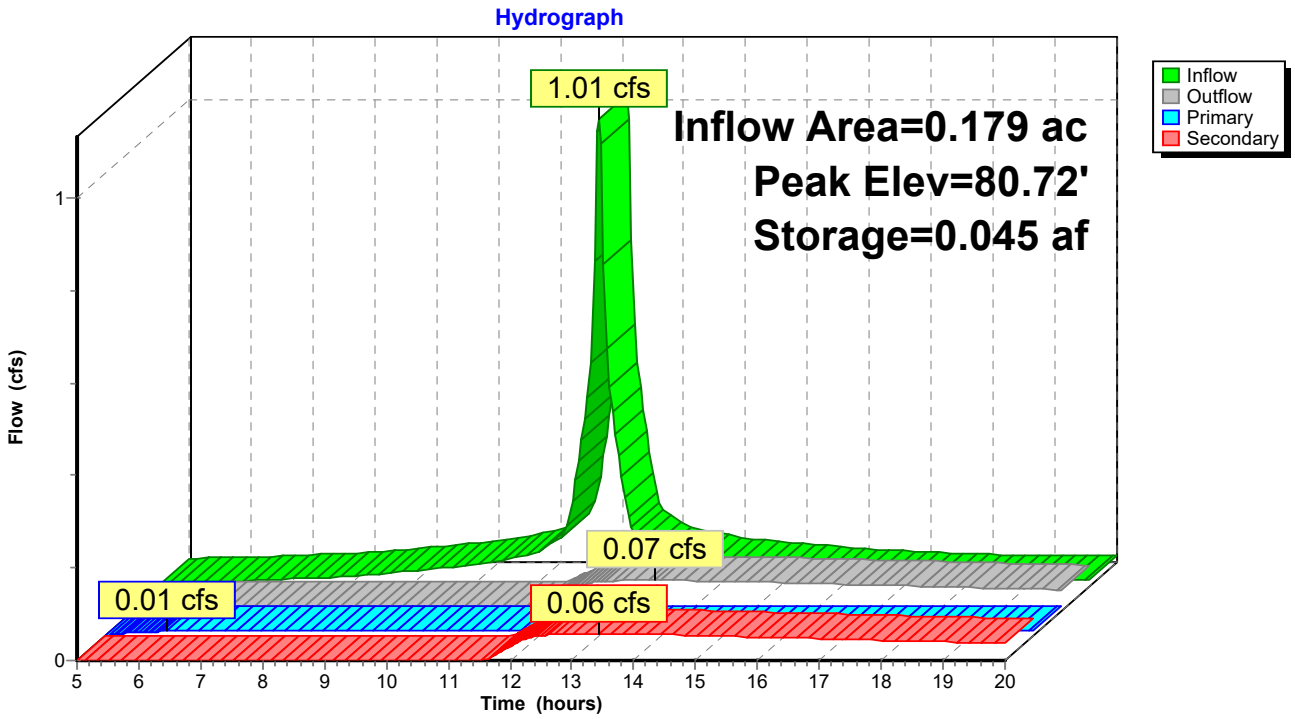
Volume	Invert	Avail.Storage	Storage Description
#1	77.40'	0.018 af	**5.33'W x 7.21'L x 3.54'H Prismatoid** x 24 0.075 af Overall - 0.029 af Embedded = 0.046 af x 40.0% Voids
#2	77.90'	0.029 af	**Cultec R-330XLHD** x 24 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
		0.047 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	77.40'	**0.01 cfs Exfiltration at all elevations**
#2	Secondary	78.41'	**1.2" Vert. Orifice/Grate** C= 0.600

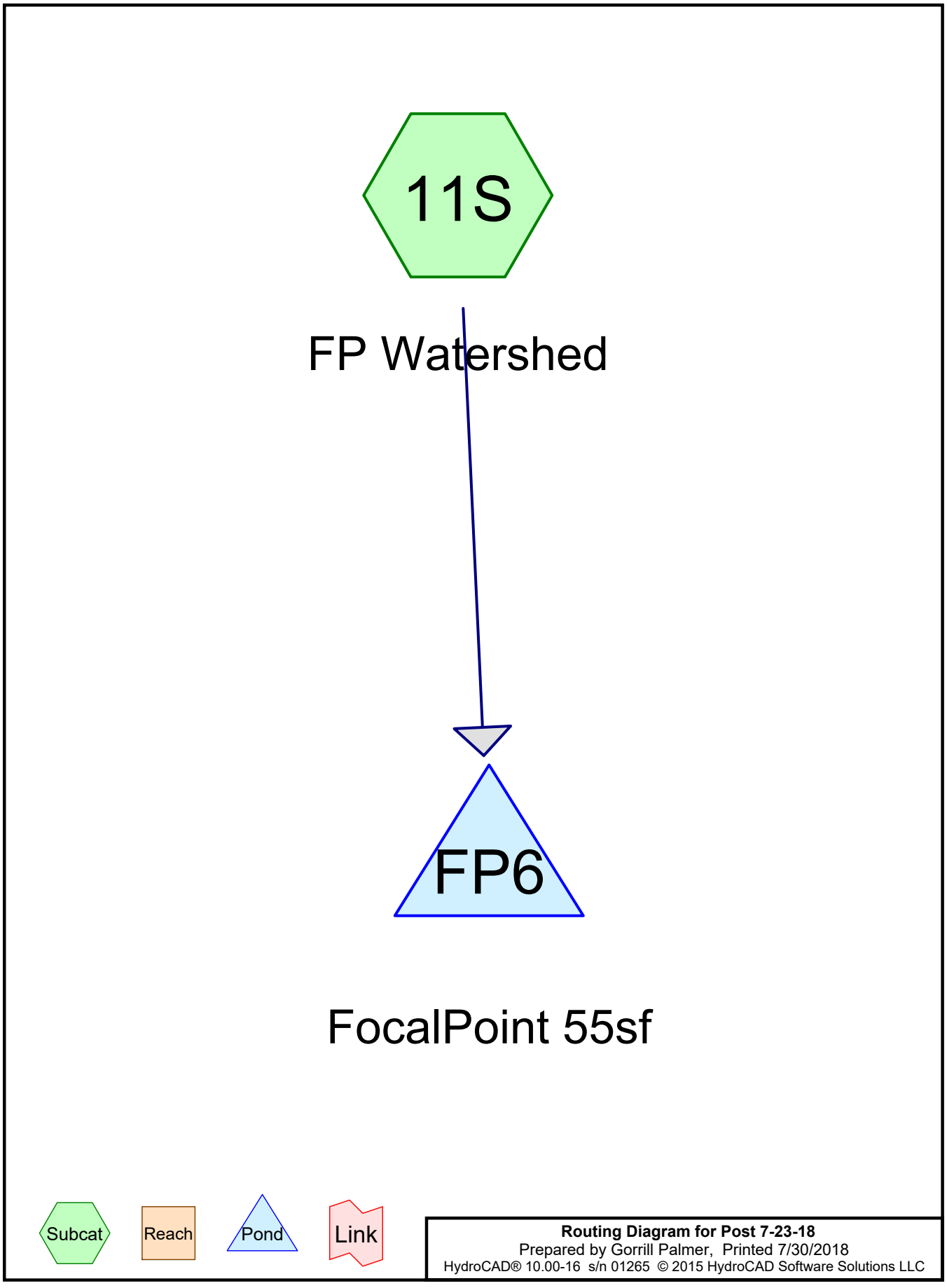
Primary OutFlow Max=0.01 cfs @ 6.00 hrs HW=77.44' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.06 cfs @ 13.43 hrs HW=80.72' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 7.25 fps)

Pond 7P: CHAMBER



ATTACHMENT C



Routing Diagram for Post 7-23-18
Prepared by Gorrill Palmer, Printed 7/30/2018
HydroCAD® 10.00-16 s/n 01265 © 2015 HydroCAD Software Solutions LLC

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 11S: FP Watershed Runoff Area=7,793 sf 87.73% Impervious Runoff Depth>0.55"
Tc=5.0 min CN=96 Runoff=0.12 cfs 0.008 af

Pond FP6: FocalPoint 55sf Peak Elev=80.91' Storage=0 cf Inflow=0.12 cfs 0.008 af
Primary=0.12 cfs 0.008 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.008 af

Total Runoff Area = 0.179 ac Runoff Volume = 0.008 af Average Runoff Depth = 0.55"
12.27% Pervious = 0.022 ac 87.73% Impervious = 0.157 ac

Summary for Subcatchment 11S: FP Watershed

[49] Hint: Tc<2dt may require smaller dt

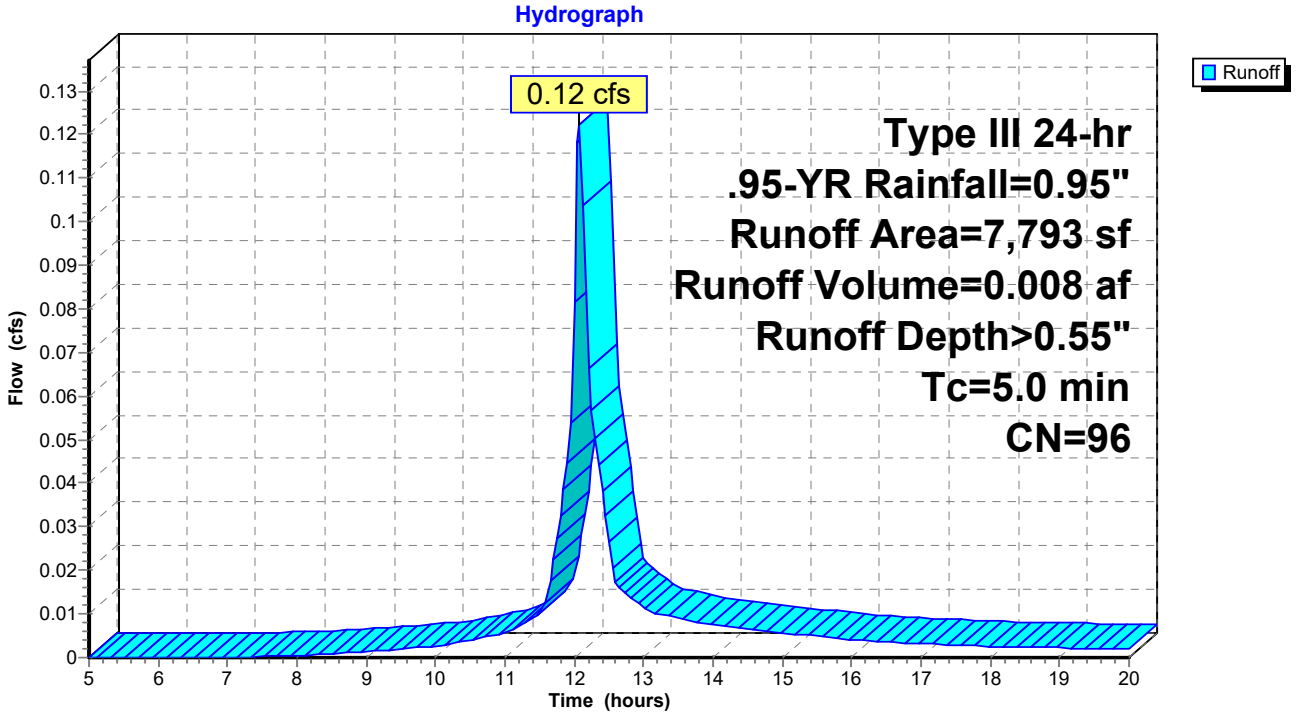
Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr .95-YR Rainfall=0.95"

Area (sf)	CN	Description
6,837	98	Paved parking, HSG D
956	80	>75% Grass cover, Good, HSG D
7,793	96	Weighted Average
956		12.27% Pervious Area
6,837		87.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 11S: FP Watershed



Summary for Pond FP6: FocalPoint 55sf

Inflow Area = 0.179 ac, 87.73% Impervious, Inflow Depth > 0.55" for .95-YR event
Inflow = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af
Outflow = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 12.08 hrs, Volume= 0.008 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 80.91' @ 12.08 hrs Surf.Area= 55 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	80.81'	0 cf	**5.00'W x 11.00'L x 2.25'H FocalPoint** 124 cf Overall x 0.0% Voids
#2	83.06'	57 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		57 cf	Total Available Storage

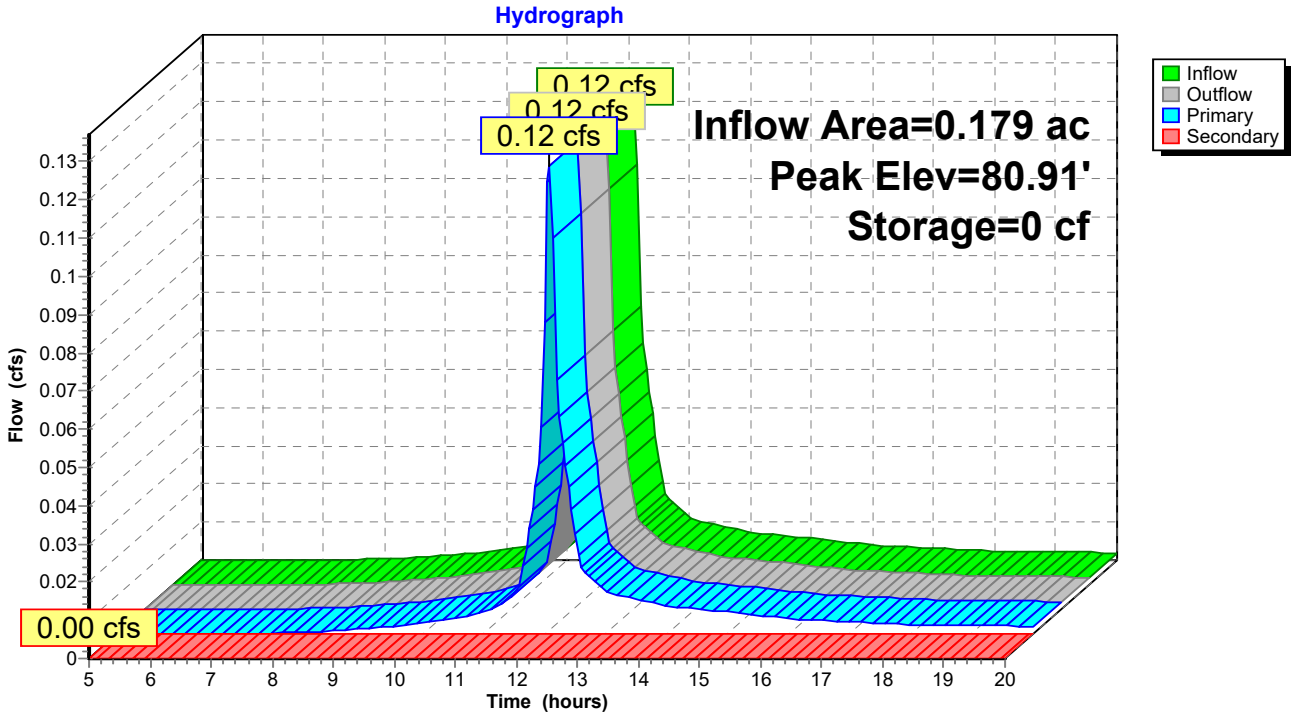
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.06	55	0	0
83.22	60	9	9
83.90	80	48	57

Device	Routing	Invert	Outlet Devices
#1	Primary	80.81'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	83.56'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 12.08 hrs HW=80.90' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=80.81' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond FP6: FocalPoint 55sf



GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 7, 2018

Mr. Kirk Mohney
State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, State House Station 65
Augusta, ME 04333-0065

Subject: Presence of Historical Areas
Mixed-Use Development
300 Allen Avenue, Portland, Maine

Dear Mr. Mohney,

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare design plans and permit applications for a proposed mixed-use development at 300 Allen Avenue. The site is approximately 1.27 acres in size and is shown on Assessor's Map 344 E003, E004, and E006.

The project site is shown on the attached Location Map.

As required by the reviewing authorities, Gorrill Palmer requests information from your department relative to the presence of any nearby structure or area with historical, architectural or archeological significance as defined by the National Historic Preservation Act.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

Sincerely,

Gorrill Palmer

David Vitali

David Vitali
Design Engineer

Enclosure

DER/djv/U:\801.06 Allen Ave - Bouchard\P Applications\Local\Resource Letters\Mohney_3-1-18.doc

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 7, 2018

Mr. John Perry
Environmental Review Coordinator
Maine Dept. of Inland Fisheries & Wildlife
284 State Street
41 State House Station
Augusta, ME 04333-0041

Subject: Presence of Essential Habitat
Mixed-Use Development
300 Allen Avenue, Portland, Maine

Dear Mr. Perry,

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare design plans and permit applications for a proposed mixed-use development at 300 Allen Avenue. The site is approximately 1.27 acres in size and is shown on Assessor's Map 344 E003, E004, and E006.

The project site is shown on the attached Location Map.

As required by the reviewing authorities, Gorrill Palmer requests information from your department regarding any threatened, endangered, and special status wildlife or fisheries species and/or habitats, within the project area which might be impacted by this project.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

Sincerely,

Gorrill Palmer

David Vitali

David Vitali
Design Engineer

Enclosure

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GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 7, 2018

Ms. Lisa St. Hilaire
Maine Natural Areas Program
93 State House Station
Augusta, ME 04333-0093

Subject: Endangered or Threatened Species
Mixed-Use Development
300 Allen Avenue, Portland, Maine

Dear Ms. St. Hilaire,

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare design plans and permit applications for a proposed mixed-use development at 300 Allen Avenue. The site is approximately 1.27 acres in size and is shown on Assessor's Map 344 E003, E004, and E006.

The project site is shown on the attached Location Map.

As required by the reviewing authorities, Gorrill Palmer requests information from your department regarding the presence of any federally listed endangered or threatened species which might be impacted by this project.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office.

Sincerely,

Gorrill Palmer

David Vitali

David Vitali
Design Engineer

Enclosure

DER/djv/U:\98089.08 - Design and Permitting 'Long' Road\P Applications\Local\Resource Letters\St Hilaire_5-23-2017.doc

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 5, 2018

Jamie Cough
Central Maine Power
162 Canco Road
Portland, ME 04103

Re: Proposed Mixed Use Development
300 Allen Avenue, Portland
Letter of Ability to Serve

Dear Jamie:

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed mixed-use development at 300 Allen Avenue. The site includes three existing lots and is shown on Assessor's Map 344 E003, E004, and E006. The total area of the site is 55,342 sf (1.27 acres). Lots E003 and E004 are entirely in the Residential R-5 zone and Lot E006 is located within both the R-5 Zone and the Residence – Professional Zone. As required by the reviewing authorities, we are writing to request a letter indicating the ability of Central Maine Power to serve this project. A preliminary utility plan is enclosed for your review.

Description of Development Site

The project site is located at 300 Allen Avenue and consists of Tax Map 344 E003, E004, and E006 as shown on the Portland Assessor's Map. The site is approximately 1.27 acres in size and has approximately 275 feet of frontage along Allen Avenue.

The project site at Lot 344 E006 is currently vacant with a landcover of brush. Lot 344 E004 consists of a single-family residential building with a separate garage and Lot 344 E003 is a fully developed, vacant grassed lawn. Topography in the area of proposed construction varies from flat slopes of approximately 0.5% to steep slopes of 33%. The steeper slopes are associated with a vegetated soil stockpile at the front of the site. Abutting land uses include:

- North – Residential
- West – Residential
- South – Residential
- East – Residential

Refer to Figure 1 – Location Map following this page for the project location.

Project Description

The project is a proposed mixed-use development consisting of a 2,400 sf footprint office/professional services building, three 1,224 sf footprint duplex residential structures, two 1,836 sf triplex residential structures, associated parking, and infrastructure. Existing electric service is located on the opposite side of Allen Ave. An existing utility pole with sidewalk guy wire is located along the site frontage. Due to the location of the existing utility pole at the proposed entrance, the preliminary utility plan depicts a

relocated pole with sidewalk guy wire and overhead service extended to the new pole. The new pole is proposed to have a pole mounted transformer and underground service to the site.

At this time, service requirements are not known. It is anticipated that this development would have single phase electric service requirements similar to other residential/office developments within the Greater Portland area.

Ability to Serve

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of Central Maine Power Company to serve the project. In addition, we are interested in receiving:

- Indication as to the acceptability of the proposed layout.
- Indication of the Utility Company responsible for the setting of poles in this area.
- Information as to any easements that you may require on-site.
- Any estimate of connection fees
- Any other information that you believe would be useful as this project proceeds.

Sincerely,

Gorrill-Palmer

David Vitali

David Vitali

Copy: Peter Bouchard, ESTELLE ESTATES, LLC

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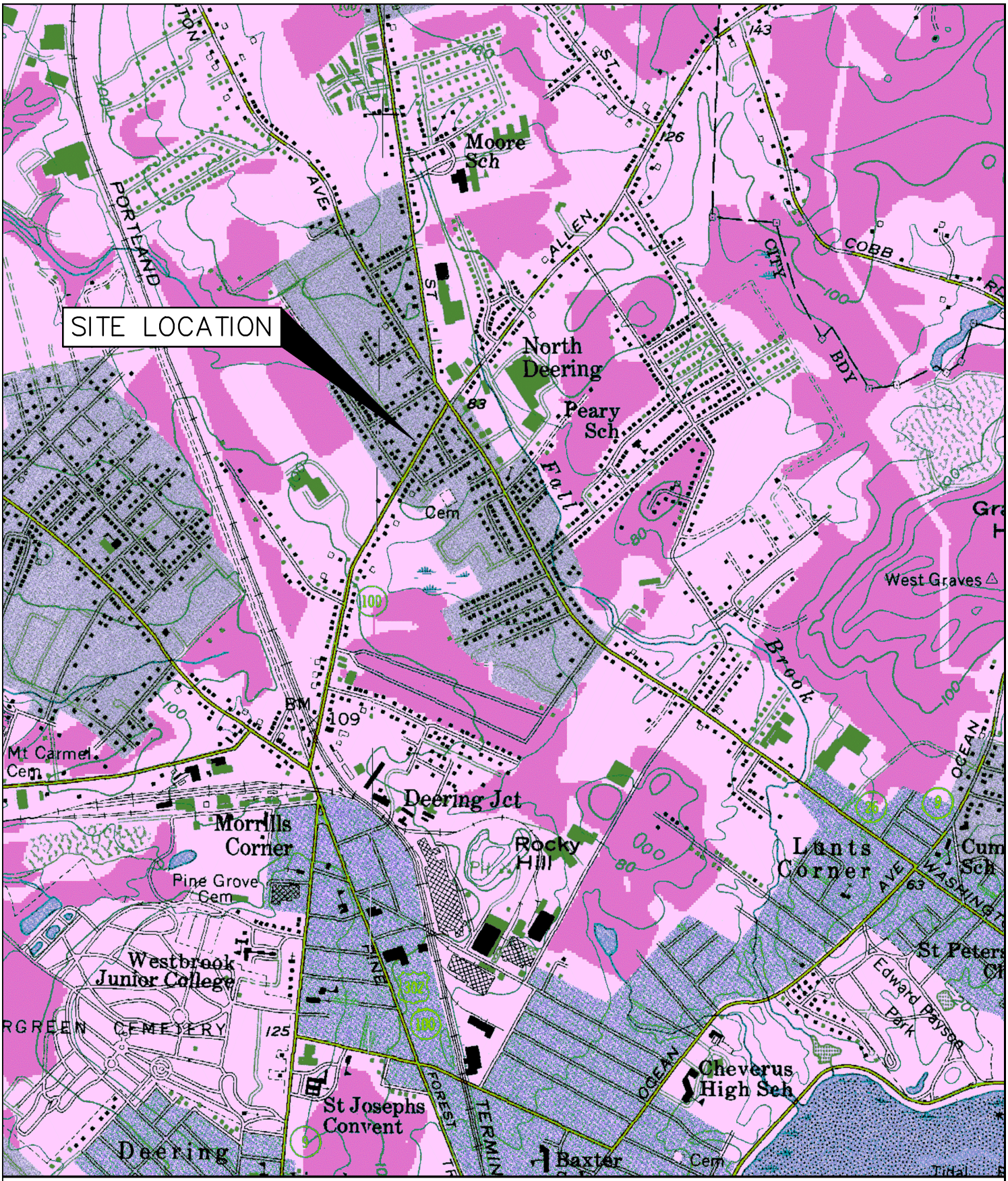

U.S.G.S. Location Map

300 Allen Ave - Portland, Maine

U.S.G.S. Portland West, State-7.5 Minute Series (Topographic)

Design: DJV	Date: FEB 2018
Draft: CG	Job No.: 801.06
Checked: DER	Scale: None
File Name: 801-06-LocMap.dwg	

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Figure 1

NEAREST FIRE HYDRANT
LOCATED APPROXIMATELY
400 FT TO THE SOUTH FROM
PROPOSED ACCESS DRIVE

WATER SERVICE
ENTRY (TYP.)

2"x1" REDUCER

4"x1" REDUCER

6" SAN
L=21'
S=0.0104 MIN.

6" SAN
L=164'
S=0.0104 MIN.

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,494 SF FOOTPRINT
FFE=84.8

GAS SERVICE
ENTRY (TYP.)

ELECTRIC SERVICE
ENTRY (TYP.)

1"W
2"W
4"FS

UGE/T/C

GAS

2" CURB STOP

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,494 SF FOOTPRINT
FFE=84.8

6" SAN
L=33'
S=0.0104 MIN.

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF STORM DRAIN

TESTPIT TO DETERMINE EXACT
LOCATION AND ELEVATION OF
TELEPHONE AND ALARM LINES

RELOCATE EXISTING POLE

R5 ZONE
RP ZONE

TEST PIT TO DETERMINE EXACT
LOCATION AND ELEVATION OF
STORM DRAIN

EXIST. SMH
RIM: 82.06
INV. IN: 75.61
INV. OUT: 75.51

RUN SANITARY SEWER OVER
STORMDRAIN AND DROP INTO
SANITARY SEWER (TYP.)

4"x1" REDUCER

2"x1" REDUCER

EXIST. 35' EASEMENT

4" GATE VALVE

METER
PIT

1+00

4"x4" TEE

2+00

6" WYE
CONNECTION (TYP.)

3+00

3+19

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF GAS MAIN

0+00

12"x4" TAPPING
SLEEVE AND VALVE

4"W

1"W
1"FS

1" CURB
STOP

GAS SERVICE
ENTRY

SAN. SEWER
EXIT, INV.=78.50

WATER SERVICE
ENTRY

ELECTRIC SERVICE
ENTRY (TYP.)

PROPOSED OFFICE/
PROFESSIONAL
SERVICES
2,400 SF FOOTPRINT
3,200 SF TOTAL
1-1/2 STORY
FFE=85.50

2" DOMESTIC
WATER

4" FIRE SERVICE

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.60

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=85.20

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.75

6" SAN
L=42'
S=0.0104 MIN.

2" RIGID INSULATION FULL
WIDTH OF TRENCH FOR
COVER LESS THAN 5' (TYP.)

WATER SERVICE
ENTRY (TYP.)

ELECTRIC
SERVICE ENTRY
(TYP.)

GAS SERVICE
ENTRY (TYP.)

EXTEND ELECTRICAL
SERVICE TO NEW POLE

RELOCATED POLE WITH
SIDEWALK GUY WIRES

RISER POLE WITH STAND OFF BRACKETS

POLE MOUNTED TRANSFORMER

R5 ZONE
RP ZONE

NOTES:

1. ELECTRICAL SERVICE SHALL BE COORDINATED WITH CMP.
2. COORDINATE LOCATION OF UTILITY SERVICE ENTRANCE POINTS WITH ARCHITECTURAL PLANS.
3. COORDINATE CONNECTION TO EXISTING WATER MAIN WITH PORTLAND WATER DISTRICT.
4. COORDINATE GAS SERVICE WITH UNITIL.

6" SANITARY SEWER (MIN. SLOPE=0.0104):
MULTIPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
G	26'	79.30
H	26'	79.30
I	26'	79.30
J	26'	79.30
K	26'	79.30
L	26'	79.30

6" SANITARY SEWER (MIN. SLOPE=0.0104):
DUPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
A	42'	79.98
B	56'	79.98
C	39'	79.10
D	56'	79.10
E	39'	79.56
F	54'	79.56

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40
1 inch = 20 ft.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9886
3-20-18
LICENSED
PROFESSIONAL ENGINEER

C:\CAD WORKING\801.06 - 300 Allen Ave\DWG\801-06-UTIL.dwg - Mar 20, 2018 - 11:18am

Rev.	Date	Revision
–	–	–

Issued For	Date	By
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJV | Draft: CG | Date: FEB 2018
Checked: DER | Scale: 1"=20' | Job No.: 801.06
File Name: 801-06-UTIL.dwg

This plan shall not be modified without written permission from Gorrill-Palmer Consulting Engineers, Inc.(GPCEI). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GPCEI.

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Drawing Name: Utility Plan
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C102

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 20, 2018

Mr. Bill Bennett
Pine Tree Waste
87 Pleasant Hill Road
Scarborough, ME 04074

Subject: 300 Allen Avenue
Portland, Maine
Ability to Serve Letter

Dear Mr. Bennett:

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed Mixed-Use Development on Allen Avenue in Portland. The site is shown on City of Portland Tax Map 344 E003, E004, AND E006, approximately 1.27 acres and is located on the western side of Allen Avenue approximately 0.1 miles south of the intersection of Allen Avenue and Washington Avenue in Portland. Refer to Figure 1 – Location Map following this page for the project location and the attached Site Plan.

As required by the reviewing authorities, we are writing to request a letter indicating the ability of Casella Waste to serve this project. A preliminary plan is enclosed for your review.

Project Description

The development of the site is anticipated to include one office/professional building, three duplex residential units, and two triplex units with associated parking and infrastructure. The existing site contains a combination of a vacant lot and developed single family lot with a grassed lawn.

Ability to Serve

Using typical solid waste generation rates, it is anticipated that the construction of the new facility could result in the following quantities:

- Stumps & Grubbings – Approximately 280 c.y. (assumes 0.7 acres and 400 c.y./acre)
- Construction Waste – Approximately 67 c.y. (assumes 10,000 sf of building area and 10 c.y./1500sf)
- Commercial Solid Waste, Recyclable – Approximately 20 c.y. per month (assumes 10,000 sf of building area and 2 c.y./1000 sf)
- Commercial Solid Waste, Non- Recyclable – Approximately 24 c.y. per month (assumes 10,000 sf of building area and 2.4 c.y./1000 sf)

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability Casella Waste to serve this project for the collection and transport of the construction waste to an approved location licensed by the MDEP to accept construction debris. It is our understanding that Casella would be able to provide the necessary containers on-site to collect the construction debris and can also transport the waste to the licensed facility.

According to our calculations above, the facility would be producing an average of 24 c.y. per month of commercial solid waste. We are writing to request the ability of Casella to serve this project for the collection and transport of the solid waste to an approved location. An email response is sufficient.

Please contact me if you have any questions relative to this matter.

Sincerely,

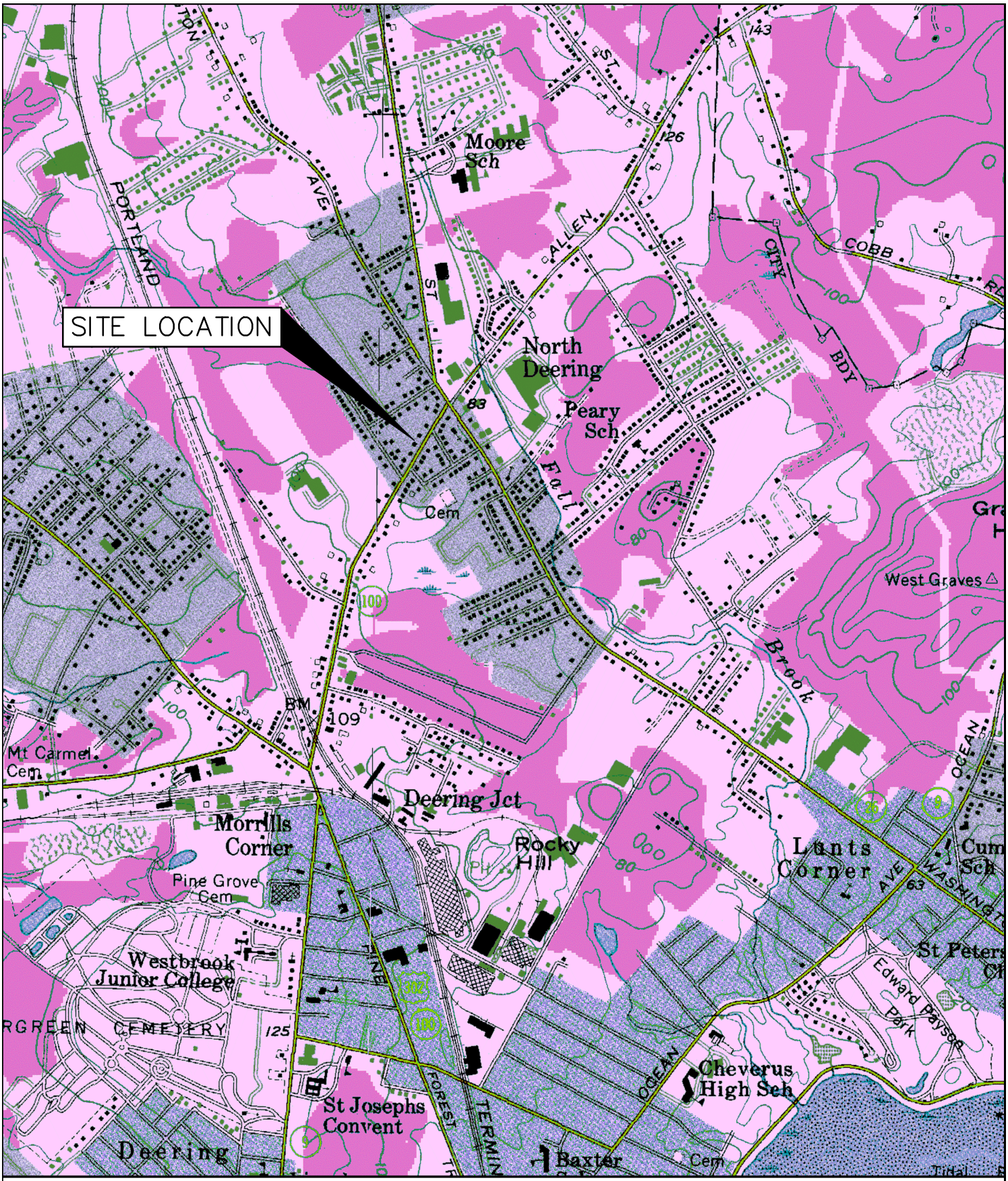
Gorrill Palmer

David Vitali, Design Engineer
dvitali@gorrillpalmer.com

Enclosure

Copy: Peter Bouchard, ESTELLE ESTATES, LLC

DER/djv/U:\801.06 Allen Ave - Bouchard\H Utilities\Solid Waste\Solid Waste 03-01-18.doc



U.S.G.S. Location Map

300 Allen Ave - Portland, Maine

U.S.G.S. Portland West, State-7.5 Minute Series (Topographic)

Design: DJV	Date: FEB 2018
Draft: CG	Job No.: 801.06
Checked: DER	Scale: None
File Name: 801-06-LocMap.dwg	

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Figure 1

NEAREST FIRE HYDRANT
LOCATED APPROXIMATELY
400 FT TO THE SOUTH FROM
PROPOSED ACCESS DRIVE

WATER SERVICE
ENTRY (TYP.)

2"x1" REDUCER

4"x1" REDUCER

6" SAN
L=21'
S=0.0104 MIN.

6" SAN
L=164'
S=0.0104 MIN.

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,494 SF FOOTPRINT
FFE=84.8

GAS SERVICE
ENTRY (TYP.)

ELECTRIC SERVICE
ENTRY (TYP.)

1"W
2"W
4"FS

UGE/T/C

GAS

2" CURB STOP

PROPOSED
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3-UNIT
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TESTPIT TO DETERMINE
EXACT LOCATION AND
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LOCATION AND ELEVATION OF
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RELOCATE EXISTING POLE

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EXIST. SMH
RIM: 82.06
INV. IN: 75.61
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RUN SANITARY SEWER OVER
STORMDRAIN AND DROP INTO
SANITARY SEWER (TYP.)

4"x1" REDUCER

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EXIST. 35' EASEMENT

4" GATE VALVE

METER
PIT

1+00

4"x4" TEE

2+00

6" WYE
CONNECTION (TYP.)

3+00

3+19

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF GAS MAIN

0+00

12"x4" TAPPING
SLEEVE AND VALVE

4"W

1"W
1"FS

1" CURB
STOP

GAS SERVICE
ENTRY

SAN. SEWER
EXIT, INV.=78.50

WATER SERVICE
ENTRY

ELECTRIC SERVICE
ENTRY (TYP.)

PROPOSED OFFICE/
PROFESSIONAL
SERVICES
2,400 SF FOOTPRINT
3,200 SF TOTAL
1-1/2 STORY
FFE=85.50

2" DOMESTIC
WATER

4" FIRE SERVICE

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.60

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
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PROPOSED
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2" RIGID INSULATION FULL
WIDTH OF TRENCH FOR
COVER LESS THAN 5' (TYP.)

WATER SERVICE
ENTRY (TYP.)

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SERVICE ENTRY
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EXTEND ELECTRICAL
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RELOCATED POLE WITH
SIDEWALK GUY WIRES

RISER POLE WITH STAND OFF BRACKETS

POLE MOUNTED TRANSFORMER

R5 ZONE
RP ZONE

NOTES:

1. ELECTRICAL SERVICE SHALL BE COORDINATED WITH CMP.
2. COORDINATE LOCATION OF UTILITY SERVICE ENTRANCE POINTS WITH ARCHITECTURAL PLANS.
3. COORDINATE CONNECTION TO EXISTING WATER MAIN WITH PORTLAND WATER DISTRICT.
4. COORDINATE GAS SERVICE WITH UNITIL.

6" SANITARY SEWER (MIN. SLOPE=0.0104):
MULTIPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
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D	56'	79.10
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F	54'	79.56

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40
1 inch = 20 ft.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9886
3-20-18
LICENSED
PROFESSIONAL ENGINEER

C:\CAD WORKING\801.06 - 300 Allen Ave\DWG\801-06-UTIL.dwg - Mar 20, 2018 - 11:18am

Rev.	Date	Revision
–	–	–

Issued For	Date	By
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJV | Draft: CG | Date: FEB 2018
Checked: DER | Scale: 1"=20' | Job No.: 801.06
File Name: 801-06-UTIL.dwg

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Drawing Name: Utility Plan
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C102

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 5, 2018

Brad Roland
Department of Public Services
55 Portland Street
Portland, Maine 04101-2991

Re: Proposed Mixed Use Development
300 Allen Avenue, Portland
Letter of Ability to Serve

Dear Mr. Roland:

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed mixed-use development at 300 Allen Avenue. The site includes three existing lots and is shown on Assessor's Map 344 E003, E004, and E006. The total area of the site is 55,342 sf (1.27 acres). Lots E003 and E004 are entirely in the Residential R-5 zone and Lot E006 is located within both the R-5 Zone and the Residence – Professional Zone. As required by the reviewing authorities, we are writing to request a letter indicating the ability of the Department of Public Services to serve this project. A preliminary utility plan is enclosed for your review.

Description of Development Site

The project site is located at 300 Allen Avenue and consists of Tax Map 344 E003, E004, and E006 as shown on the Portland Assessor's Map. The site is approximately 1.27 acres in size and has approximately 275 feet of frontage along Allen Avenue.

The project site at Lot 344 E006 is currently vacant with a landcover of brush. Lot 344 E004 consists of a two-story residential building with a separate garage and Lot 344 E003 is a fully developed, vacant grassed lawn. Topography in the area of proposed construction varies from flat slopes of approximately 0.5% to steep slopes of 33%. The steeper slopes are associated with a vegetated soil stockpile at the front of the site. Abutting land uses include:

- North – Residential
- West – Residential
- South – Residential
- East – Residential

Refer to Figure 1 – Location Map following this page for the project location.

Project Description

The development of the site is anticipated to include one office/professional building, three duplex residential units, and two triplex residential units with water service by the Portland Water District and wastewater service by the City of Portland. It is anticipated that the units and office building would be sprinklered for fire protection.

Existing Service

An existing 12" sanitary sewer is located onsite within an easement to the City of Portland. The project proposes to connect the sanitary sewer service from each duplex building as well as the office/professional building to the existing 12" sewer as depicted on the enclosed preliminary utility plan. The triplex units along Allen Avenue will convey the sewer services to a 6" or 8" sewer pipe that is proposed to connect to the existing 12" sanitary sewer.

Anticipated Flows

The anticipated wastewater generation for the development was computed using the Maine Subsurface Waste Water Disposal Rules Section 4.E.1 for multiple family dwelling units and Table 4C. Based on the publication Water Supply and Pollution Control, Third Edition, by Clark, Viessman and Hammer, Chapter 4, Section 5; the peak daily use can be considered to about 180% of the average daily use. The table below is a summary of the wastewater generation that is anticipated for the development.

Anticipated Wastewater Generation		
	Average Daily Wastewater Generation (gpd)	Peak Daily Wastewater Generation (gpd)
Proposed 12-unit Residential duplex/multiplex	1,200	2,160
Proposed Office/Professional Building	67	120
Total	1,267	**2,280**

The Water/Wastewater Generation Calculation sheet is attached to this letter.

Ability to Serve

Attached to this letter is the City of Portland Wastewater Capacity Application from the Level III Site Plan Application which will be submitted to the City. In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of the Department of Public Services to serve the proposed project. In addition, we are interested in receiving:

- Information as to any easements that the District may require on-site.
- Any impact or connection fees associated with the development.
- Issues relating to any combined stormwater/sewer system which may affect the project.
- Any other information that you believe would be useful as this project proceeds.

Please contact me if you have any questions relative to this matter.

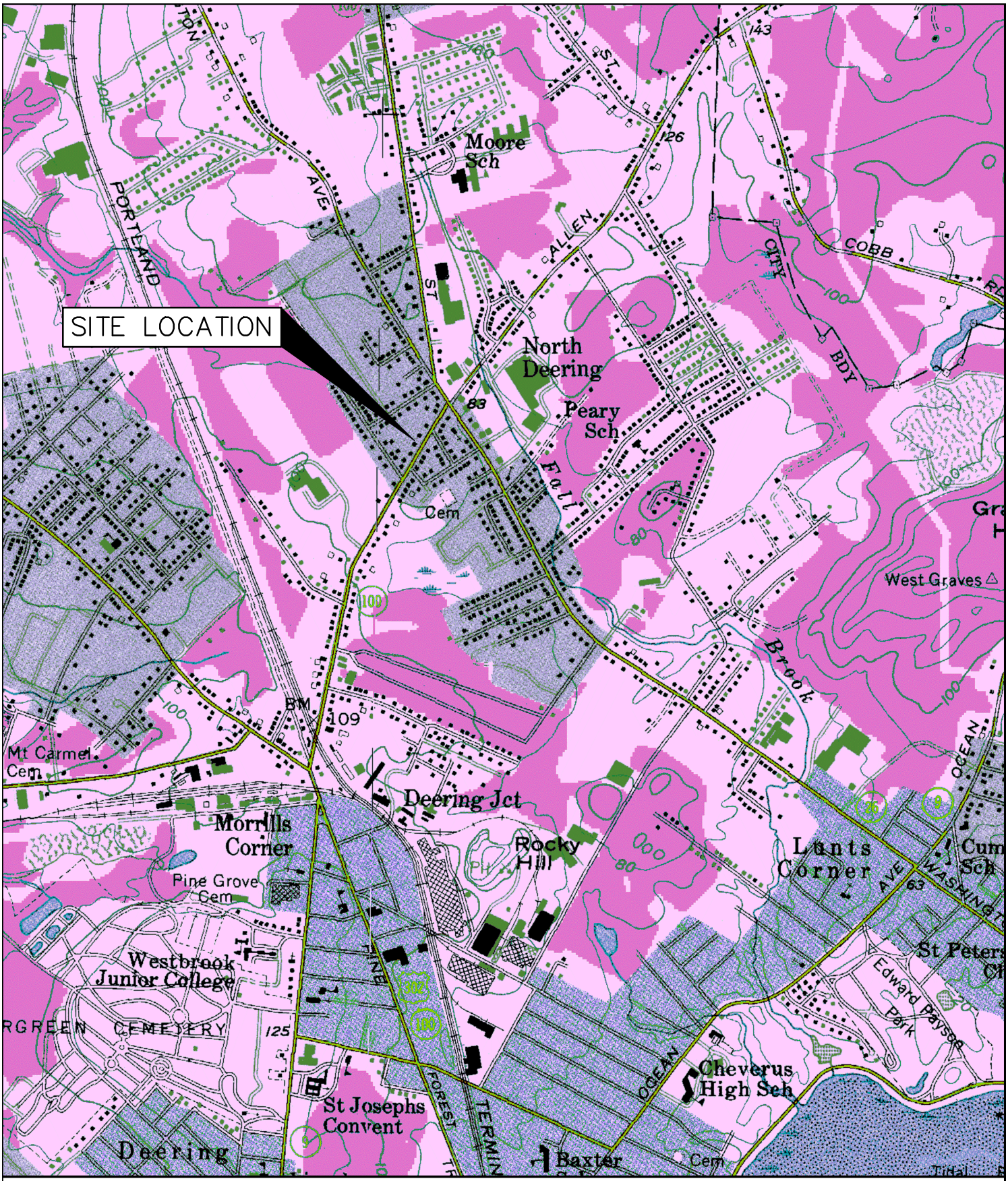
Sincerely,

Gorrill-Palmer

David Vitali

Copy: Peter Bouchard, ESTELLE ESTATES, LLC

DER/djv/U:\801.06 Allen Ave - Bouchard\H Utilities\Wastewater 02-27-18.doc



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300 Allen Ave - Portland, Maine

U.S.G.S. Portland West, State-7.5 Minute Series (Topographic)

Design: DJV	Date: FEB 2018
Draft: CG	Job No.: 801.06
Checked: DER	Scale: None
File Name: 801-06-LocMap.dwg	

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207.772.2515

Figure 1

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division

Date: 02/28/2018

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 300 Allen Avenue

Chart Block Lot Number: 344 E003, E004, E006

Proposed Use: Office/Professional/Residential
Previous Use: E003 - grassed lawn, E004 - single family, E006 - vacant
Existing Sanitary Flows: 270 GPD
Existing Process Flows: 0 GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.
Existing 12"sewer within existing City Easement that crosses the site

Site Category		
	Commercial *(see part 4 below)*	x
	Industrial *(complete part 5 below)*	
	Governmental	
	Residential	x
	Other *(specify)*	

From MSWDR Table 4A for a Single Family Dwelling Unit with 3 Bedrooms

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: Barbara Barhydt Phone: 207-874-8699
Owner/Developer Name: ESTELLE ESTATES, LLC
Owner/Developer Address: 39 Darling Avenue, South Portland, ME 04106
Phone: Fax: E-mail:
Engineering Consultant Name: Gorrill Palmer
Engineering Consultant Address: 707 Sable Oaks Drive, Suite 30, South Portland, ME 04106
Phone: 207-772-2515 Fax: 207-772-2520 E-mail: dreynolds@gorrillpalmer.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 2,280 peak, 1,267 average GPD
Peaking Factor/ Peak Times: 180%
Specify the source of design guidelines: *(i.e.* x *"Handbook of Subsurface Wastewater Disposal in Maine,"* __ *"Plumbers and Pipe Fitters Calculation Manual,"* __ *Portland Water District Records, Other (specify)* _____

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: _____

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

GORRILL PALMER

JOB	801.06 - 300 Allen Avenue - Portland			
SHEET NO.	1	OF	1	
CALCULATED BY	DJV	DATE	2/27/2017	
CHECKED BY		DATE		
SCALE	N/A			

Task: Determine daily water demand/wastewater generation for proposed development of Mixed Use Development.

Reference: 1. Maine Subsurface Waste Water Disposal Rules for peak flow rates 2015

2. Water Supply and Pollution Control, Third Edition, By Clark, Viessman & Hammer
Chapter 4, Section 5

Assumptions: Proposed development assumed to consist of the following:
Twelve residential multiplex units with two bedrooms per unit.
3,000 sf Office/Professional building, Assume 10 employees.

Multiple Family Dwelling Units		**12**	units
with	2 bedroom/Unit =	**24**	bedrooms

Calculations:

Duplex/Multiplex

From Ref. 1, Section 4.E.1, peak flow rate
90 gpd/bedroom

Peak Water/Wastewater Generation:	**2160**	**gpd**
Average Water/Wastewater Generation (Ref. 2): (peak flow =180% of average flow)	**1200**	**gpd**

Office/Professional

From Ref. 1, Table 4C, place of employment with no showers, peak flow rate
12 gpd/employee

Peak Water/Wastewater Generation:	**120**	**gpd**
Average Water/Wastewater Generation (Ref. 2): (peak flow =180% of average flow)	**67**	**gpd**

Average Daily Water/Wastewater Generation for Proposed Development:	**1267**	**gpd**
Peak Daily Water/Wastewater Generation for Proposed Development:	**2280**	**gpd**

NEAREST FIRE HYDRANT
LOCATED APPROXIMATELY
400 FT TO THE SOUTH FROM
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ENTRY (TYP.)

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4"FS

UGE/T/C

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4"x1" REDUCER

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CONNECTION (TYP.)

3+00

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SAN. SEWER
EXIT, INV.=78.50

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ELECTRIC SERVICE
ENTRY (TYP.)

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3,200 SF TOTAL
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NOTES:

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6" SANITARY SEWER (MIN. SLOPE=0.0104):
MULTIPLEX UNITS

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20 0 10 20 40
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STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9886
3-20-18
LICENSED
PROFESSIONAL ENGINEER

C:\CAD WORKING\801.06 - 300 Allen Ave\DWG\801-06-UTIL.dwg - Mar 20, 2018 - 11:18am

Rev.	Date	Revision
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Drawing Name: Utility Plan
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C102

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

March 5, 2018

Jay Arnold
Portland Water District
225 Douglas Street
Portland, Maine 04104

Re: Proposed Mixed Use Development
300 Allen Avenue, Portland
Letter of Ability to Serve

Dear Mr. Arnold:

ESTELLE ESTATES, LLC has retained Gorrill Palmer to prepare plans and permit applications for a proposed mixed-use development at 300 Allen Avenue. The site includes three existing lots and is shown on Assessor's Map 344 E003, E004, and E006. The total area of the site is 55,342 sf (1.27 acres). Lots E003 and E004 are entirely in the Residential R-5 zone and Lot E006 is located within both the R-5 Zone and the Residence – Professional Zone. As required by the reviewing authorities, we are writing to request a letter indicating the ability of Portland Water District to serve this project. A preliminary utility plan is enclosed for your review.

Description of Development Site

The project site is located at 300 Allen Avenue and consists of Tax Map 344 E003, E004, and E006 as shown on the Portland Assessor's Map. The site is approximately 1.27 acres in size and has approximately 275 feet of frontage along Allen Avenue.

The project site at Lot 344 E006 is currently vacant with a landcover of brush. Lot 344 E004 consists of a two-story residential building with a separate garage and Lot 344 E003 is a fully developed, vacant grassed lawn. Topography in the area of proposed construction varies from flat slopes of approximately 0.5% to steep slopes of 33%. The steeper slopes are associated with a vegetated soil stockpile at the front of the site. Abutting land uses include:

- North – Residential
- West – Residential
- South – Residential
- East – Residential

Refer to Figure 1 – Location Map following this page for the project location.

Project Description

The development of the site is anticipated to include one office/professional building, three duplex residential units, and two triplex residential units with water service by the Portland Water District and wastewater service by the City of Portland. It is anticipated that the units and office building would be sprinklered for fire protection.

Existing Service

An existing 12" water main is located in the east side of Allen Avenue. As discussed at a meeting with the District on September 14, 2016, a 1" service from the main will serve the office building, and a 4" service off the main will provide fire and domestic service to the 12 residential units. The 4" service diverges into a 2" domestic service and a 4" fire service at the property line to supply each residential unit as depicted on the enclosed preliminary utility plan.

Anticipated Flows

The anticipated wastewater generation for the development was computed using the Maine Subsurface Waste Water Disposal Rules Section 4.E.1 for multiple family dwelling units and Table 4C. Based on the publication Water Supply and Pollution Control, Third Edition, by Clark, Viessman and Hammer, Chapter 4, Section 5; the peak daily use can be considered to about 180% of the average daily use. The table below is a summary of the wastewater generation that is anticipated for the development.

Anticipated Wastewater Generation		
	Average Daily Wastewater Generation (gpd)	Peak Daily Wastewater Generation (gpd)
Proposed 12-unit Residential duplex/multiplex	1,200	2,160
Proposed Office/Professional Building	67	120
Total	1,267	**2,280**

The Water/Wastewater Generation Calculation sheet is attached to this letter.

Ability to Serve

In support of the applications to the reviewing authorities, we are writing to request a letter indicating the ability of the Portland Water District to serve the proposed project. In addition, we are interested in receiving:

- An estimate for any work the Water District would perform within the right-of-way.
- Information as to any easements that the District may require on-site.
- Any results of hydrant tests near the site.
- Any other information that you believe would be useful as this project proceeds.

Please contact me if you have any questions relative to this matter.

Sincerely,

Gorrill-Palmer

David Vitali

Copy: Peter Bouchard, ESTELLE ESTATES, LLC

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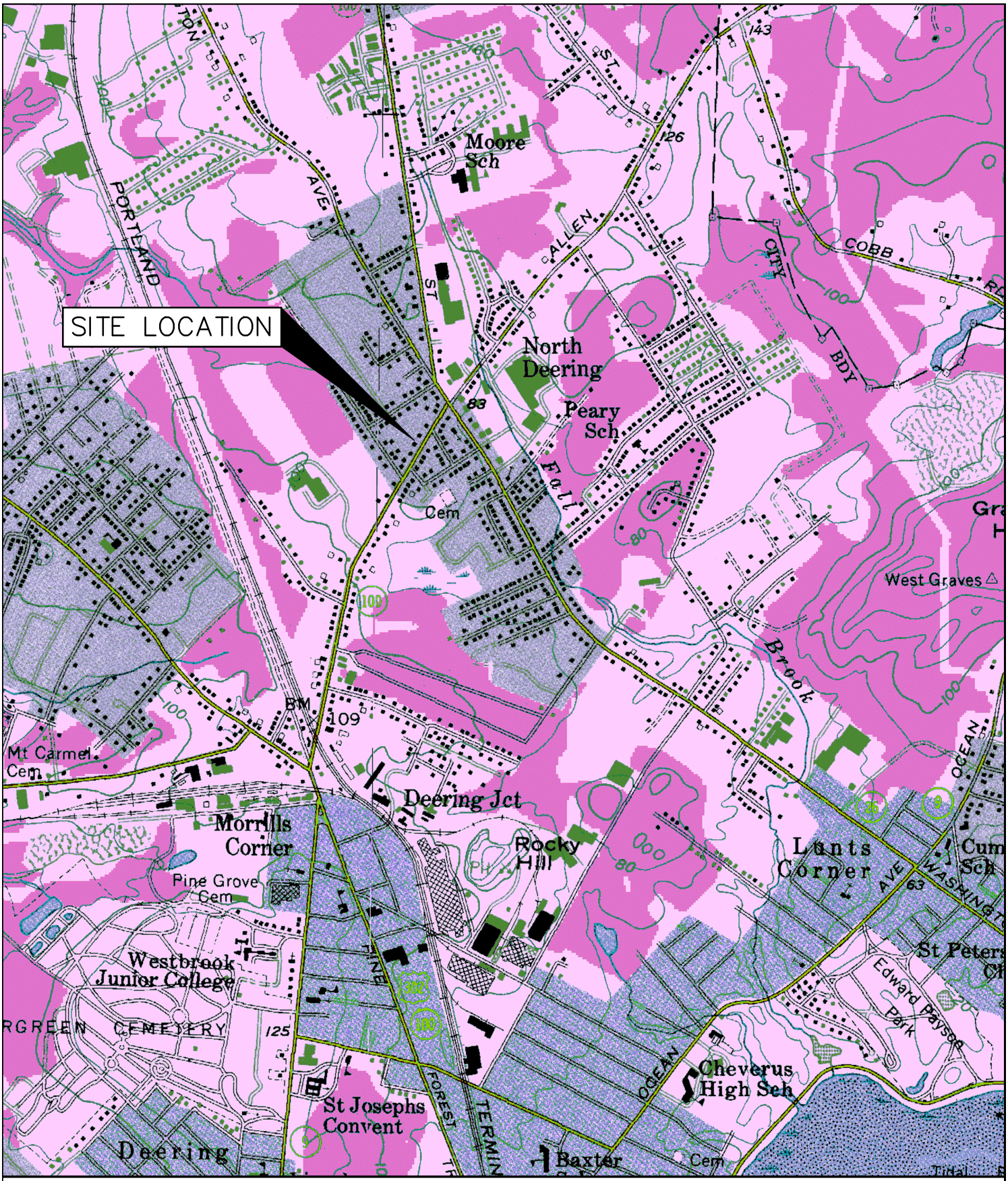

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Figure 1

GORRILL PALMER

JOB	801.06 - 300 Allen Avenue - Portland			
SHEET NO.	1	OF	1	
CALCULATED BY	DJV	DATE	2/27/2017	
CHECKED BY		DATE		
SCALE	N/A			

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3,000 sf Office/Professional building, Assume 10 employees.

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with	2 bedroom/Unit =	**24**	bedrooms

Calculations:

Duplex/Multiplex

From Ref. 1, Section 4.E.1, peak flow rate
90 gpd/bedroom

Peak Water/Wastewater Generation:	**2160**	**gpd**
Average Water/Wastewater Generation (Ref. 2): (peak flow =180% of average flow)	**1200**	**gpd**

Office/Professional

From Ref. 1, Table 4C, place of employment with no showers, peak flow rate
12 gpd/employee

Peak Water/Wastewater Generation:	**120**	**gpd**
Average Water/Wastewater Generation (Ref. 2): (peak flow =180% of average flow)	**67**	**gpd**

Average Daily Water/Wastewater Generation for Proposed Development:	**1267**	**gpd**
Peak Daily Water/Wastewater Generation for Proposed Development:	**2280**	**gpd**

NEAREST FIRE HYDRANT
LOCATED APPROXIMATELY
400 FT TO THE SOUTH FROM
PROPOSED ACCESS DRIVE

WATER SERVICE
ENTRY (TYP.)

2"x1" REDUCER

4"x1" REDUCER

6" SAN
L=21'
S=0.0104 MIN.

6" SAN
L=164'
S=0.0104 MIN.

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,494 SF FOOTPRINT
FFE=84.8

GAS SERVICE
ENTRY (TYP.)

ELECTRIC SERVICE
ENTRY (TYP.)

1"W
2"W
4"FS

UGE/T/C

GAS

2" CURB STOP

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,494 SF FOOTPRINT
FFE=84.8

6" SAN
L=33'
S=0.0104 MIN.

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF STORM DRAIN

TESTPIT TO DETERMINE EXACT
LOCATION AND ELEVATION OF
TELEPHONE AND ALARM LINES

RELOCATE EXISTING POLE

R5 ZONE
RP ZONE

TEST PIT TO DETERMINE EXACT
LOCATION AND ELEVATION OF
STORM DRAIN

EXIST. SMH
RIM: 82.06
INV. IN: 75.61
INV. OUT: 75.51

RUN SANITARY SEWER OVER
STORMDRAIN AND DROP INTO
SANITARY SEWER (TYP.)

4"x1" REDUCER

2"x1" REDUCER

EXIST. 35' EASEMENT

4" GATE VALVE

METER
PIT

1+00

4"x4" TEE

2+00

6" WYE
CONNECTION (TYP.)

3+00

3+19

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF GAS MAIN

0+00

12"x4" TAPPING
SLEEVE AND VALVE

4"W

1"W
1"FS

1" CURB
STOP

GAS SERVICE
ENTRY

SAN. SEWER
EXIT, INV.=78.50

WATER SERVICE
ENTRY

ELECTRIC SERVICE
ENTRY (TYP.)

PROPOSED OFFICE/
PROFESSIONAL
SERVICES
2,400 SF FOOTPRINT
3,200 SF TOTAL
1-1/2 STORY
FFE=85.50

2" DOMESTIC
WATER

4" FIRE SERVICE

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.60

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=85.20

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.75

6" SAN
L=42'
S=0.0104 MIN.

2" RIGID INSULATION FULL
WIDTH OF TRENCH FOR
COVER LESS THAN 5' (TYP.)

WATER SERVICE
ENTRY (TYP.)

ELECTRIC
SERVICE ENTRY
(TYP.)

GAS SERVICE
ENTRY (TYP.)

EXTEND ELECTRICAL
SERVICE TO NEW POLE

RELOCATED POLE WITH
SIDEWALK GUY WIRES

RISER POLE WITH STAND OFF BRACKETS

POLE MOUNTED TRANSFORMER

R5 ZONE
RP ZONE

NOTES:

1. ELECTRICAL SERVICE SHALL BE COORDINATED WITH CMP.
2. COORDINATE LOCATION OF UTILITY SERVICE ENTRANCE POINTS WITH ARCHITECTURAL PLANS.
3. COORDINATE CONNECTION TO EXISTING WATER MAIN WITH PORTLAND WATER DISTRICT.
4. COORDINATE GAS SERVICE WITH UNITIL.

6" SANITARY SEWER (MIN. SLOPE=0.0104):
MULTIPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
G	26'	79.30
H	26'	79.30
I	26'	79.30
J	26'	79.30
K	26'	79.30
L	26'	79.30

6" SANITARY SEWER (MIN. SLOPE=0.0104):
DUPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
A	42'	79.98
B	56'	79.98
C	39'	79.10
D	56'	79.10
E	39'	79.56
F	54'	79.56

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40
1 inch = 20 ft.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9886
3-20-18
LICENSED
PROFESSIONAL ENGINEER

C:\CAD WORKING\801.06 - 300 Allen Ave\DWG\801-06-UTIL.dwg - Mar 20, 2018 - 11:18am

Rev.	Date	Revision
–	–	–

Issued For	Date	By
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJV | Draft: CG | Date: FEB 2018
Checked: DER | Scale: 1"=20' | Job No.: 801.06
File Name: 801-06-UTIL.dwg

This plan shall not be modified without written permission from Gorrill-Palmer Consulting Engineers, Inc.(GPCEI). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GPCEI.

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Drawing Name: Utility Plan
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C102

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Submit each Tab as one PDF file and bookmark the items as noted below

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

Checklist	Items to be Provided
Yes NA Plan ☐ ☐ ☐	PROJECT DESCRIPTION • Cover Letter with detailed project description
Yes NA Plan ☐ ☐ ☐	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes NA Plan ☐ ☐ ☐	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements
Yes NA Plan ☐ ☐ ☐	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable
Yes NA Plan ☐ ☐ ☐	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes NA Plan ☐ ☐ ☐	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements
Yes NA Plan ☐ ☐ ☐	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table
Yes NA Plan ☐ ☐ ☐	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA Plan ☐ ☐ ☐	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.

Submit each Tab as one PDF file and bookmark the items as noted below

Tab 2 - TRANSPORTATION

Check list	Assess/Provide/Document:
Yes NA Plan	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable
Yes NA Plan	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable
Yes NA Plan	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies

Tab 3 - ENVIRONMENTAL AND LANDSCAPE FEATURES	
Check list	Assess/Provide/Document:
Yes NA Plan	**Preservation of Significant Natural Features (14-526 (b) 1), if applicable** • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes NA Plan	**Landscaping and Landscape Preservation (14-526 (b) 2 a)** • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes NA Plan	**Site Landscaping (14-526 (b) 2 b)** • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes NA Plan	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable** • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes NA Plan	**Street Trees (14-526 (b) 2 b iii)** • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

Tab 4 - ENVIRONMENTAL AND STORMWATER	
Check list	Assess/Provide/Document:
Yes NA Plan	**Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)** • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY

Check list	Assess/Provide/Document:
Yes NA Plan	**Consistency with City Master Plans (14-526 (c) 1)** • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA Plan	**Public Safety and Fire Prevention (14-526 (c))** • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes NA Plan	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)** • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

Tab 6 - SITE DESIGN

Check list	Assess/Provide/Document:
Yes NA Plan	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
Yes NA Plan	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA Plan	**Snow and Ice Loading (14-526 (d) 3)** • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA Plan	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appendix 1)

Yes NA Plan ☐ ☐ ☐	**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
Yes NA Plan ☐ ☐ ☐	**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes NA Plan ☐ ☐ ☐	**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes NA Plan ☐ ☐ ☐	**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
Yes NA Plan ☐ ☐ ☐	**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples
Tab 7 - Construction Management Plan	
Check list	
Yes NA Plan ☐ ☐ ☐	**Construction Management Plan** • Construction Management Document and Plan

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan

☐ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☑ **Existing Conditions**

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☑ **Proposed Site Plan**

- Ground floor area, and grade elevations for all buildings

☑ **Access, Circulation, and Parking**

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

☑ **Site Considerations**

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☑ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☑ GRADING and DRAINAGE PLAN including:
• Existing grades and drainage • Proposed grades • Proposed stormwater management meeting Technical Manual (Section 5) standards • Location and proposed alteration of a water course • Preservation or alteration of wetlands
☑ EROSION CONTROL
• Must be in compliance with Technical Manual, Section 5
☑ LANDSCAPE PLAN including:
• Existing vegetation to be preserved and preservation measures • Proposed landscaping and buffers • Planting schedule
☐ RECORDING PLAT, if applicable
• IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)
☑ ARCHITECTURAL PLANS & RENDERINGS including:
• Exterior building elevations, color renderings, illustrations of all sides • Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening • Provide context drawings, if applicable (Design Manual, page 1) • Floor plans

ZONING ANALYSIS Relevant Zone(s) RP/R5

All Projects:

	Required	Proposed
Lot Size	6,000sf/54,000sf	55,342sf
Area Per Dwelling Unit	NA/4,500sf	4,500sf
Minimum Street Frontage	60'/50'	276.5'
Front Yard Minimum	12.5'/20'	> 20'
Front Yard Maximum	NA/NA	NA
Rear Yard	20'	20'
Yard Right	12'/12'	> 12'
Yard Left	14'/14'	> 14'
Side Street Setback	15'/15'	NA
Step Back	NA/NA	NA
Maximum Lot Coverage	0.65/0.40	0.18
Minimum Lot Coverage	NA/NA	NA
Maximum Height	45' (35')	< 35'
Open Space	NA (NA)	NA
Maximum Impervious Area	0.80 (NA)	0.53
Pavement Setback	NA/NA	NA
Floor Area Ratio	0.65/0.40	0.18
Off Street Parking Spaces	8 (24)	12 (30)
Loading Bays	NA	NA
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	Required	Proposed
Minimum Lot Size		
Minimum Lot Area per Dwelling		
Maximum # Units per Building		
Maximum Building Length		
Maximum Accessory Building Length		
Minimum Setbacks		
Minimum Building Separation		
Minimum Open Space		

Affordable Housing Density Bonuses (if applicable)

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

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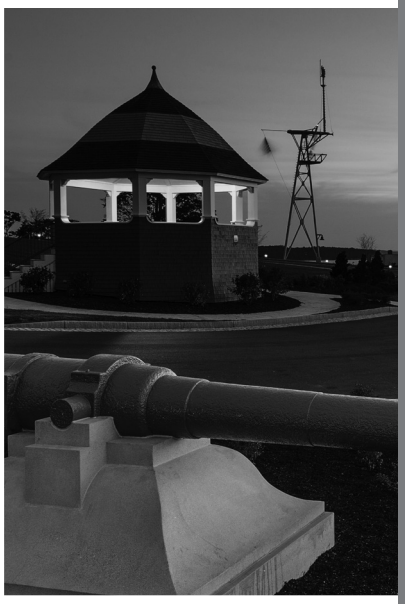


NPRA Tier I Application for 300 Allen Avenue Portland, Maine

PREPARED FOR:
Estelle Estates, LLC
South Portland, Maine

April 2018

SUBMITTED BY:
Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

April 5, 2018

On Call Analyst
Maine Department of Environmental Protection
312 Canco Road
Portland, ME 04103

Subject: 300 Allen Avenue
NRPA TIER 1 Permit Application

To whom it may concern,

The attached application is for an NRPA Tier 1 permit for 300 Allen Avenue in Portland.

Copies of the application have been sent to the Army Corps of Engineers, the City of Portland, and the Maine Historic Preservation Commission.

A check for $75 is attached for the application fee.

Two copies of the application and plans are included for your use.

If you have any further questions please contact us.

Sincerely,

Gorrill Palmer

Douglas Reynolds, PE
Project Manager

Copy: Peter Bouchard, Estelle Estates, LLC

DER/djg/U:\801.06 Allen Ave - Bouchard\P Applications\State\NRPA Tier 1\Cover Letter 4-2-18.doc

Table of Contents

1. Narrative
2. NRPA Tier I Application
3. Agent Authorization Letter
4. Wetland Photos
5. Title / Right / Interest
6. Figure #1: Wetland Impact
7. MHPC Letter & Response
8. Drawing #1: Wetland Impact Plan

1. Narrative

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

NRPA PERMIT APPLICATION

Introduction

Gorrill Palmer has been retained by Estelle Estates, LLC to prepare plans and permit applications for the construction of 12 residential units as well as a small office building located at 300 and 292 Allen Avenue in Portland, ME.

At this time, Estelle Estates, LLC has directed us to submit a NRPA permit application. Since the development of the site is proposed to impact 9,159 square feet of scrub shrub wetland, a Tier 1 application is appropriate for this development. The following narrative provides additional details for the project.

Site and Development Description

The total area of the project parcels is 55,432 square feet. 300 Allen Ave is currently vacant and contains a vegetated soil stockpile in the easterly section of the site. Development is also proposed on the adjacent lot located at 292 and 280 Allen Ave. Currently, a single-family building with a garage and fully developed lawn cover is present at the adjacent lot. The sites drain to the two existing culvert inlets located at the center of the site within the City of Portland utility easement.

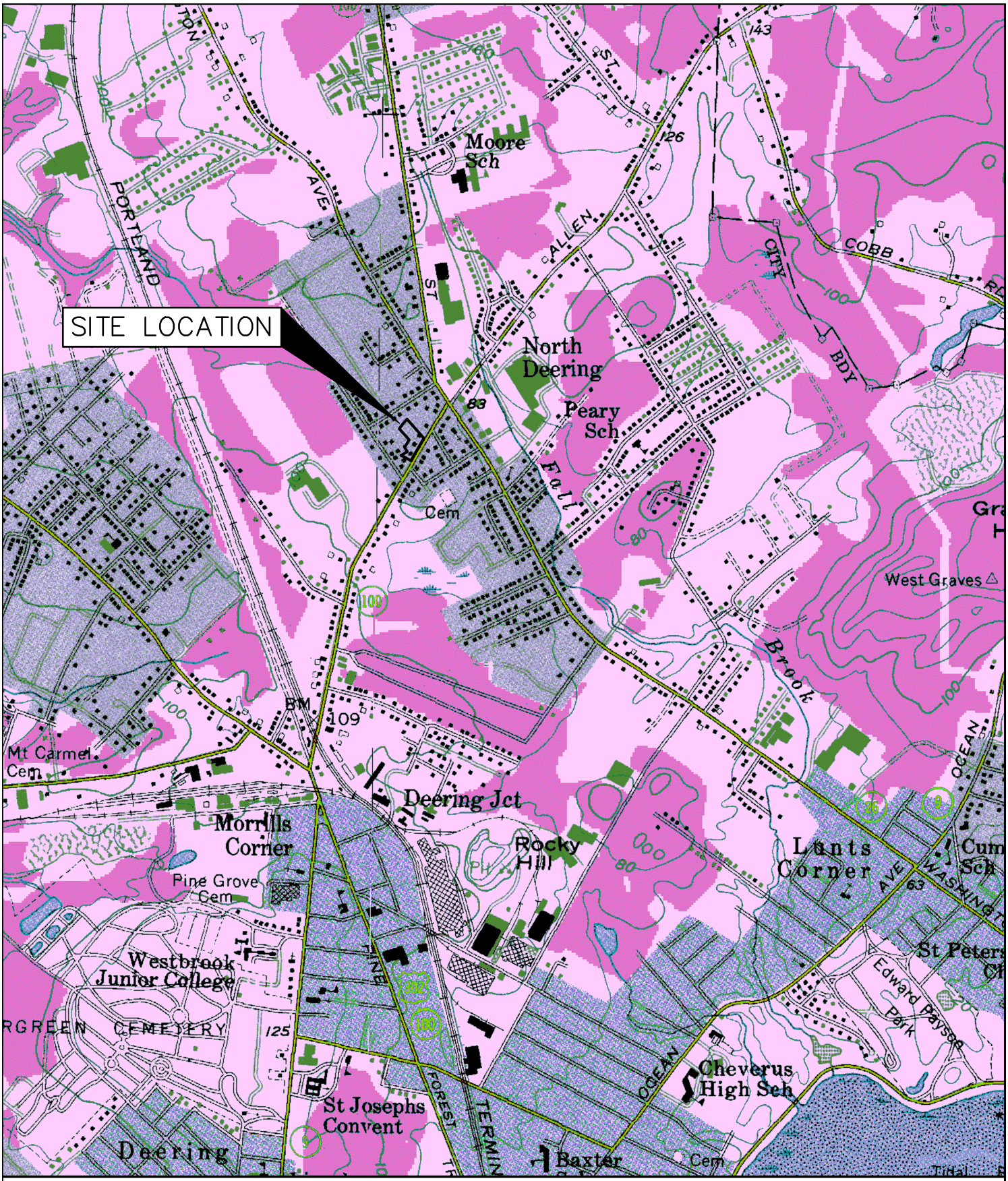
The development includes the creation of three duplex residential units with a footprint of 1,224 sf each, two triplex residential units with a footprint of 1,494 sf each, and an office/professional services building of 2,400 sf footprint with associated parking and infrastructure. Wetlands on-site were delineated by Jones Associates in July 2016 for 300 Allen Ave and Boyle Associates in January of 2018 for 292 Allen Ave.

The affected wetlands occur in the center of the parcel and along the western boundary of the parcel. The wetlands in this area are scrub shrub/emergent marsh wetlands. No vernal pools or rare or unusual plant or animal species were observed at the site.

Wetland Impact

The wetlands impacted on site associated with the construction of the duplexes and associated parking, as well as the construction of a grassed underdrain soil filter for Water Quality purposes. Given the small size of the site, wetland impacts were unavoidable. To minimize impacts, the access drive, parking and duplexes are pushed as far south-west on the site as practical. Side slopes within the wetlands have been steeped from 3:1 to 2:1 where possible.

The wetland areas proposed to be impacted by the project are depicted on the Wetland Impact Plan following this page. As can be seen, the proposed development will result in approximate 9,159 square feet of wetland impact.



U.S.G.S. Location Map

300 Allen Ave - Portland, Maine

U.S.G.S. Portland West, State-7.5 Minute Series (Topographic)

Design: DJV	Date: FEB 2018
Draft: CG	Job No.: 801.06
Checked: DER	Scale: None
File Name: 801-06-LocMap.dwg	

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Figure 1

2. NRPA TIER I APPLICATION

APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

➔**PLEASE TYPE OR PRINT IN *BLACK INK ONLY***

1. Name of Applicant:	Peter Bouchard, Estelle Estates, LLC	**5.Name of Agent:**	Gorrill Palmer
2. Applicant's Mailing Address:	39 Darling Avenue, South Portland, ME, 04106	**6. Agent's Mailing Address:**	707 Sable Oaks Drive - Suite 30 South Portland, ME 04106
3. Applicant's Daytime Phone #:	207-956-8404	**7. Agent's Daytime Phone #:**	207-772-2515
4. Applicant's Email Address: Required from *either* applicant or agent:	peter@bouchard.us	**8.Agent's E-mail Address:**	dreynolds@gorrillpalmer.com

9. Location of Activity: (Nearest Road, Street, Rt.#)	300 Allen Ave	**10. Town:**	Portland	**11. County:**	Cumberland

12. Type of Resource: (Check all that apply)	❑ River, stream or brook ❑ Great Pond ❑ Coastal Wetland ☒ Freshwater Wetland ❑ Wetland Special Significance ❑ Significant Wildlife Habitat ❑ Fragile Mountain	**13. Name of Resource:**	Unnamed
		14. Amount of Impact: (Sq.Ft.)	**Fill:** 9,159 **Dredging/Veg Removal/Other:**

15. Type of Wetland: (Check all that apply)	❑ Forested ☒ Scrub Shrub ❑ Emergent ❑ Wet Meadow ❑ Peatland ❑ Open Water ❑ Other_____	**FOR FRESHWATER WETLANDS**		
		Tier 1	*Tier 2*	*Tier 3*
		❑ 0 - 4,999 sq ft. ☒ 5,000-9,999 sq ft ❑ 10,000-14,999 sq ft	❑ 15,000 – 43,560 sq. ft.	❑ > 43,560 sq. ft. or ❑ smaller than 43,560 sq. ft., not eligible for Tier 1

16. Brief Activity Description	Construction of three duplex residential units, two triplex residential units, an professional office building and associated infrastructure

17. Size of Lot or Parcel & UTM Locations:	☒ 55,342 square feet, or ❑ _____acres	UTM Northing: 4839187.9	UTM Easting: 396090.2
18. Title, Right or Interest:	☒ own ❑ lease ❑ purchase option ❑ written agreement		

19. Deed Reference Numbers:	Book#: 34605 Page: 338	**20. Map and Lot Numbers:**	Map #: 344	Lot #: E006	
21. DEP Staff Previously Contacted:		**22. Part of a larger project:**	❑ Yes ☒ No	**After-the-Fact:**	❑ Yes ☒ No
23. Resubmission of Application?	❑ Yes➔ ☒ No	**If yes, previous application #**		**Previous project manager:**	
24. Written Notice of Violation?	❑ Yes ➔ ☒ No	**If yes, name of DEP enforcement staff involved:**		**25. Previous Wetland Alteration:**	❑ Yes ☒ No

26. Detailed Directions to the Project Site:	Going north on I-295, take Exit 8 onto Washington Ave. Go 2.1 miles then take a left on Allen Ave. Go 600 feet and the site will be on the right.

27. TIER 1	**TIER 2/3 AND INDIVIDUAL PERMITS**	
☒ Title, right or interest documentation ☒ Topographic Map ☒ Narrative Project Description ☒ Plan or Drawing (8 1/2" x 11") ☒ Photos of Area ☒ Statement of Avoidance & Minimization ☒ Statement/Copy of cover letter to MHPC	❒ Title, right or interest documentation ❒ Topographic Map ❒ Copy of Public Notice/Public Information Meeting Documentation ❒ Wetlands Delineation Report (Attachment 1) that contains the Information listed under Site Conditions ❒ Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized	❒ Erosion Control/Construction Plan ❒ Functional Assessment (Attachment 3), if required ❒ Compensation Plan (Attachment 4), if required ❒ Appendix A and others, if required ❒ Statement/Copy of cover letter to MHPC ❒ Description of Previously Mined Peatland, if required

28. FEES Amount Enclosed:	

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

DEP SIGNATORY REQUIREMENT

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

CORPS SIGNATORY REQUIREMENT

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fines not more than $10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

DEP SIGNATORY REQUIREMENT

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

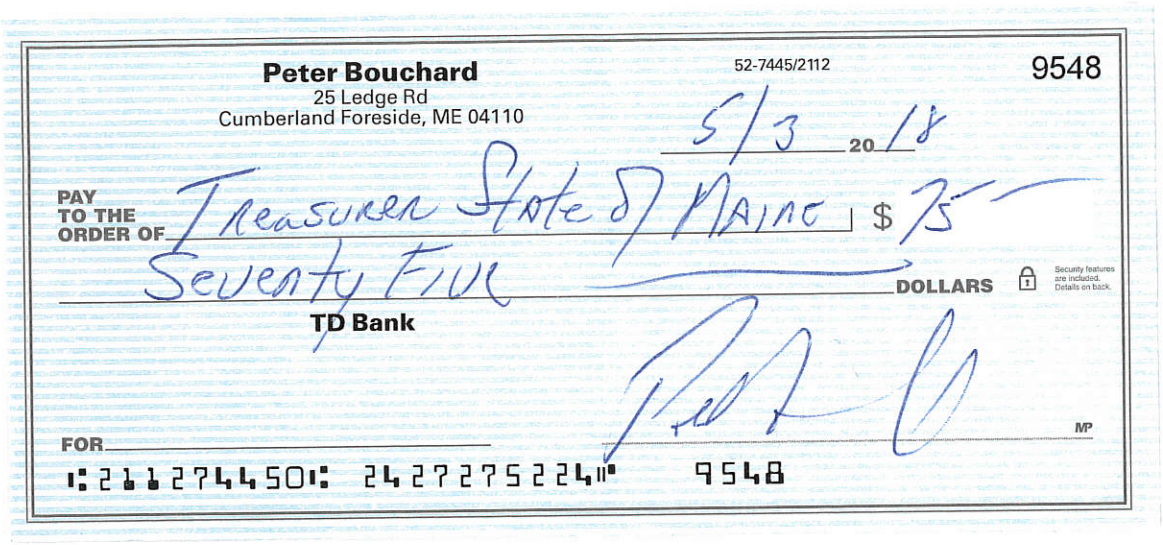
Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #4 for the applicant and #8 for the agent)."

SIGNATURE OF AGENT/APPLICANT Date: 3-28-18

Signature of Agent Date: 3-28-18

NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.

(yellow)



Peter Bouchard
25 Ledge Rd
Cumberland Foreside, ME 04110

52-7445/2112

9548

5/3 20 18

PAY TO THE ORDER OF Treasurer State of Maine $ 75

Seventy Five DOLLARS

Security features are included. Details on back.

TD Bank

FOR

MP

⑆211274450⑆ 2427275224⑈ 9548

3. Agent Authorization Letter

March 1, 2018

Re: **Agent Authorization**
Mixed Use Development
Portland, Maine

To Whom it May Concern:

Peter Bouchard ("Developer") is in the process of developing a site (the "Site") in the state of Maine, Cumberland County, located at 300 and 292 Allen Ave, in Portland. On behalf of the Developer, I hereby authorize Gorrill Palmer, (the "Engineer") to act as agent for the purpose of obtaining permits and approvals related to the development of the Site.

In such capacity, the Engineer's authority is expressly limited to signing and delivering applications for permits and approvals that are related to the development of the Site, advancing nominal funds as are required to file such applications and to representation at meetings and hearings for the applications. The Engineer is not authorized to negotiate on the Developer's behalf or to bind or obligate the Developer i any manner whatsoever, including without limitation accruing any obligations on the Developer's behalf to pay for or construct improvements without additional authorization in writing.

This authorization is effective as of the date of this correspondence and will remain valid until revoked in writing.

ESTELLE ESTATES, LLC

Peter Bouchard

4. Wetland Photos

Wetlands in central portion of site facing northwest.

Wetlands along property line facing southwest

5. Title / Right / Interest

DocuSign Envelope ID: 58B5777C-41A7-456E-BC25-97091388F37F

DocuSign Envelope ID E2893310-BF8D-4FDA-9F0E-DE94EF70E883

AGREEMENT FOR THE PURCHASE AND SALE OF REAL ESTATE

AGREEMENT made and entered into this 19th day of June, 2017, by and between HARLEQUIN LLC, a Maine limited liability company with its principal place of business in Portland, County of Cumberland and State of Maine (the "Seller") and ESTELLE ESTATES, LLC, a Maine limited liability company with its principal place of business in South Portland, County of Cumberland and State of Maine (the "Buyer").

WITNESSETH AS FOLLOWS:

1. PURCHASE AND SALE. Seller agrees to sell, and Buyer agrees to buy, on and subject to the terms and conditions hereinafter set forth certain real estate, together with the buildings and improvements located thereon and also owned by the Seller located at 300 Allen Avenue, in Portland, County of Cumberland and State of Maine, as more particularly described in a Warranty Deed from Robert L. Adam to the Seller dated August 11, 2004 and recorded at the Cumberland County Registry of Deeds in Book 21661, Page 282, a copy of which is attached hereto as Exhibit A and made a part hereof (such real estate and personal property being referred to herein collectively as the "Premises").

2. PURCHASE PRICE. Subject to any adjustments and prorations hereinafter described, Buyer agrees to pay for the Premises the sum of [redacted] (the "Purchase Price"), which shall be payable as follows:

(a) The sum of [redacted], being paid simultaneously with the execution of this Agreement, as earnest money deposit (the "Deposit"), which shall be held by Magnusson Balfour, (the "Escrow Agent"), in its non-interest bearing trust account pending Closing (defined below) and shall be credited towards the purchase price at Closing;

(b) The sum of [redacted] shall be paid to Seller at the Closing in the form of a Promissory Note (the "Promissory Note") bearing interest at the rate of six percent (6%) per annum simple interest, payable interest only on a monthly basis until the eighteen (18) month anniversary date of the Closing (the "Maturity Date"), when the balance of principal and any accrued but unpaid interest at said rate shall then be paid in full. In the event that the Buyer shall assign the contract to an entity, the Buyer shall personally guaranty the payment pursuant to the terms of the Promissory Note; and

(c) The remaining amount of the Purchase Price, after application of the Deposit and the delivery of the Promissory Note and all applicable closing prorations, shall be paid in full in immediately available funds at Closing.

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3. TITLE. Seller shall convey the Premises to the Buyer at Closing in fee simple with good, marketable and insurable title, free and clear of all mortgages, security interests, liens, encroachments and encumbrances, except such encumbrances (such as for utilities) as shall be acceptable to Buyer in Buyer's sole discretion (the "Permitted Encumbrances"). Buyer shall have until July 15, 2017 to complete its examination of the title to the Premises.

In the event that Buyer determines upon examining title to the Premises that Seller would be unable to convey title as aforesaid, Seller shall be given a reasonable period of time after notice from Buyer, not to exceed sixty (60) days, in which to remedy any title defects. Seller agrees to take reasonable steps to remedy any such title defects, including, without limitation, by payment of any amounts necessary to cause the correction of any such defects. In the event that said defects cannot be corrected or remedied within said time period this Agreement shall terminate unless further extended by agreement of Buyer and Seller in writing. Buyer may, however, elect to close notwithstanding such defects as may exist and, in that case, there shall be no offset or reduction in the Purchase Price and Seller shall have no liability to the Buyer for any such title defects.

Seller agrees and represents that it will not further encumber or permit to be encumbered the Premises by any liens, mortgages, attachments, covenants, restrictions or easements after the date of this Agreement.

4. CLOSING.

(a) The closing shall take place at the offices of Norman, Hanson and DeTroy, LLC, Two Canal Plaza, Fourth Floor, Portland, Maine, no later than February 28, 2018 at a mutually convenient time (the "Closing" or "Closing Date"), or at some other time and place that the Buyer and the Seller shall mutually agree in advance and in writing, except that the Buyer may extend the date of Closing for up to an additional sixty (60) days in the event that despite Buyer's reasonable commercial efforts to obtain all required land-use permits and approvals for the development of the Project (as defined in this Agreement) Buyer has not obtained all such required permits and approvals by December 31, 2017. Buyer shall provide Seller written notice of the extension on or before January 10, 2018.

(b) At Closing, Seller shall execute and deliver to Buyer, against payment of the purchase price, a Quitclaim Deed with Covenant, conveying good, marketable and insurable title to the Premises, free and clear of all mortgages, liens, encroachments or other encumbrances in accordance with the Short Form Deeds Act, 33 M.R.S. §§ 761 et seq., (the "Deed"). Seller further agrees to execute and deliver to the Company at Closing the following documents: (i) a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations); (ii) a title insurance "Seller's Affidavit" regarding mechanics liens and persons in possession; (iii) an affidavit

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regarding underground storage tanks (as required by Maine law); (iv) documents demonstrating Seller's authority to convey and good standing as evidenced by a copy of Seller's resolution authorizing the transaction contemplated herein and a copy of the relevant portions of its Operating Agreement; (v) such other documents as may be required to issue an owner's policy of title insurance in form reasonably acceptable to Buyer's counsel; (vi) such other documents as may be reasonably necessary to effect the transfers described in this Purchase and Sale Agreement; and (vii) such other documents as are reasonably required by Buyer's counsel at closing. The Seller shall also assign any leases or tenancies in the Premises and provide a rent roll and tender delivery of all security deposits for all leases or tenancies in the Premises.

5. RISK OF LOSS, DAMAGE AND INSURANCE.

(a) All risk of loss to the Premises prior to the Closing Date shall be borne by Seller, except and unless the loss was caused by Buyer or Buyer's employees, agents, or contractors. Seller shall keep the Premises insured against fire and other extended coverage risks up to and including the Closing Date.

(b) In the event that the improvements that are part of the Premises are destroyed prior to Closing, Seller shall have the right to terminate this Agreement and refund the Deposit and, in that case, it shall be solely entitled to any insurance proceeds payable for or on account of any such destruction. In the event Seller shall not so elect, Buyer shall be entitled to elect to (1) terminate this Agreement by written notice to Seller, or (2) receive any and all insurance proceeds payable for or on account of any such destruction.

(c) If, prior to the Closing, all or any material portion of the Premises shall be taken for any public use (other than minor takings for street widening) or access to or from the Premises shall be permanently taken or materially impaired, or any change(s) to public way(s) or the grade(s) thereof shall be made which materially and adversely affects or is likely to materially and adversely affect the commercial value of the Premises, then Seller shall be required to notify Buyer of the same by written notice the earlier of five (5) days after receipt of such notice or one (1) business day prior to closing. Additionally, if notice of any of the foregoing shall be made public or otherwise come to Buyer's attention Buyer shall have the election either (i) to terminate this Agreement, in which event this Agreement shall terminate, the Deposit shall be refunded to Buyer, and the parties shall have no further liability or responsibility to each other, or (ii) to consummate the sale without reduction of the Purchase Price on account of same, in which event Seller shall assign to Buyer all claims and rights, if any, on account of or arising out of any of the foregoing.

6. INSPECTIONS; DUE DILIGENCE.

(a) The Buyer may enter into any part of the Premises at all reasonable

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times prior to 5:00 PM on December 31, 2017 in order to inspect the Premises, conduct surveys, building studies, inspections and assessments and to undertake zoning, land-use and environmental compliance assessments and to do such things and may conduct such investigations as Buyer shall elect. Buyer shall also be entitled to review all plans, specifications, studies, assessments (including environmental assessments) and all other documents in Seller's possession relating to the Premises, all of which shall be provided to Buyer by Seller within five (5) business days of request.

(b) Seller acknowledges that Buyer shall have the right in its sole and absolute discretion, either based on Buyer's disapproval of any of the reports or information received by Buyer relating to the Premises or to the feasibility of the Project (as defined in this Agreement) or based on Buyer's dissatisfaction with any inspection or investigation or for any other reason whatsoever to terminate this Agreement by delivering notice thereof to Seller at any time after execution of this Agreement and prior to 5:00 PM, December 31, 2017 (the "Due Diligence Period,") which delivery shall be complete upon mailing or transmission by telefax. In the event Buyer so elects to terminate this Agreement within the Due Diligence Period, the Deposit shall be refunded to Buyer within three (3) business days of such notice and this Agreement shall terminate without further recourse or liability to the parties at law or in equity. In the event that Buyer fails to provide the Seller with any such termination notice on a timely basis, the Buyer shall have no right to terminate this Agreement for or on account of any matter pertaining to the condition of the Premises or their suitability for any particular purpose.

7. FINANCING CONTINGENCY; SECURITY FOR SELLER-FINANCING.

(a) Seller's and Buyer's obligations under this Agreement are subject to Buyer obtaining a financing commitment for [redacted] (the "Senior Debt") for the purchase of the Premises and the construction of the Project, as defined in Paragraph 8 of this Agreement, from a conventional bank or commercial lender (the "Project Lender") at prevailing rates, terms and conditions and also subject to the conditions set forth in Paragraph 7(b) of this Agreement. Buyer shall provide Seller with written evidence of its application for a financing commitment for such loan on or before July 15, 2017 and shall use reasonable commercial efforts to obtain the commitment for such acquisition and construction loan on or before October 15, 2017. In the event that despite Buyer's timely application and reasonable commercial efforts to obtain a financing commitment for such loan on or before October 15, 2017 Buyer is unable to do so, then either Buyer may terminate this Agreement by written notice to Seller on or before October 15, 2017, whereupon any payments made under this Agreement shall be forthwith refunded and Seller shall no longer have any obligation to sell the Premises to Buyer, and this Agreement shall be void and without recourse to the parties hereto.

(b) Seller agrees that the mortgage from Buyer to the Project Lender securing the Senior Debt (the "Senior Mortgage") shall be senior in priority to the

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mortgage to Seller from Buyer securing the Promissory Note (the "Junior Mortgage") and the Junior Mortgage (or related Subordination Agreement between Seller, Project Lender and Buyer) shall contain such other and further standby and subordination requirements as the Project Lender may require as a condition of its commitment to lend the Senior Debt to Buyer. Buyer's mortgage to Seller securing the Promissory Note shall contain a lot or unit release provision pursuant to which the Seller will grant and execute partial releases of the mortgage securing the Promissory Note in exchange for partial release payments in the amount of $52,000.00 per lot or unit, such partial releases to be in recordable form so as to accommodate sales of lots or units from the Premises.

(c) Peter R. Bouchard, a member of Buyer ("Bouchard"), shall provide Seller with personal financial statements within five (5) days of the execution of this Agreement. Seller shall have five (5) days to review the financial statements and terminate this Agreement if the financial statements do not meet its approval. Bouchard shall be personally liable with Buyer on the Promissory Note.

8. THE PROJECT; CONTINGENCY FOR PERMITS AND APPROVALS.

(a) Buyer shall diligently prosecute all required land-use, permitting and approval applications required by the City of Portland (and any other regulatory authority having jurisdiction) for the development of the Premises into seven (7) lots or condominium units (the "Project"), such lots or units to be in conformity with all applicable land-use, permitting and approval requirements. Buyer shall use reasonable commercial efforts to obtain all required land-use permits and approvals for the Project on or before December 31, 2017, at which time the Deposit shall become fully non-refundable. In the event that Buyer shall not have obtained all required permits and approvals for the Project by December 31, 2017, Buyer may extend the date of Closing for up to an additional sixty (60) days for payment of an additional non-refundable deposit of $10,000.00 to the Seller. Buyer shall provide Seller written notice of the extension on or before January 10, 2018.

(b) If Buyer shall not have obtained all required permits and approvals for the development of the Project on or before the date for Closing (or the extended date for Closing as the case may be), then this Agreement shall terminate and the parties shall have no further liability or responsibility to one another. The refund of the Deposit in that case shall depend on whether the termination of the Agreement for any failure to obtain required permits and approvals occurred on or before December 31, 2017 (in which case the Deposit shall be refunded) or afterwards (in which case the Seller shall be entitled to retain the Deposit).

9. POSSESSION OF THE PREMISES. The Premises shall be delivered to the Buyer at Closing free and clear of all tenancies or occupancies by any other person or entity.

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10. REPRESENTATIONS OF SELLER. Seller represents to the Buyer (as the sole representations made by it or its members relating to the subject matter of this Agreement) the following:

(a) Seller has received no written notice from the City of Portland of any alleged violation at the Premises respecting any zoning ordinances or laws.

(b) All outstanding bills and/or accounts payable concerning or otherwise relating to the Premises are either paid or will be paid prior to or at Closing, including without limitation all utility charges, all municipal assessments and all charges for services rendered or materials furnished with respect to the Premises, including, without limitation, regarding any services or materials for which a mechanic's lien could be claimed.

(c) There are no leases affecting the Premises as of the date hereof.

(d) Seller has received no written notice from any governmental entity or agency, nor does it have any knowledge of any special wastes, underground storage tanks, waste oil, petroleum and any other hazardous substances, materials or wastes in or on the Premises. The terms used in the foregoing sentence shall include, without limitation, all substances, materials, etc., designated by such terms under any laws, ordinances or regulations, whether federal, state or local.

(e) There are no outstanding or pending liens, claims, rights of first refusal, mortgages, encroachments or other encumbrances (other than utility easements) against the Premises.

(f) The Seller has taken all corporate actions necessary to authorize the execution and delivery of this Agreement and to perform all of its obligations due to the Buyer hereunder and it has the full right and power to consummate all of the transactions contemplated for it to be performed under this Agreement.

11. DEFAULT AND REMEDIES. In the event that Seller fails to close hereunder for a reason other than default of Buyer, Buyer shall have the right to specific performance or any other legal or equitable remedies and also may seek to recover damages, as well as the refund of the Deposit. In the event that Buyer defaults in the performance of its obligations hereunder, Seller shall retain the Deposit and shall have all other legal or equitable remedies.

12. CONDITIONS PRECEDENT TO BUYER'S OBLIGATION TO CLOSE. The obligation of Buyer to close is subject to the satisfaction at or before Closing of all of the following conditions:

(a) All representations of Seller contained in this Agreement shall be true

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in all material aspects as of the Closing.

(b) The due diligence, financing and permitting and approval contingencies set forth in Paragraphs 6, 7 and 8 of this Agreement shall have been satisfied to Seller's reasonable satisfaction or, alternatively, Seller shall have waived any such unsatisfied contingency or contingencies.

13. BROKERAGE. Seller and the Buyer represent and warrant to each other that neither party has engaged the services of any real estate broker with respect to this transaction, other than Magnuson Balfour for Seller and Keller Williams for Buyer. Each party agrees to indemnify and hold harmless the other party from any claim made by any broker claiming by or through them. The foregoing indemnity shall include all legal fees and costs incurred in defending any claim therefor.

14. ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.

(a) Real estate taxes, assessments and rental charges shall be prorated as of the Closing Date.

(b) Metered utilities, such as water and sewer, shall be paid by the Seller through the date of closing.

(c) The Maine real estate transfer tax shall be paid by the Seller and Buyer (or at their election, the Company), in accordance with 36 M.R.S. § 4641-A.

(d) The recording fee for the Deed will be paid by the Buyer. The recording fee for the Mortgage, and any related documents shall be paid by the Seller.

15. GENERAL PROVISIONS.

(a) Time. Time shall be of the essence of this Agreement. Despite the foregoing, however, the parties shall cooperate with one another for commercially reasonable extensions of time in the event that the request for the extension is made no fewer than ten (10) days before the expiration of the then applicable deadline.

(b) Notices. Any notice or communication given pursuant to this Agreement by either of the parties to the other shall be in writing and delivered in person or mailed by overnight courier, registered or certified mail, postage prepaid (mailed notices shall be deemed given on the third day after they are duly mailed), or telefax with record of transmission as follows:

TO SELLER: Estate of Robert L. Adam
159 Lincoln Street #10
Westbrook, ME 04092

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WITH A COPY TO: Alan E. Wolf, Esq.
Law Office of Alan E. Wolf
P.O. Box 1292
Portland, ME 04104-1292

TO BUYER: Mr. Peter R. Bouchard
25 Ledge Road
Cumberland Foreside, ME 04110

WITH A COPY TO: Paul F. Driscoll, Esq.
Norman, Hanson & DeTroy, LLC
Two Canal Plaza
P.O. Box 4600
Portland, ME 04112-4600

Either party may change its address for the purposes of this subparagraph by giving the other party notice of the new address in accordance with this Paragraph 13.

(c) Binding Effect. This Agreement will inure to the benefit of, and bind, the respective successors and assigns of the Seller and the Buyer.

(d) Construction. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof. It is hereby agreed that all provisions and representations set forth in this Agreement shall survive Closing.

(e) Counterparts/Facsimile Signatures. This Agreement may be simultaneously executed in any number of counterparts, each of which when so executed and delivered shall be an original, but such counterparts shall constitute one and the same instrument. This Agreement may be transmitted between the parties by facsimile and signatures appearing on such facsimile documents shall be treated as original signatures.

(f) Effective Date. The Effective Date of this Agreement shall be deemed to be the date first above written herein.

(g) Further Assurances. In addition to the actions recited herein and contemplated to be performed, executed and delivered by each party, each party shall perform, execute and deliver or cause to be performed, executed and delivered at the Closing or thereafter any and all further acts, deeds and assurances as the other party or the Escrow Agent may reasonably require to consummate or evidence the consummation of the transaction contemplated herein.

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(h) Invalid Provision. If any provision of this Agreement is held to be illegal, invalid or unenforceable under present or future laws, and if such provision is not essential to the effectuation of the basic purposes of this Agreement, such provision shall be fully severable, this Agreement shall be construed and enforced as if such illegal, invalid or unenforceable provision had never been a part of this Agreement, and the remaining provisions of this Agreement shall remain in full force and effect.

(i) No Waiver. The waiver by either party of the performance of any covenant, condition or promise shall not invalidate this Agreement, nor shall it be construed as a waiver of any other covenant, condition or promise herein. The waiver by any party of the time for performing any act shall not constitute a waiver of the time for performing any other act or any incidental act required to be performed at a later time. The delay or forbearance by either party in exercising any remedy or right, the time for the exercise of which is not specifically and expressly limited or specified in this Agreement shall not be considered a waiver of or an estoppel against the later exercise of such remedy or right.

16. AGREEMENT OF ESCROW AGENT. By executing this Agreement, Escrow Agent agrees to hold the Deposit in its non-interest bearing client trust account, which Deposit shall be disbursed in accordance with the terms of this Agreement.

17. MEDIATION. Any dispute or claim arising out of or relating to this contract or the property addressed in this contract shall be submitted to non-binding mediation a mutually acceptable mediator, with mediation to take place in Portland, Maine. Buyer and Seller are bound to mediate in good faith and pay their respective mediation fees. If a party does not agree first to go to mediation, then that party will be liable for the other party's legal fees in any subsequent litigation regarding that same matter in which the party who refused to go to mediation loses in that subsequent litigation. This clause shall survive the closing of the transaction.

IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement as of the date first above written.

HARLEQUIN LLC

DocuSigned by:
By: Elisabeth Galtz 6/19/2017
[redacted]
Its _____

DocuSigned by:
Peter Bouchard 6/19/2017
[redacted]
Peter R. Bouchard

DS EG DS PB

ESCROW AGENT:

Scott Balfour

MAGNUSSON BALFOUR

By: [signature]

Its pres

DS EG DS PB

DocuSign Envelope ID: 58B5777C-41A7-456E-BC25-97091388F37F
DocuSign Envelope ID E2893310-8F8D-4FDA-9F0E-DE94EF70E883

EXHIBIT A – LEGAL DESCRIPTION

A certain lot or parcel of land located at 300 Allen Avenue in Portland, County of Cumberland and State of Maine being the lot of land delineated on the Plan of Existing Conditions and Boundary Survey made by Gorrill-Palmer Consulting Engineers dated June 6, 2003 and recorded in the Cumberland County Registry of Deeds in Plan Book 203, Page 461 and being more particularly described as follows:

Beginning at a ½ inch iron pipe found driven into the earth on the northwesterly sideline of Allen Avenue at the easterly corner of land now or formerly of Bernice E. Knox as described in a deed recorded in the Registry in Book 6312, Page 216; thence:

1. N 29° 52' 27" W a distance of Two Hundred Ninety-Two and 69/100 (292.69) feet by said Knox and land now or formerly of Garry J. Smith and Jane H. Smith as described in a deed recorded in the Registry in Book 18761, Page 72, by Short Street as delineated on a certain plan of The Homesteads dated September 1921 and recorded in Plan Book 14, Page 70, and by land now or formerly of David O. Dulac as described in a deed recorded in the Registry in Book 3274, Page 194 to a ½ inch iron pipe found driven into the earth; thence

2. N 48° 24' 37" E a distance of Sixty-One and 25/100 (61.25) feet by said Dulac and Hennessy Drive as delineated on the aforesaid plan of The Homesteads to a capped 5/8 inch rebar, P.L.S. No. 492, and land now or formerly of Davidson Realty, LLC as described in a deed recorded in the Registry in Book 14746, Page 29; thence

3. N 53° 28' 39" E a distance of Seventy-Two and 07/100 (72.07) feet by said Davidson Realty, LLC to a capped 5/8 inch rebar, P.L.S. No. 492; thence

4. S 27° 48' 17" E a distance of Thirty-Six and 77/100 (36.77) feet by said Davidson Realty, LLC to a capped 5/8 inch rebar, P.L.S. No. 492, and land now or formerly of John Matthews as described in a deed recorded in the Registry in Book 14756, Page 121; thence

5. S 28° 52' 57" E a distance of Thirty-Six and 77/100 (36.77) feet by said John Matthews to a capped 5/8 inch rebar, P.L.S. No. 492; thence

6. S 28° 51' 14" E a distance of Two Hundred and 21/100 (200.21) feet by said John Matthews to a six inch square monument on the northwesterly sideline of Allen Avenue; thence

7. S 47° 43' 50" W a distance of Six and 11/100 (6.11) feet by said Allen Avenue to an angle point on the northwesterly sideline of Allen Avenue; thence

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DocuSign Envelope ID: E2893310-8F8D-4FDA-9F0E-DE94EF70E883

8. S 42° 11' 20" W a distance of One Hundred Twenty-Six and 20/100 (126.20) feet by said Allen Avenue to the point of beginning.

Said premises are conveyed subject to an easement of sewer given by Mary J. Wilson to the Portland Home Building Association by deed recorded in the Registry in Book 1111, Page 300.

The use and enjoyment of said premises are subject to a restrictive covenant which shall remain in effect for a period of ninety-nine (99) years and shall commence on August 22, 2003 and shall terminate on August 22, 2102. Said restrictive covenant shall prevent the operation of a real estate brokerage practice from being conducted on the premises.

Said parcel contains 36, 44 3 sq. ft. and is the same parcel conveyed to Northgate Plaza Associates, LLC by Warranty Deed of OPM, Inc. recorded in the Cumberland County Registry of Deeds in Book 18718, Page 120. Bearings are referenced to Magnetic North.

Being the same premises conveyed by Robert L. Adam to Harlequin LLC by Warranty Deed dated August 11, 2004 and recorded in the Cumberland County Registry of Deeds in Book 21661, Page 282.

DS EG DS PB

MAINE REAL ESTATE TAX-Paid

DLN:1001840019574

DEED OF SALE BY PERSONAL REPRESENTATIVE

That, **DANIEL A. TIRRELL**, duly appointed and Personal Representative of the **Estate of BERNICE E. KNOX**, deceased (testate), as shown by the probate records of the County of Cumberland, Maine (docket #2017-1417), and having given notice to each person succeeding to an interest in the real property described below at least ten (10) days prior to the sale, by the power conferred by the Maine Probate Code, and every other power, for consideration paid, grants to **ESTELLE ESTATES, LLC,** a Maine Limited Liability Company, whose mailing address is 39 Darling Avenue, South Portland, Maine, all of the decedent's interest in the premises located in the City of Portland, County of Cumberland and State of Maine, being more particularly described in Exhibit A attached hereto and made a part hereof.

WITNESS my hand this 19 day of January, 2018.

Witness

DANIEL A. TIRRELL
Personal Representative of the
Estate of Bernice E. Knox, deceased

State of Maine
County of Cumberland

On January 19, 2018, then personally appeared the above-named **DANIEL A. TIRRELL,** in his capacity as Personal Representative of the Estate of Bernice E. Knox and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Notary Public/Attorney
Name:

Charles H. McLaughlin
Attorney At Law

DOC :3015 BK:34605 PG:339
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
01/19/2018, 12:05:47P
Register of Deeds Nancy A. Lane E-RECORDED

File Number: **17-1129**

EXHIBIT "A"

LEGAL DESCRIPTION

PARCEL ONE

A certain lot or parcel of land situated in Portland, County of Cumberland, State of Maine, being **Lot No. 50** on a plan of "The Holmsteads," made by E. C. Jordan, C.E. dated September, 1921, recorded in the Cumberland County Registry of Deeds in Plan Book 14, Page 70, to which reference may be had for a more particular description.

PARCEL TWO

Also a certain lot or parcel of land with the buildings thereon, situated on the northerly side of Allen Avenue in said Portland, bounded and described as follows:

Commencing at the westerly corner of land now or formerly of Cyrus Abbott; thence westerly along said Allen Avenue seventy-five (75) feet; thence northerly on a line parallel with the westerly line of said Abbott's land one hundred thirty-five (135) feet; thence easterly on a line parallel with said road to said westerly line of said Abbott's land; thence southerly by said Abbott's land to the point of beginning. Containing ten thousand one hundred twenty-five (10,125) square feet.

PARCEL THREE

Also another certain lot or parcel of land situated in said Portland, being **Lot No. 51** on a "Plan of The Holmsteads" made by E. C. Jordan, C. E., dated September, 1921, and recorded in the Cumberland County Registry of Deeds in Plan Book 14, Page 70 to which reference may be had for a more particular description.

Being the same premises conveyed to Bernice E. Knox by deed dated October 29, 1983 and recorded in the Cumberland County Registry of Deeds in Book 6312, Page 216 and by deed dated December 14, 1999 and recorded in said Registry in Book 15223, Page 810. Bernice E. Knox died on September 22, 2017.

Sullivan Bill

From: Craig Church <cchurch@balfourcommercial.com>
Sent: Tuesday, January 9, 2018 3:59 PM
To: Sullivan Bill
Subject: RE: 300 Allen Ave & Hope Ave

Hi Bill,

Thanks for the heads up I had just got off the phone with Alan Wolfe and he suggested that I send you an email stating that I was in receipt of the $10,000 for the extension of closing for up to 60 days for Allen Ave. Good to see great minds think alike.

Look forward to the feedback.

Craig S. Church
Commercial & Business Broker
Cell (207) 318-6498
cchurch@balfourcommercial.com

Magnusson Balfour
COMMERCIAL & BUSINESS BROKERS

95 India Street
Portland, Maine 04101
Office (207) 774-7715 x 102
Fax (207) 879-9102
www.balfourcommercial.com

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---

From: Sullivan Bill [mailto:bill@sullivanmulti.com]
Sent: Tuesday, January 09, 2018 3:32 PM
To: Craig Church <cchurch@balfourcommercial.com>
Cc: Cindy Kueck <cindy@sullivanmulti.com>
Subject: RE: 300 Allen Ave & Hope Ave

Craig,
I will be meeting with Peter tomorrow and will give you a full report no later than Thursday. I also would like to take the time to put in writing that the $10,000 non-refundable check that I dropped off on Friday was to extend the closing date by 60 days for 300 Allen per the purchase and sale agreement.
Thanks,

Bill Sullivan
Broker

A Division of Keller Williams Realty
50 Sewall Street 2nd Flr
Portland, ME 04102
207-771-5556 Office
207-773-4647 Fax
www.sullivanmulti.com
www.sullivanmgmt.com

From: Craig Church [mailto:cchurch@balfourcommercial.com]
Sent: Tuesday, January 9, 2018 12:11 PM
To: Sullivan Bill <bill@sullivanmulti.com>
Subject: 300 Allen Ave & Hope Ave

Hi Bill,

Can you please detailed feedback as to where we stand on permitting for both properties.

Craig S. Church
Commercial & Business Broker
Cell (207) 318-6498
cchurch@balfourcommercial.com

Magnusson Balfour
COMMERCIAL & BUSINESS BROKERS

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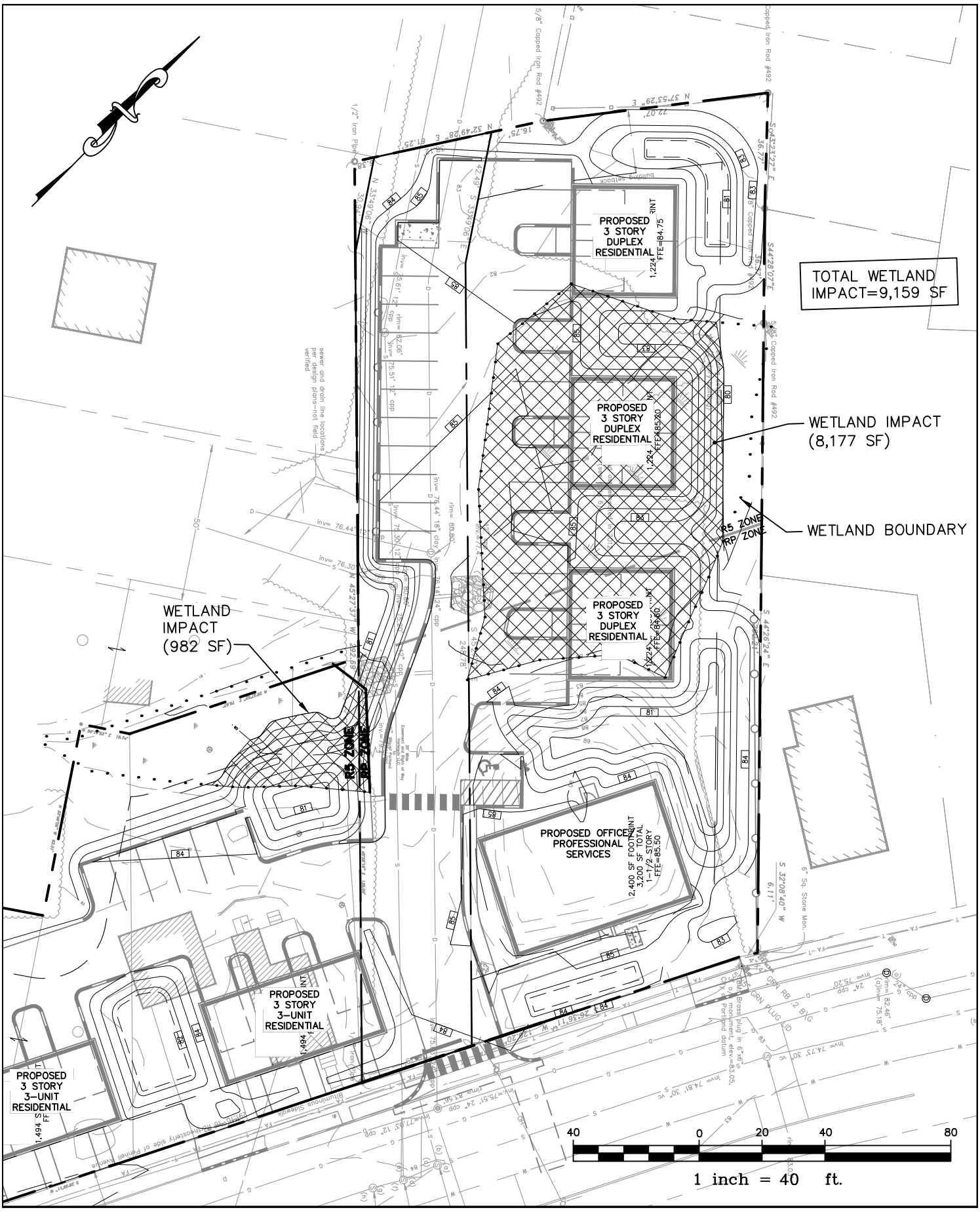
6. Figure #1: Wetland Impact



Design: DJG	Date: MARCH 2018
Draft: CG	Job No.: 801.06
Checked: DER	Scale: 1" = 40'
File Name: 801-06-WetImp.dwg	

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207.772.2515

Drawing Name:
Wetland Impact

Project:
300 Allen Ave, Portland, ME

Figure No.
1

7. MHPC Letter & Response

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

April 5, 2018

Mr. Kirk F. Mohney
Director and State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, State House Station 65
Augusta, ME 04333

Subject: Presence of Historical Areas
300 Allen Ave Development – Portland, Maine

Dear Mr. Mohney:

Estelle Estates, LLC has retained Gorrill Palmer to prepare design plans and permit modifications for the construction of three duplex residential units, two triplex residential units, and a professional office building with associated infrastructure on Lot E006, Tax Map 344 in Portland, Maine. The permit applications will include permitting for the addition of the residential units and parking. The attached Figure shows the project location.

As part of the Natural Resource Protection Act Tier 1 permit application, Gorrill Palmer requests information from MHPC relative to the presence of any nearby structure or area with historical, architectural or archeological significance as defined by the National Historic Preservation Act of 1966.

Thank you for your consideration. If you have any questions regarding the proposed project, please contact our office at (207) 772-2515. Your response may be mailed to our office or emailed to dgagnon@gorrillpalmer.com

Sincerely,

Gorrill Palmer

Drew Gagnon, EI
Project Engineer

Enclosure

DJG/djgU:\3270 - Mt. Ararat High School - PDT - Land Development Services\P Applications\State\MDEP\NRPA\Baseball and Athletic Fields\Mohney_3-30-17 Cover Letter to MHPC.doc

801.06/p

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

April 4, 2018

Mr. David Vitali
Gorrill Palmer
707 Sable Oaks Drive, Suite 30
South Portland, ME 04106

APR 09 2018

Project: MHPC #0376-18 Estelle Estates LLC; 300 Allen Avenue
Mixed Use Development

Town: Portland, ME

Dear Mr. Vitali:

In response to your recent request, I have reviewed the information received March 26, 2018 to initiate consultation on the above referenced project.

In order to continue consultation, please provide photographs of any buildings 50 years or older on or adjacent to the proposed project. In addition, please provide plans of the proposed development, if available.

We look forward to continuing the consultation with you. If you have any questions regarding this matter, please contact Megan M. Hopkin of this office with questions at megan.m.hopkin@maine.gov.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132 FAX: (207) 287-2335

8. Drawing #1: Wetland Impact Plan

PROPOSED 3 STORY 3-UNIT RESIDENTIAL

PROPOSED 3 STORY 3-UNIT RESIDENTIAL

WETLAND IMPACT (982 SF)

R5 ZONE

RP ZONE

PROPOSED OFFICE/ PROFESSIONAL SERVICES

PROPOSED 3 STORY DUPLEX RESIDENTIAL

PROPOSED 3 STORY DUPLEX RESIDENTIAL

PROPOSED 3 STORY DUPLEX RESIDENTIAL

R5 ZONE

RP ZONE

WETLAND BOUNDARY

WETLAND IMPACT (8,177 SF)

TOTAL WETLAND IMPACT=9,159 SF

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

DOUGLAS E. REYNOLDS No. 9886 LICENSED PROFESSIONAL ENGINEER

20 0 10 20 40

1 inch = 20 ft.

C:\CAD WORKING\801.06 - 300 Allen Ave\DWG\801-06-WetImp.dwg - Mar 29, 2018 - 10:46am

Rev.	Date	Revision
–	–	–

Issued For	Date	By
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJG	Draft: CG	Date: NOV 2017
Checked: DER	Scale: 1"=20'	Job No.: 801.06
File Name: 801-06-WetImp.dwg		

This plan shall not be modified without written permission from Gorrill-Palmer Consulting Engineers, Inc.(GPCEI). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GPCEI.

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207.772.2515

Drawing Name: **Wetland Impact Plan**

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. *1*

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

ESTELLE ESTATES LLC	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) FRESHWATER WETLAND ALTERATION
ONE COMMERCIAL BUILDING AND	)
FIVE RESIDENTIAL BUILDINGS	) WATER QUALITY CERTIFICATION
L-21567-TB-C-N (Approval)	) FINDINGS OF FACT AND ORDER

Project History: In Department Order #L-21567-TC-A-N, dated December 5, 2003, the Department approved filling 10,393 square feet of freshwater wetland associated with construction of a six-unit residential building and associated parking areas and driveway. The permit expired before the applicant could construct the project. In Department Order #L-21567-TC-B-N, dated September 7, 2006, approved the same project. The project was not constructed and the permit expired.

Project Description: The applicant proposes to alter 9,112 square feet of scrub shrub and wet meadow wetlands to construct a 2,400-square foot professional office/professional services building, two 1,944-square foot triplex residential buildings, three 1,224-square foot duplex residential buildings, along with associated parking, driveways, and stormwater structures. The project is shown on a plan titled "Wetland Impact Plan, Mixed Use Development, 300 Allen Ave., Portland, Maine for Estelle Estates, LLC, 39 Darling Avenue, South Portland, ME 04106," prepared by Gorrill Palmer, and dated November 2017 with a most recent revision date of June 7, 2018. The applicant has avoided wetland impacts by placing the proposed developed areas as far as possible to the southwest portion of the lot to avoid impacting the wetlands located on the northeast portion of the lot. The applicant minimized wetland impacts by steepening the proposed side slopes adjacent to wetlands from 3H:1V to 2H:1V, and by revising the layout of the parking associated with the duplex buildings. According to the Department's Geographic Information System (GIS), there are no mapped essential or significant wildlife habitats associated with the project site. The proposed project is located on a 1.27-acre lot at 292 and 300 Allen Avenue in the City of Portland.

Permit for:	[X]	Tier 1
DEP Decision:	[X]	Approved [ ] Denied (see attached letter)
CORPS Action:	[X]	The Corps has been notified of your application. The following are subject to Federal screening: (1) projects with previously authorized or unauthorized work, in combination with a Tier 1 permit for a single and complete project, which total more than 15,000 square feet of altered area; (2) projects with multiple state permits and/or state exemptions which apply to a single and complete project that total more than 15, 000 square feet of altered area; and (3) projects that may impact a vernal pool, as determined by the State of Maine or the Corps. If your activity is listed above, *Corps approval is required for your project*. For information regarding the status of your application contact the Corps' Maine Project Office at (207) 623-8367.

Standard Conditions:

1) If construction or operation of the activity is not begun within four (4) years from the date signed, this permit shall lapse and the applicant shall reapply to the Department for a new permit. This permit is transferable only with prior approval from the Department. If the activity is associated with a larger project, starting any aspect of that project constitutes start of construction.
2) The project shall be completed according to the plans in the application. Any change in the project plans must be reviewed and approved by the Department.
3) Properly installed erosion control measures shall be installed prior to beginning the project, and all disturbed soil should be stabilized immediately upon project completion.
4) A copy of this approval will be sent to the City of Portland. Department approval of your activity does not supersede or substitute the need for any necessary local approvals.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 18TH DAY OF JUNE, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Filed
JUN 18 2018
State of Maine
Board of Environmental Protection

BY: Mark Bergeron
For: Paul Mercer, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

CGW/L21567CN/ATS#83027

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. § 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error*. Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge*. If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

Traffic Assessment
Proposed Mixed Use Development – Portland, Maine
(JN 801.06)

Date: June 26, 2018
Subject: Traffic Assessment
Proposed Mixed Use Development – Portland, Maine
To: File
From: Randy Dunton / Jeff Pulver, Gorrill Palmer

Introduction

Gorrill Palmer (GP) has prepared this traffic evaluation for the proposed mixed used development on Route 100 (Allen Avenue) in Portland, Maine. The proposed project includes five three-story residential buildings with a total of 12 units and a 4,800 sf office building. The existing site has one residential building which is proposed to be razed. The site will be accessed via a proposed full movement access on Allen Avenue. The following is a summary of the methodology and results of the traffic assessment.

Trip Generation

To forecast the trip generation for the proposed site, GP used the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, Tenth Edition. Land Use Code (LUC) 221 – Multifamily Housing (Mid-Rise) and LUC 712 – Small Office Building were used to calculate trip generation for the residential units and the office building respectively. The trip generation has been based on 12 residential units and 4,800 sf of office space. The following summarizes the trip generation for the site:

Reduced Trip Generation Summary

	Trip Generation				
	AM Adj St	**AM Gen**	**PM Adj St**	**PM Gen**	**Sat Gen**
Multifamily Housing (Mid-Rise)	4	4	5	5	5
Small Office Building	9	16	12	18	7
Site Total	**13**	**20**	**17**	**23**	**12**

A trip end is defined as a trip into or out of the site, thus a round trip is equal to two trip ends. As shown in the table, the proposed site is forecast to generate 20 trip ends during the AM peak

hour of the generator and 23 trip ends during the PM peak hour of the generator. The trip generation is forecast to be less than 99 trip ends for all peak hours, which is the threshold for requiring a MaineDOT Traffic Movement Permit (TMP). Since the trip generation is less than the 99 trip end threshold, a MaineDOT TMP is not required at this time.

Trip Distribution

Based on ITE *Trip Generation*, Tenth Edition, LUC 221 – Multifamily Housing (Mid-Rise) and LUC 712 – Small Office Building, the following site trip distribution is anticipated:

- AM Peak Hour of the Adjacent Street: 9 in / 4 out
- AM Peak Hour of the Generator: 11 in / 9 out
- PM Peak Hour of the Adjacent Street: 7 in / 10 out
- PM Peak Hour of the Generator: 11 in / 12 out
- Saturday Peak Hour of the Generator: 7 in / 5 out

Crash History

GP obtained the most recent three-year collision history in the vicinity of the project from the MaineDOT (2015-2017). In order to evaluate whether a location has a high rate of crashes, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average **and**:

2. A minimum of eight crashes over the same three year period.

Based on the crash data provided by MaineDOT, there are no HCLs in the immediate vicinity of the site.

Sight Line Evaluation

GP completed a site visit to evaluate the sight distances at the proposed site access. The City of Portland requires that MaineDOT criteria be met. Basic sight line standards are as follows:

Standards for Sight Distance

Speed Limit (mph)	MaineDOT / City Requirement (ft)
25	200
30	250
35	305
40	360
45	425

The available sight distances have been evaluated in accordance with MaineDOT standards. The evaluation method is as follows:

Driveway observation point:	10 feet from edge of traveled way
Height of eye at driveway:	3 ½ feet above pavement
Height of approaching vehicle:	4 ¼ feet above pavement

The posted speed limit is 35 mph on the frontage road, which requires a MaineDOT and City of Portland sight distance of 305 feet. The following table summarizes the measured sight distances available at the existing and proposed site accesses:

Sight Distance Summary

Site Access	Available Sight Distance (ft)		
	Required	Looking Left	Looking Right
Allen Avenue Site Entrance	305	460+	460+

As shown in the table, the proposed access exceeds the sight distance requirements in both directions.

Conclusion

The following is a summary of the conclusions and recommendations:

1. The proposed site is forecast to generate 20 trip ends during the AM peak hour of the generator and 23 trip ends during the PM peak hour of the generator. This level of trip generation is less than the 99 trip end threshold to require a MaineDOT TMP, therefore a TMP is not required.

2. Based on the crash data provided by MaineDOT, there are no HCLs in the immediate vicinity of the site.

3. Based on the sight line evaluation, the site access exceeds MaineDOT sight distance requirements.

4. Overall this project is not forecast to have a significant impact on the adjacent roadway network.

JN:
Project Description:
Project Location:
Date:

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Single-Family Detached Housing
Land Use Code (LUC) 210

Dwelling Units: 1

Average Rate

Time Period	ITE Trip Rate		Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT
Weekday	T = 9.44 (X)	159	9	50%	50%	5	4
AM Peak Hour of Adj. Street Traffic	T = 0.74 (X)	173	1	25%	75%	0	1
PM Peak Hour of Adj. Street Traffic	T = 0.99 (X)	190	1	65%	35%	1	0
AM Peak Hour of Generator	T = 0.76 (X)	157	1	25%	75%	0	1
PM Peak Hour of Generator	T = 1.00(X)	165	1	65%	35%	1	0
Saturday	T = 9.54 (X)	52	10	50%	50%	5	5
Saturday Peak Hour of Gen.	T = 0.93 (X)	31	1	55%	45%	1	0

* Percentages rounded to nearest 5%

Fitted Curve Equation

Time Period	ITE Trip Rate		Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	
Weekday	Ln(T) = 0.92 Ln(X) + 2.71	159	15	50%	50%	8	7	0.95
AM Peak Hour of Adj. Street Traffic	T = 0.71 (X) + 4.80	173	6	25%	75%	2	4	0.89
PM Peak Hour of Adj. Street Traffic	Ln(T) = 0.96 Ln(X) + 0.20	190	1	65%	35%	1	0	0.92
AM Peak Hour of Generator	Ln(T) = 0.91 Ln(X) + 0.20	157	1	25%	75%	0	1	0.89
PM Peak Hour of Generator	Ln(T) = 0.94 Ln(X) + 0.34	165	1	65%	35%	1	0	0.92
Saturday	Ln(T) = 0.94 Ln(X) + 2.56	52	13	50%	50%	7	6	0.91
Saturday Peak Hour of Gen.	T = 0.84 (X) + 17.99	31	19	55%	45%	10	9	0.87

* Percentages rounded to nearest 5%

JN:
Project Description:
Project Location:
Date:

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Multifamily Housing (Low-Rise)
Land Use Code (LUC) 220

Dwelling Units: 12

Average Rate

Time Period	ITE Trip Rate	Sample Size	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	**T = 7.32 (X)**	**29**	**88**	**50%**	**50%**	**44**	**44**	**N/A**
Peak Hour of Adjacent Street Traffic 7-9 AM	**T = 0.46 (X)**	**42**	**6**	**25%**	**75%**	**2**	**4**	**N/A**
Peak Hour of Adjacent Street Traffic 4-6 PM	**T = 0.56 (X)**	**50**	**7**	**65%**	**35%**	**5**	**2**	**N/A**
AM Peak Hour of Generator	T = 0.56 (X)	36	7	30%	70%	2	5	N/A
PM Peak Hour of Generator	T = 0.67 (X)	35	8	60%	40%	5	3	N/A
Saturday	T = 8.41 (X)	5	101	50%	50%	51	50	N/A
Saturday Peak Hour of Gen.	T = 0.70 (X)	5	8	--	--	--	--	N/A

* Percentages rounded to nearest 5%

Fitted Curve Equation

Time Period	ITE Trip Rate	Sample Size	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 7.56 (X) - 40.86	29	106	50%	50%	53	53	0.96
Peak Hour of Adjacent Street Traffic 7-9 AM	Ln(T) = 0.95 Ln(X) - 0.51	42	6	25%	75%	2	4	0.9
Peak Hour of Adjacent Street Traffic 4-6 PM	Ln(T) = 0.89 Ln(X) - 0.02	50	9	65%	35%	6	3	0.86
AM Peak Hour of Generator	Ln(T) = 0.94 Ln(X) - 0.29	36	8	30%	70%	2	6	0.91
PM Peak Hour of Generator	T = 0.66 (X) + 1.41	35	9	60%	40%	5	4	0.94
Saturday	T = 14.01 (X) - 521.69	5	-354	50%	50%	-177	-177	0.93
Saturday Peak Hour of Gen.	T = 1.08 (X) - 33.24	5	-20	55%	45%	-11	-9	0.92

* Percentages rounded to nearest 5%

JN:
Project Description:
Project Location:
Date:

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Small Office Building
Land Use Code (LUC) 712

Gross Floor Area: 3,200

Average Rate

Time Period	ITE Trip Rate	Sample Size	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	**T = 16.19 (X)**	**17**	**52**	**50%**	**50%**	**26**	**26**	**N/A**
Peak Hour of Adjacent Street Traffic 7-9 AM	**T = 1.92 (X)**	**17**	**6**	**85%**	**15%**	**5**	**1**	**N/A**
Peak Hour of Adjacent Street Traffic 4-6 PM	**T = 2.45 (X)**	**17**	**8**	**30%**	**70%**	**2**	**6**	**N/A**
AM Peak Hour of Generator	T = 3.26 (X)	18	10	60%	40%	6	4	N/A
PM Peak Hour of Generator	T = 3.73 (X)	18	12	45%	55%	5	7	N/A
Saturday	Not Given	--	--	--	--	--	--	N/A
Saturday Peak Hour of Gen.	T = 0.40 (X)	1	1	50%	50%	1	0	N/A

* Percentages rounded to nearest 5%

Fitted Curve Equation

Time Period	ITE Trip Rate	Sample Size	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	Not Given	17	--	50%	50%	--	--	--
Peak Hour of Adjacent Street Traffic 7-9 AM	Not Given	17	--	85%	15%	--	--	--
Peak Hour of Adjacent Street Traffic 4-6 PM	Not Given	17	--	65%	35%	--	--	--
AM Peak Hour of Generator	Not Given	18	--	30%	70%	--	--	--
PM Peak Hour of Generator	Not Given	18	--	60%	40%	--	--	--
Saturday	Not Given	--	--	--	--	--	--	--
Saturday Peak Hour of Gen.	Not Given	1	--	50%	50%	--	--	--

* Percentages rounded to nearest 5%

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — These specifications are for USA standards only. Check with factory for Canadian specifications. Square Straight Steel is a general purpose light pole for up to 39-foot mounting heights. This pole provides a robust yet cost effective option for mounting area lights and floodlights.

CONSTRUCTION — Pole Shaft: The pole shaft is of uniform dimension and wall thickness and is made of a weldable-grade, hot-rolled, commercial-quality steel tubing with a minimum yield of 55 KSI (11-gauge, .1196"), or 50 KSI (7-gauge, .1793"). Shaft is one-piece with a full-length longitudinal high-frequency electric resistance weld. Uniformly square in cross-section with flat sides, small corner radii and excellent torsional qualities. Available shaft widths are 4", 5" and 6".

Pole Top: A flush non-metalic black top cap is provided for all poles that will receive drilling patterns for side-mount luminaire arm assemblies or when ordered with PT option.

Handhole: A reinforced handhole with grounding provision is provided at 18" from the base on side A. Positioning the handhole lower may not be possible and requires engineering review; consult Tech Support-Outdoor for further information. Every handhole includes a cover and cover attachment hardware. The handhole has a nominal dimension of 2.5" x 5".

Base Cover: A durable ABS plastic two-piece full base cover, finished to match the pole, is provided with each pole assembly. Additional base cover options are available upon request.

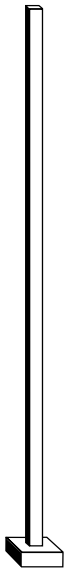
Anchor Base/ Bolts: Anchor base is fabricated from steel that meets ASTM A36 standards and can be altered to match existing foundations; consult factory for modifications. Anchor bolts are manufactured to ASTM F1554 Standards grade 55, (55 KSI minimum yield strength and tensile strength of 75-95 KSI). Top threaded portion (nominal 12") is hot-dipped galvanized per ASTM A-153.

HARDWARE – All structural fasteners are high-strength galvanized carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.

FINISH – Extra durable standard powder-coat finishes include Dark Bronze, White, Black, Medium Bronze and Natural Aluminum colors. Classic finishes include Sandstone, Charcoal Gray, Tennis Green, Bright Red and Steel Blue colors. Architectural Colors and Special Finishes are available by quote and include, but are not limited to Hot-dipped Galvanized, Paint over Hot-dipped Galvanized, RAL Colors, Custom Colors and Extended Warranty Finishes. Factory-applied primer paint finish is available for customer field-paint applications.

WARRANTY — 1-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

NOTE: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.



Anchor Base Poles

SSS

SQUARE STRAIGHT STEEL

See footnotes next page.

SSS Square Straight Steel Poles

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example:** SSS 20 5C DM19 DDB

SSS						
Series	**Nominal fixture mounting height**	**Nominal shaft base size/wall thickness[1]**	**Mounting[2]**		**Options**	**Finish[10]**
SSS	10'-39' (for 1/2 ft increments, add -6 to the pole height. Ex: 20-6 equals 20ft 6in.) See technical information table for complete ordering information.)	4C 4" 11g (.1196") 4G 4" 7g (.1793") 5C 5" 11g (.1196") 5G 5" 7g (.1793") 6G 6" 7g (.1793") See technical information table for complete ordering information.)	Tenon mounting PT Open top (includes top cap) T20 2-3/8" O.D. (2" NPS) T25 2-7/8" O.D. (2-1/2" NPS) T30 3-1/2" O.D. (3" NPS) T35 4" O.D. (3-1/2" NPS) KAC/KAD/KSE/KSF/KVR/KVF Drill mounting[3] DM19 1 at 90° DM28 2 at 180° DM28 PL 2 at 180° with one side plugged DM29 2 at 90° DM39 3 at 90° DM49 4 at 90° CSX/DSX/AERIS™/OMERO™/HLA/KAX Drill mounting[3] DM19AS 1 at 90° DM28AS 2 at 180° DM29AS 2 at 90° DM39AS 3 at 90° DM49AS 4 at 90°	AERIS™ Suspend drill mounting[3,4] DM19AST_ 1 at 90° DM28AST_ 2 at 180° DM29AST_ 2 at 90° DM39AST_ 3 at 90° DM49AST_ 4 at 90° OMERO™ Suspend drill mounting[3,4] DM19MRT_ 1 at 90° DM28MRT_ 2 at 180° DM29MRT_ 2 at 90° DM39MRT_ 3 at 90° DM49MRT_ 4 at 90°	Shipped installed L/AB Less anchor bolts (Include when anchor bolts are not needed) VD Vibration damper TP Tamper resistant handhole cover fasteners HAxy Horizontal arm bracket (1 fixture)[5,6] FDLxy Festoon outlet less electrical[5] CPL12/xy 1/2" coupling[5] CPL34/xy 3/4" coupling[5] CPL1/xy 1" coupling[5] NPL12/xy 1/2" threaded nipple[5] NPL34/xy 3/4" threaded nipple[5] NPL1/xy 1" threaded nipple[5] EHHxy Extra handhole[5,7] MAEX Match existing[8] USPOM United States point of manufacture[9] IC Interior coating[10] UL UL listed with label (Includes NEC compliant cover) NEC NEC 410.30 compliant gasketed handhole (Not UL Labeled) Shipped separately (replacement kit available) (blank) FBC Full base cover (plastic) (blank) TC Top cap (blank) HHC Handhole cover	Standard colors DDBXD Dark bronze DWHXD White DBLXD Black DMBXD Medium bronze DNAXD Natural aluminum Classic colors DSS Sandstone DGC Charcoal gray DTG Tennis green DBR Bright red DSB Steel blue Architectural Colors and Special Finishes[11] Galvanized, Paint over Galvanized, RAL Colors, Custom Colors and Extended Warranty Finishes available.

NOTES:

1. Wall thickness will be signified with a "C" (11 Gauge) or a "G" (7-Gauge) in nomenclature. "C" - 0.1196" | "G" - 0.1793".
2. PT open top poles include top cap. When ordering tenon mounting and drill mounting for the same pole, follow this example: DM28/T20. The combination includes a required extra handhole.
3. Refer to the fixture spec sheet for the correct drilling template pattern and orientation compatibility.
4. Insert "1" or "2" to designate fixture size; e.g. DM19AST**2**.
5. Specify location and orientation when ordering option.
   For "x": Specify the height above the base of pole in feet or feet and inches; separate feet and inches with a "-".
   Example: 5ft = 5 and 20ft 3in = 20-3
   For "y": Specify orientation from handhole (A,B,C,D)
   Refer to the Handhole Orientation diagram below.
   Example: 1/2" coupling at 5'8 ", orientation C = CPL12/5-8C
6. Horizontal arm is 18" x 2-3/8" O.D. tenon standard, with radius curve providing 12" rise and 2-3/8" O.D. If ordering two horizontal arm at the same height, specify with HAxyy. Example: HA20BD.
7. Combination of tenon-top and drill mount includes extra handhole.
8. Must add original order number of existing pole(s).
9. Use when mill certifications are required.
10. Provides enhanced corrosion resistance.
11. Additional colors available; see www.lithonia.com/archcolors or Architectural Colors brochure (Form No. 794.3). Available by formal quote only, consult factory for details.

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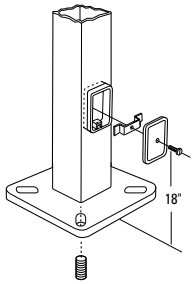
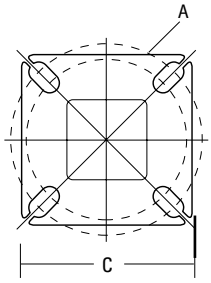
TECHNICAL INFORMATION — EPA (ft2) with 1.3 gust														
Catalog Number	Nominal Shaft Length (ft.)*	Pole Shaft Size (Base in. x Top in. x ft.)	Wall thick (in)	Gauge	EPA (ft^2) with 1.3 gust						Bolt circle (in)	Bolt size (in. x in. x in.)	Approximate ship weight (lbs.)
					80 MPH	Max. weight	90 MPH	Max. weight	100 MPH	Max. weight			
SSS 10 4C	10	4.0 x 10.0	0.1196	11	30.6	765	23.8	595	18.9	473	8--9	3/4 x 18 x 3	75
SSS 12 4C	12	4.0 x 12.0	0.1196	11	24.4	610	18.8	470	14.8	370	8--9	3/4 x 18 x 3	90
SSS 14 4C	14	4.0 x 14.0	0.1196	11	19.9	498	15.1	378	11.7	293	8--9	3/4 x 18 x 3	100
SSS 16 4C	16	4.0 x 16.0	0.1196	11	15.9	398	11.8	295	8.9	223	8--9	3/4 x 18 x 3	115
SSS 18 4C	18	4.0 x 18.0	0.1196	11	12.6	315	9.2	230	6.7	168	8--9	3/4 x 18 x 3	125
SSS 20 4C	20	4.0 x 20.0	0.1196	11	9.6	240	6.7	167	4.5	150	8--9	3/4 x 18 x 3	140
SSS 20 4G	20	4.0 x 20.0	0.1793	7	14	350	11	275	8	200	8--9	3/4 x 30 x 3	198
SSS 20 5C	20	5.0 x 20.0	0.1196	11	17.7	443	12.7	343	9.4	235	10--12	1 x 36 x 4	185
SSS 20 5G	20	5.0 x 20.0	0.1793	7	28.1	703	21.4	535	16.2	405	10--12	1 x 36 x 4	265
SSS 25 4C	25	4.0 x 25.0	0.1196	11	4.8	150	2.6	100	1	50	8--9	3/4 x 18 x 3	170
SSS 25 4G	25	4.0 x 25.0	0.1793	7	10.8	270	7.7	188	5.4	135	8--9	3/4 x 30 x 3	245
SSS 25 5C	25	5.0 x 25.0	0.1196	11	9.8	245	6.3	157	3.7	150	10--12	1 x 36 x 4	225
SSS 25 5G	25	5.0 x 25.0	0.1793	7	18.5	463	13.3	333	9.5	238	10--12	1 x 36 x 4	360
SSS 30 4G	30	4.0 x 30.0	0.1793	7	6.7	168	4.4	110	2.6	65	8--9	3/4 x 30 x 3	295
SSS 30 5C	30	5.0 x 30.0	0.1196	11	4.7	150	2	50	--	--	10--12	1 x 36 x 4	265
SSS 30 5G	30	5.0 x 30.0	0.1793	7	10.7	267	6.7	167	3.9	100	10--12	1 x 36 x 4	380
SSS 30 6G	30	6.0 x 30.0	0.1793	7	19	475	13.2	330	9	225	11--13	1 x 36 x 4	520
SSS 35 5G	35	5.0 x 35.0	0.1793	7	5.9	150	2.5	100	--	--	10--12	1 x 36 x 4	440
SSS 35 6G	35	6.0 x 35.0	0.1793	7	12.4	310	7.6	190	4.2	105	11--13	1 x 36 x 4	540
SSS 39 6G	39	6.0 x 39.0	0.1793	7	7.2	180	3	75	--	--	11--13	1 x 36 x 4	605

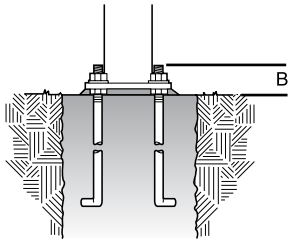
* EPA values are based ASCE 7-93 wind map. For 1/2 ft increments, add -6 to the pole height. Ex: 20-6 equals 20ft 6in.

BASE DETAIL

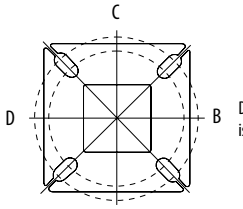


POLE DATA								
Shaft base size	Bolt circle A	Bolt projection B	Base diameter C	Base plate thickness	Template description	Anchor bolt description	Anchor bolt and template number	Anchor bolt description
4"C	8" – 9"	3.25"- 3.75"	8"- 8.25"	0.75"	ABTEMPLATE PJ50004	AB18-0	ABSSS-4C	3/4"x18"x3"
4"G	8" – 9"	3.38"- 3.75"	8"- 8.25"	0.875"	ABTEMPLATE PJ50004	AB30-0	ABSSS-4G	3/4"x30"x3"
5"	10" – 12"	3.5"- 4"	11"	1"	ABTEMPLATE PJ50010	AB36-0	ABSSS-5	1"x36"x4"
6"	11" – 13"	4"- 4.50"	12.5"	1"	ABTEMPLATE PJ50011	AB36-0	N/A	1"x36"x4"





HANDHOLE ORIENTATION



Default DM19 is on side B.

IMPORTANT INSTALLATION NOTES:

- **Do not** erect poles without having fixtures installed.
- Factory-supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claim for incorrect anchorage placement due to failure to use Lithonia Lighting factory templates.
- If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage.
- Lithonia Lighting is not responsible for the foundation design.

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D-Series Size 0
LED Area Luminaire

Catalog Number

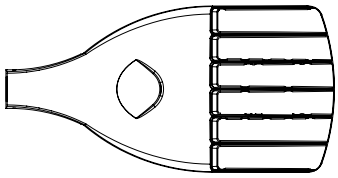
Notes

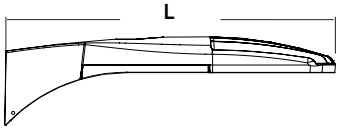
Type

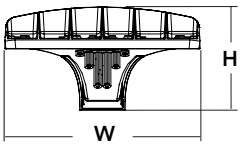
Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	0.95 ft² (.09 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)







A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** P1 P4 P7 P2 P5 P3 P6 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted[2]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[2,3] LCCO Left corner cutoff[2,3] RCCO Right corner cutoff[2,3]	MVOLT[4,5] 120[6] 208[5,6] 240[5,6] 277[6] 347[5,6,7] 480[5,6,7]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[8] RPUMBA Round pole universal mounting adaptor[8] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9]

Control options

Shipped installed

NLTAIR2	nLight AIR generation 2 enabled[10]
PER	NEMA twist-lock receptacle only (control ordered separate)[11]
PER5	Five-wire receptacle only (control ordered separate)[11,12]
PER7	Seven-wire receptacle only (control ordered separate)[11,12]
DMG	0-10V dimming extend out back of housing for external control (control ordered separate)
PIR	Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[5,13,14]
PIRH	Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[5,13,14]
PIRHN	Network, Bi-Level motion/ambient sensor[15]
PIR1FC3V	Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[5,13,14]
PIRH1FC3V	Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[5,13,14]
BL30	Bi-level switched dimming, 30%[5,16,17]
BL50	Bi-level switched dimming, 50%[5,16,17]
PNMTDD3	Part night, dim till dawn[5,18]
PNMT5D3	Part night, dim 5 hrs[5,18]
PNMT6D3	Part night, dim 6 hrs[5,18]
PNMT7D3	Part night, dim 7 hrs[5,18]
FAO	Field adjustable output[19]

Other options

Shipped installed

HS	House-side shield[20]
SF	Single fuse (120, 277, 347V)[6]
DF	Double fuse (208, 240, 480V)[6]
L90	Left rotated optics[1]
R90	Right rotated optics[1]
DDL	Diffused drop lens[20]

Shipped separately

BS	Bird spikes[21]
EGS	External glare shield[21]

Finish *(required)*

DDBXD	Dark bronze
DBLXD	Black
DNAXD	Natural aluminum
DWHXD	White
DDBTXD	Textured dark bronze
DBLBXD	Textured black
DNATXD	Textured natural aluminum
DWHGXD	Textured white

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Ordering Information

Accessories

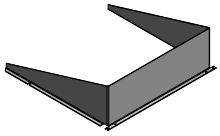
Ordered and shipped separately.

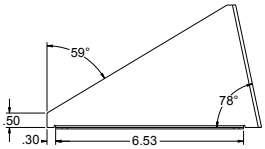
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [22]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [22]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [22]
DSHORT SBK U	Shorting cap [22]
DSX0HS 20C U	House-side shield for 20 LED unit [20]
DSX0HS 30C U	House-side shield for 30 LED unit [20]
DSX0HS 40C U	House-side shield for 40 LED unit [20]
DSX0DDL U	Diffused drop lens (polycarbonate) [20]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish) [23]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [8]

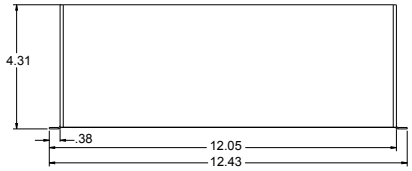
For more control options, visit DTL and ROAM online.

NOTES
1 P10, P11, P12 and P13 and rotated options (L90 or R90) only available together.
2 AMBPC is not available with BLC, LCCO, RCCO, P4, P7 or P13.
3 Not available with HS or DDL.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
7 Not available in P4, P7 or P13. Not available with BL30, BL50 or PNMT options.
8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
9 Must order fixture with SPA mounting. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
10 Must be ordered with PIRHN.
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
13 Reference Motion Sensor table on page 3.
14 Reference PER Table on page 3 to see functionality.
15 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
16 Requires (2) separately switched circuits.
17 Not available with 347V, 480V or PNMT. For PER5 or PER7 see PER Table on page 3. Requires isolated neutral.
18 Not available with 347V, 480V, BL30 and BL50. For PER5 or PER7 see PER Table on page 3. Separate Dusk to Dawn required.
19 Not available with other dimming controls options.
20 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
21 Must be ordered with fixture for factory pre-drilling.
22 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
23 For retrofit use only.

External Glare Shield

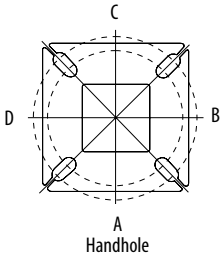




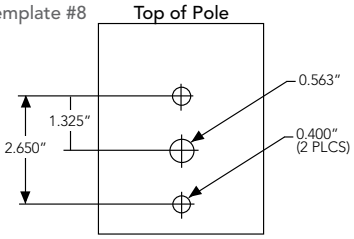


Drilling

HANDHOLE ORIENTATION



Template #8



Tenon Mounting Slipfitter **

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

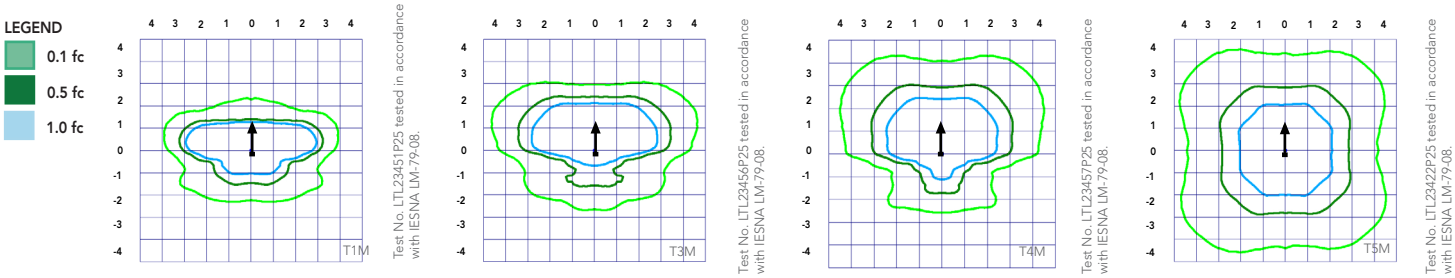
Pole drilling nomenclature: # of heads at degree from handhole (default side A)					
DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS
1 @ 90°	2 @ 280°	2 @ 90°	3 @ 120°	3 @ 90°	4 @ 90°
Side B	Side B & D	Side B & C	Round pole only	Side B, C, & D	Sides A, B, C, D
Note: Review luminaire spec sheet for specific nomenclature					

Pole top or tenon O.D.	4.5" @ 90°	4" @ 90°	3.5" @ 90°	3" @ 90°	4.5" @ 120°	4" @ 120°	3.5" @ 120°	3" @ 120°
DSX SPA	Y	Y	Y	N	-	-	-	-
DSX RPA	Y	Y	N	N	Y	Y	Y	Y
DSX SPUMBA	Y	N	N	N	-	-	-	-
DSX RPUMBA	N	N	N	N	Y	Y	Y	N
					*3 fixtures @120 require round pole top/tenon.			

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



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Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°F**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	25000	50000	100000
Lumen Maintenance Factor	0.96	0.92	0.85

Electrical Load

	Performance Package	LED Count	Drive Current	Wattage	Current (A)					
					120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	20	530	38	0.32	0.18	0.15	0.15	0.10	0.08
	P2	20	700	49	0.41	0.23	0.20	0.19	0.14	0.11
	P3	20	1050	71	0.60	0.37	0.32	0.27	0.21	0.15
	P4	20	1400	92	0.77	0.45	0.39	0.35	0.28	0.20
	P5	40	700	89	0.74	0.43	0.38	0.34	0.26	0.20
	P6	40	1050	134	1.13	0.65	0.55	0.48	0.39	0.29
	P7	40	1300	166	1.38	0.80	0.69	0.60	0.50	0.37
Rotated Optics (Requires L90 or R90)	P10	30	530	53	0.45	0.26	0.23	0.21	0.16	0.12
	P11	30	700	72	0.60	0.35	0.30	0.27	0.20	0.16
	P12	30	1050	104	0.88	0.50	0.44	0.39	0.31	0.23
	P13	30	1300	128	1.08	0.62	0.54	0.48	0.37	0.27

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min
*for use with Inline Dusk to Dawn or timer.						

PER Table						
Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✔	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	⊘	✔	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion (ROAM on/off only)	⊘	⚠	Wires Capped inside fixture	⚠	Wires Capped inside fixture	Wires Capped inside fixture
Future-proof*	⊘	⚠	Wired to dimming leads on driver	✔	Wired to dimming leads on driver	Wires Capped inside fixture
Future-proof* with Motion	⊘	⚠	Wires Capped inside fixture	✔	Wires Capped inside fixture	Wires Capped inside fixture

✔ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.

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Performance Data

Lumen Output

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Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20	530	**P1**	38W	T1S	4,369	1	0	1	115	4,706	1	0	1	124	4,766	1	0	1	125	2,541	1	0	1	73
				T2S	4,364	1	0	1	115	4,701	1	0	1	124	4,761	1	0	1	125	2,589	1	0	1	74
				T2M	4,387	1	0	1	115	4,726	1	0	1	124	4,785	1	0	1	126	2,539	1	0	1	73
				T3S	4,248	1	0	1	112	4,577	1	0	1	120	4,634	1	0	1	122	2,558	1	0	1	73
				T3M	4,376	1	0	1	115	4,714	1	0	1	124	4,774	1	0	1	126	2,583	1	0	1	74
				T4M	4,281	1	0	1	113	4,612	1	0	2	121	4,670	1	0	2	123	2,570	1	0	1	73
				TFTM	4,373	1	0	1	115	4,711	1	0	2	124	4,771	1	0	2	126	2,540	1	0	1	73
				T5VS	4,548	2	0	0	120	4,900	2	0	0	129	4,962	2	0	0	131	2,650	1	0	0	76
				T5S	4,552	2	0	0	120	4,904	2	0	0	129	4,966	2	0	0	131	2,690	1	0	0	77
				T5M	4,541	3	0	1	120	4,891	3	0	1	129	4,953	3	0	1	130	2,658	2	0	0	76
				T5W	4,576	3	0	2	120	4,929	3	0	2	130	4,992	3	0	2	131	2,663	2	0	1	73
				BLC	3,586	1	0	1	94	3,863	1	0	1	102	3,912	1	0	1	103					
				LCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77					
				RCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77					
20	700	**P2**	49W	T1S	5,570	1	0	1	114	6,001	1	0	1	122	6,077	2	0	2	124	3,144	1	0	1	70
				T2S	5,564	1	0	2	114	5,994	1	0	2	122	6,070	2	0	2	124	3,203	1	0	1	71
				T2M	5,593	1	0	1	114	6,025	1	0	1	123	6,102	1	0	1	125	3,141	1	0	1	70
				T3S	5,417	1	0	2	111	5,835	1	0	2	119	5,909	2	0	2	121	3,165	1	0	1	70
				T3M	5,580	1	0	2	114	6,011	1	0	2	123	6,087	1	0	2	124	3,196	1	0	1	71
				T4M	5,458	1	0	2	111	5,880	1	0	2	120	5,955	1	0	2	122	3,179	1	0	1	71
				TFTM	5,576	1	0	2	114	6,007	1	0	2	123	6,083	1	0	2	124	3,143	1	0	1	70
				T5VS	5,799	2	0	0	118	6,247	2	0	0	127	6,327	2	0	0	129	3,278	2	0	0	73
				T5S	5,804	2	0	0	118	6,252	2	0	0	128	6,332	2	0	1	129	3,328	2	0	0	74
				T5M	5,789	3	0	1	118	6,237	3	0	1	127	6,316	3	0	1	129	3,288	2	0	1	73
				T5W	5,834	3	0	2	119	6,285	3	0	2	128	6,364	3	0	2	130	3,295	2	0	1	73
				BLC	4,572	1	0	1	93	4,925	1	0	1	101	4,987	1	0	1	102					
				LCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76					
				RCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76					
20	1050	**P3**	71W	T1S	7,833	2	0	2	110	8,438	2	0	2	119	8,545	2	0	2	120					
				T2S	7,825	2	0	2	110	8,429	2	0	2	119	8,536	2	0	2	120					
				T2M	7,865	2	0	2	111	8,473	2	0	2	119	8,580	2	0	2	121					
				T3S	7,617	2	0	2	107	8,205	2	0	2	116	8,309	2	0	2	117					
				T3M	7,846	2	0	2	111	8,452	2	0	2	119	8,559	2	0	2	121					
				T4M	7,675	2	0	2	108	8,269	2	0	2	116	8,373	2	0	2	118					
				TFTM	7,841	2	0	2	110	8,447	2	0	2	119	8,554	2	0	2	120					
				T5VS	8,155	3	0	0	115	8,785	3	0	0	124	8,896	3	0	0	125					
				T5S	8,162	3	0	1	115	8,792	3	0	1	124	8,904	3	0	1	125					
				T5M	8,141	3	0	2	115	8,770	3	0	2	124	8,881	3	0	2	125					
				T5W	8,204	3	0	2	116	8,838	4	0	2	124	8,950	4	0	2	126					
				BLC	6,429	1	0	2	91	6,926	1	0	2	98	7,013	1	0	2	99					
				LCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73					
				RCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73					
20	1400	**P4**	92W	T1S	9,791	2	0	2	106	10,547	2	0	2	115	10,681	2	0	2	116					
				T2S	9,780	2	0	2	106	10,536	2	0	2	115	10,669	2	0	2	116					
				T2M	9,831	2	0	2	107	10,590	2	0	2	115	10,724	2	0	2	117					
				T3S	9,521	2	0	2	103	10,256	2	0	2	111	10,386	2	0	2	113					
				T3M	9,807	2	0	2	107	10,565	2	0	2	115	10,698	2	0	2	116					
				T4M	9,594	2	0	2	104	10,335	2	0	3	112	10,466	2	0	3	114					
				TFTM	9,801	2	0	2	107	10,558	2	0	2	115	10,692	2	0	2	116					
				T5VS	10,193	3	0	1	111	10,981	3	0	1	119	11,120	3	0	1	121					
				T5S	10,201	3	0	1	111	10,990	3	0	1	119	11,129	3	0	1	121					
				T5M	10,176	4	0	2	111	10,962	4	0	2	119	11,101	4	0	2	121					
				T5W	10,254	4	0	3	111	11,047	4	0	3	120	11,186	4	0	3	122					
				BLC	8,036	1	0	2	87	8,656	1	0	2	94	8,766	1	0	2	95					
				LCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71					
					5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71					

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Performance Data

Lumen Output

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Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	700	**P5**	89W	T1S	10,831	2	0	2	122	11,668	2	0	2	131	11,816	2	0	2	133					
				T2S	10,820	2	0	2	122	11,656	2	0	2	131	11,803	2	0	2	133					
				T2M	10,876	2	0	2	122	11,716	2	0	2	132	11,864	2	0	2	133					
				T3S	10,532	2	0	2	118	11,346	2	0	2	127	11,490	2	0	2	129					
				T3M	10,849	2	0	2	122	11,687	2	0	2	131	11,835	2	0	2	133					
				T4M	10,613	2	0	3	119	11,434	2	0	3	128	11,578	2	0	3	130					
				TFTM	10,842	2	0	2	122	11,680	2	0	2	131	11,828	2	0	2	133					
				T5VS	11,276	3	0	1	127	12,148	3	0	1	136	12,302	3	0	1	138					
				T5S	11,286	3	0	1	127	12,158	3	0	1	137	12,312	3	0	1	138					
				T5M	11,257	4	0	2	126	12,127	4	0	2	136	12,280	4	0	2	138					
				T5W	11,344	4	0	3	127	12,221	4	0	3	137	12,375	4	0	3	139					
				BLC	8,890	1	0	2	100	9,576	1	0	2	108	9,698	1	0	2	109					
				LCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81					
				RCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81					
40	1050	**P6**	134W	T1S	14,805	3	0	3	110	15,949	3	0	3	119	16,151	3	0	3	121	6,206	2	0	2	68
				T2S	14,789	3	0	3	110	15,932	3	0	3	119	16,134	3	0	3	120	6,322	2	0	2	69
				T2M	14,865	3	0	3	111	16,014	3	0	3	120	16,217	3	0	3	121	6,201	2	0	2	68
				T3S	14,396	3	0	3	107	15,509	3	0	3	116	15,705	3	0	3	117	6,247	1	0	2	69
				T3M	14,829	2	0	3	111	15,975	3	0	3	119	16,177	3	0	3	121	6,308	2	0	2	69
				T4M	14,507	2	0	3	108	15,628	3	0	3	117	15,826	3	0	3	118	6,275	1	0	2	69
				TFTM	14,820	2	0	3	111	15,965	3	0	3	119	16,167	3	0	3	121	6,203	1	0	2	68
				T5VS	15,413	4	0	1	115	16,604	4	0	1	124	16,815	4	0	1	125	6,671	2	0	0	73
				T5S	15,426	3	0	1	115	16,618	4	0	1	124	16,828	4	0	1	126	6,569	2	0	0	72
				T5M	15,387	4	0	2	115	16,576	4	0	2	124	16,786	4	0	2	125	6,491	3	0	1	71
				T5W	15,506	4	0	3	116	16,704	4	0	3	125	16,915	4	0	3	126	6,504	3	0	2	71
				BLC	12,151	1	0	2	91	13,090	1	0	2	98	13,255	1	0	2	99					
				LCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74					
				RCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74					
40	1300	**P7**	166W	T1S	17,023	3	0	3	103	18,338	3	0	3	110	18,570	3	0	3	112					
				T2S	17,005	3	0	3	102	18,319	3	0	3	110	18,551	3	0	3	112					
				T2M	17,092	3	0	3	103	18,413	3	0	3	111	18,646	3	0	3	112					
				T3S	16,553	3	0	3	100	17,832	3	0	3	107	18,058	3	0	3	109					
				T3M	17,051	3	0	3	103	18,369	3	0	3	111	18,601	3	0	3	112					
				T4M	16,681	3	0	3	100	17,969	3	0	3	108	18,197	3	0	3	110					
				TFTM	17,040	3	0	3	103	18,357	3	0	4	111	18,590	3	0	4	112					
				T5VS	17,723	4	0	1	107	19,092	4	0	1	115	19,334	4	0	1	116					
				T5S	17,737	4	0	2	107	19,108	4	0	2	115	19,349	4	0	2	117					
				T5M	17,692	4	0	2	107	19,059	4	0	2	115	19,301	4	0	2	116					
				T5W	17,829	5	0	3	107	19,207	5	0	3	116	19,450	5	0	3	117					
				BLC	13,971	2	0	2	84	15,051	2	0	2	91	15,241	2	0	2	92					
				LCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68					
					10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68					

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	**P10**	53W	T1S	6,727	2	0	2	127	7,247	3	0	3	137	7,339	3	0	3	138					
				T2S	6,689	3	0	3	126	7,205	3	0	3	136	7,297	3	0	3	138					
				T2M	6,809	3	0	3	128	7,336	3	0	3	138	7,428	3	0	3	140					
				T3S	6,585	3	0	3	124	7,094	3	0	3	134	7,183	3	0	3	136					
				T3M	6,805	3	0	3	128	7,331	3	0	3	138	7,424	3	0	3	140					
				T4M	6,677	3	0	3	126	7,193	3	0	3	136	7,284	3	0	3	137					
				TFTM	6,850	3	0	3	129	7,379	3	0	3	139	7,472	3	0	3	141					
				T5VS	6,898	3	0	0	130	7,431	3	0	0	140	7,525	3	0	0	142					
				T5S	6,840	2	0	1	129	7,368	2	0	1	139	7,461	2	0	1	141					
				T5M	6,838	3	0	1	129	7,366	3	0	2	139	7,460	3	0	2	141					
				T5W	6,777	3	0	2	128	7,300	3	0	2	138	7,393	3	0	2	139					
				BLC	5,626	2	0	2	106	6,060	2	0	2	114	6,137	2	0	2	116					
				LCCO	4,018	1	0	2	76	4,328	1	0	2	82	4,383	1	0	2	83					
				RCCO	4,013	3	0	3	76	4,323	3	0	3	82	4,377	3	0	3	83					
30	700	**P11**	72W	T1S	8,594	3	0	3	119	9,258	3	0	3	129	9,376	3	0	3	130					
				T2S	8,545	3	0	3	119	9,205	3	0	3	128	9,322	3	0	3	129					
				T2M	8,699	3	0	3	121	9,371	3	0	3	130	9,490	3	0	3	132					
				T3S	8,412	3	0	3	117	9,062	3	0	3	126	9,177	3	0	3	127					
				T3M	8,694	3	0	3	121	9,366	3	0	3	130	9,484	3	0	3	132					
				T4M	8,530	3	0	3	118	9,189	3	0	3	128	9,305	3	0	3	129					
				TFTM	8,750	3	0	3	122	9,427	3	0	3	131	9,546	3	0	3	133					
				T5VS	8,812	3	0	0	122	9,493	3	0	0	132	9,613	3	0	0	134					
				T5S	8,738	3	0	1	121	9,413	3	0	1	131	9,532	3	0	1	132					
				T5M	8,736	3	0	2	121	9,411	3	0	2	131	9,530	3	0	2	132					
				T5W	8,657	4	0	2	120	9,326	4	0	2	130	9,444	4	0	2	131					
				BLC	7,187	3	0	3	100	7,742	3	0	3	108	7,840	3	0	3	109					
				LCCO	5,133	1	0	2	71	5,529	1	0	2	77	5,599	1	0	2	78					
				RCCO	5,126	3	0	3	71	5,522	3	0	3	77	5,592	3	0	3	78					
30	1050	**P12**	104W	T1S	12,149	3	0	3	117	13,088	3	0	3	126	13,253	3	0	3	127					
				T2S	12,079	4	0	4	116	13,012	4	0	4	125	13,177	4	0	4	127					
				T2M	12,297	3	0	3	118	13,247	3	0	3	127	13,415	3	0	3	129					
				T3S	11,891	4	0	4	114	12,810	4	0	4	123	12,972	4	0	4	125					
				T3M	12,290	3	0	3	118	13,239	4	0	4	127	13,407	4	0	4	129					
				T4M	12,058	4	0	4	116	12,990	4	0	4	125	13,154	4	0	4	126					
				TFTM	12,369	4	0	4	119	13,325	4	0	4	128	13,494	4	0	4	130					
				T5VS	12,456	3	0	1	120	13,419	3	0	1	129	13,589	4	0	1	131					
				T5S	12,351	3	0	1	119	13,306	3	0	1	128	13,474	3	0	1	130					
				T5M	12,349	4	0	2	119	13,303	4	0	2	128	13,471	4	0	2	130					
				T5W	12,238	4	0	3	118	13,183	4	0	3	127	13,350	4	0	3	128					
				BLC	10,159	3	0	3	98	10,944	3	0	3	105	11,083	3	0	3	107					
				LCCO	7,256	1	0	3	70	7,816	1	0	3	75	7,915	1	0	3	76					
				RCCO	7,246	3	0	3	70	7,806	4	0	4	75	7,905	4	0	4	76					
30	1300	**P13**	128W	T1S	14,438	3	0	3	113	15,554	3	0	3	122	15,751	3	0	3	123					
				T2S	14,355	4	0	4	112	15,465	4	0	4	121	15,660	4	0	4	122					
				T2M	14,614	3	0	3	114	15,744	4	0	4	123	15,943	4	0	4	125					
				T3S	14,132	4	0	4	110	15,224	4	0	4	119	15,417	4	0	4	120					
				T3M	14,606	4	0	4	114	15,735	4	0	4	123	15,934	4	0	4	124					
				T4M	14,330	4	0	4	112	15,438	4	0	4	121	15,633	4	0	4	122					
				TFTM	14,701	4	0	4	115	15,836	4	0	4	124	16,037	4	0	4	125					
				T5VS	14,804	4	0	1	116	15,948	4	0	1	125	16,150	4	0	1	126					
				T5S	14,679	3	0	1	115	15,814	3	0	1	124	16,014	3	0	1	125					
				T5M	14,676	4	0	2	115	15,810	4	0	2	124	16,010	4	0	2	125					
				T5W	14,544	4	0	3	114	15,668	4	0	3	122	15,866	4	0	3	124					
				BLC	7919	3	0	3	62	8531	3	0	3	67	8639	3	0	3	67					
				LCCO	5145	1	0	2	40	5543	1	0	2	43	5613	1	0	2	44					
					5139	3	0	3	40	5536	3	0	3	43	5606	3	0	3	44					

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FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.95 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40

1 inch = 20 ft.

C:\CAD WORKING\801.06 – 300 Allen Ave\DWG\801-06-Z-FIRETRUCK.dwg – Jul 02, 2018 – 3:25pm

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE–APPLICATION MEETING	11/7/17	DER

Design: DJG	Draft: CG	Date: NOV 2017
Checked: DER	Scale: 1"=20'	Job No.: 801.06
File Name: 801-06-Z-FIRETRUCK.dwg		

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Drawing Name: **Autoturn Plan**

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. *1*

3D's ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY SHOW OPTIONAL OR SITE BUILT ITEMS. THEY ARE AN ARTISTIC INTERPRETATION OF THE GENERAL APPEARANCE AND NOT MEANT TO BE AN EXACT RENDITION. PLEASE REFER TO BUILDER CONTRACTS FOR PRODUCTS INCLUDED.

WESTCHESTER MODULAR HOMES, INC.

AN EMPLOYEE OWNED COMPANY

30 REAGANS MILL RD. WINGDALE, NY 12594

Tel (845)832-9400 Fax (845)832-6698

www.westchestermodular.com

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	7/17/2018
4	7/26/2018
4a	7/27/2018

HOME OWNER

SPEC

SITE

ALLEN AVE
PORTLAND, ME

BUILDER

SBHLLC

39 X 60 OFFICE BUILDING

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP: R3

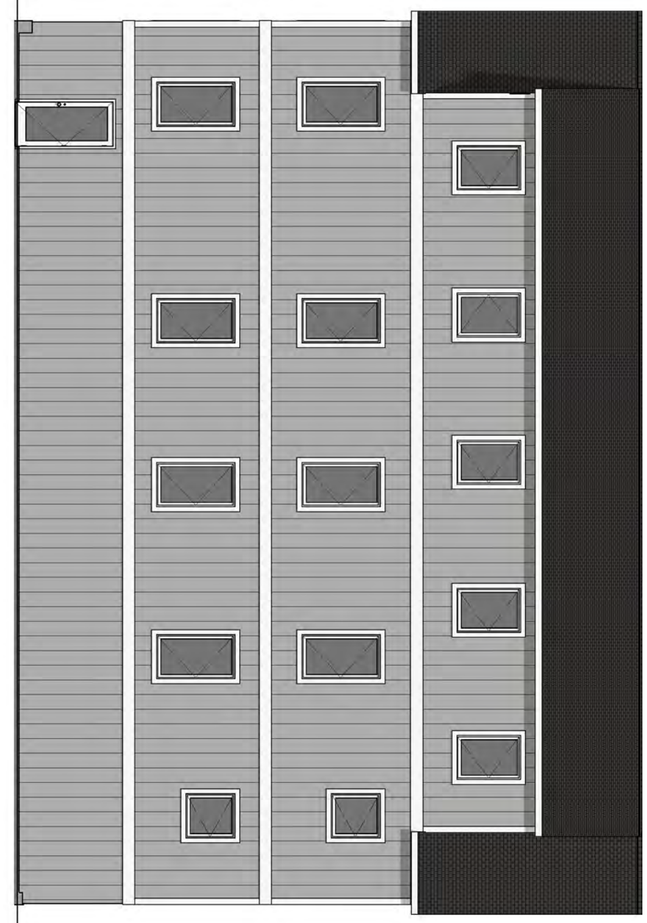
CONST TYPE: WOOD FRAME (VB)

DESIGNER: DWW

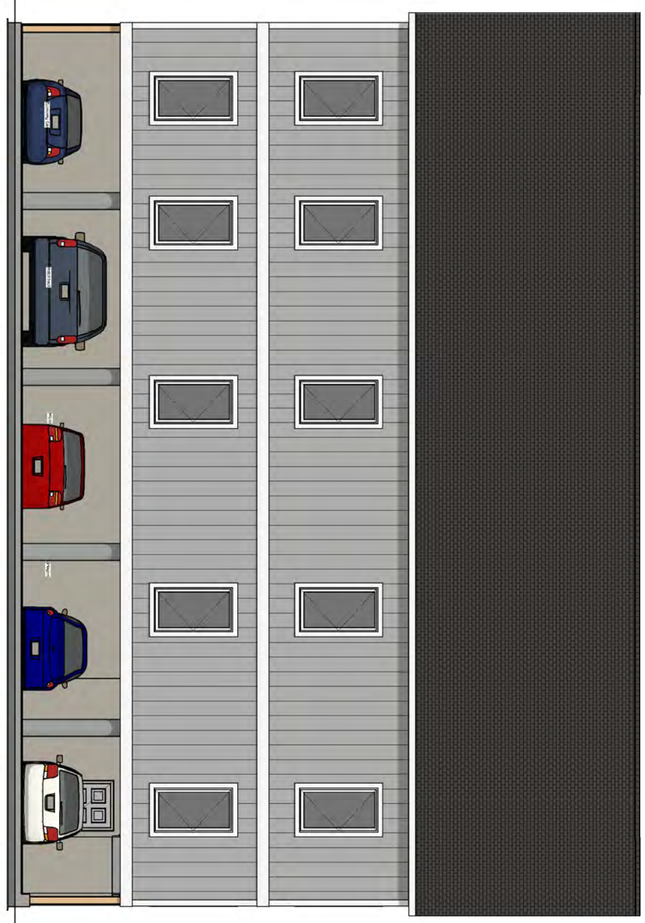
DATE: 7/27/2018

SCALE: AS NOTED

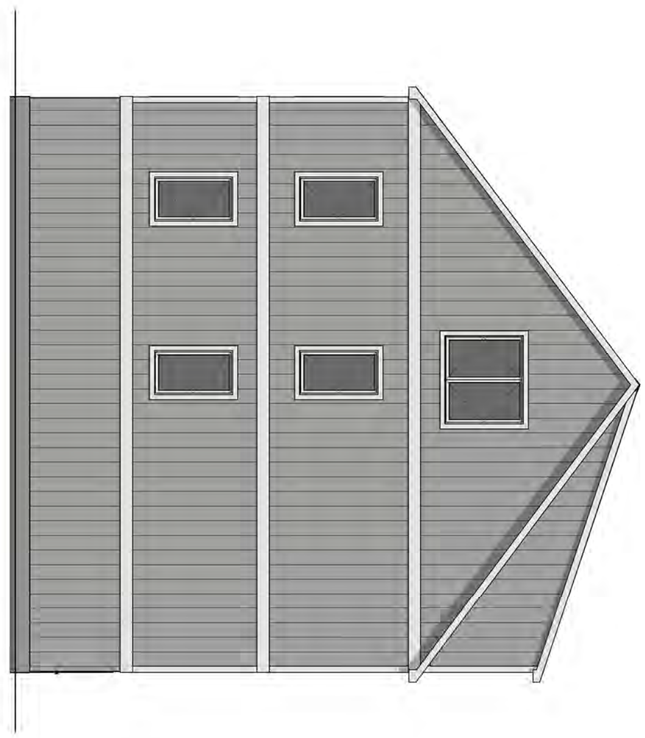
PAGE: 1



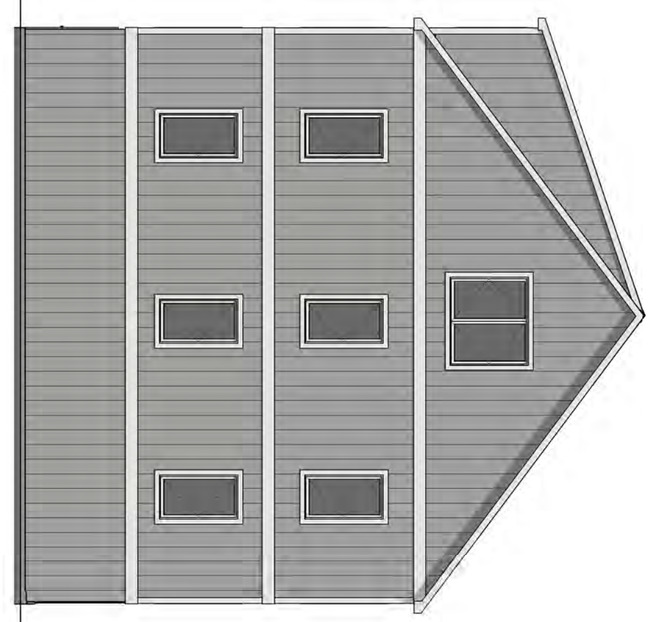
FRONT ELEVATION
SCALE: 1/8" = 1'0"



REAR ELEVATION
SCALE: 1/8" = 1'0"



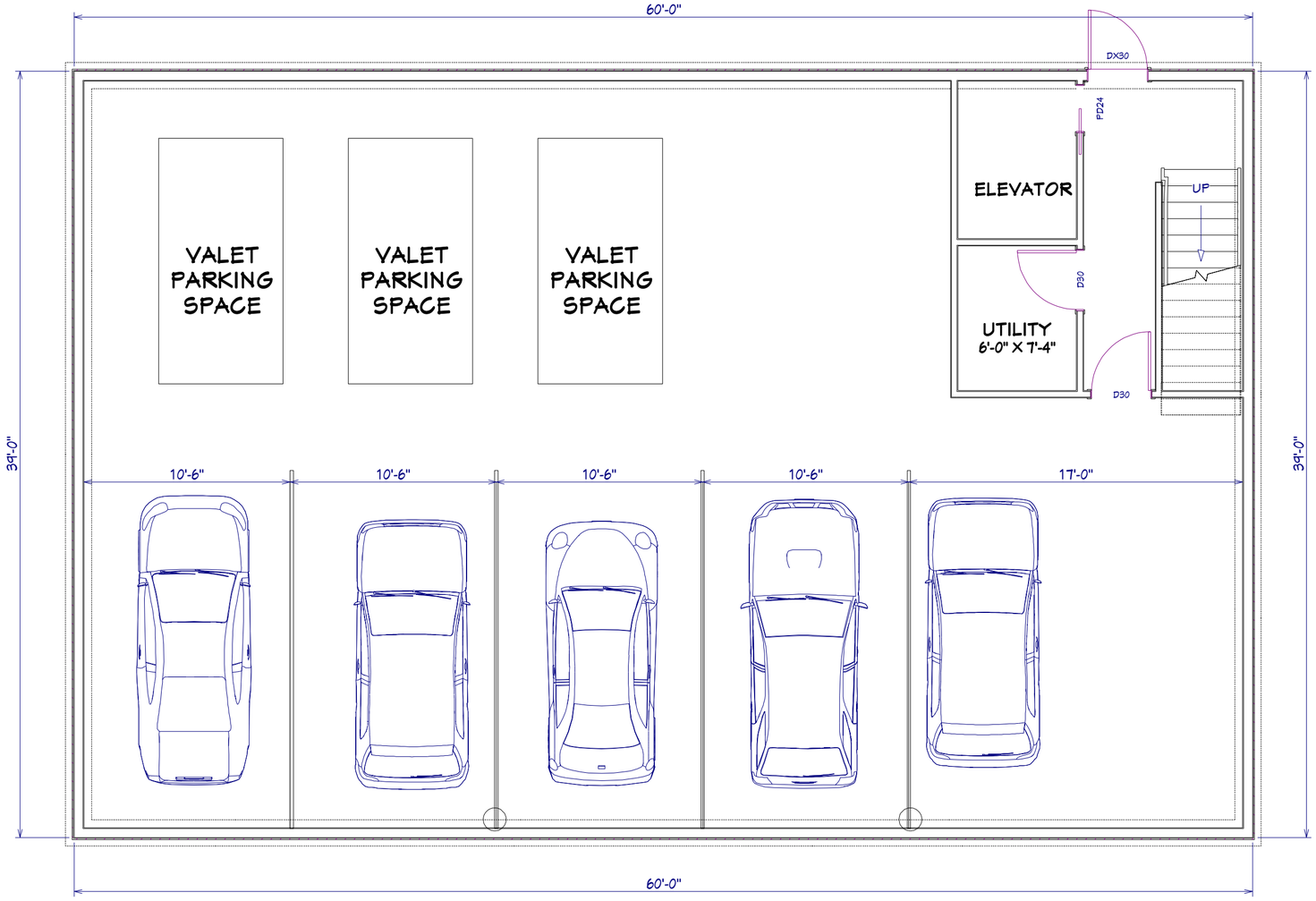
RIGHT ELEVATION
SCALE: 1/8" = 1'0"



LEFT ELEVATION
SCALE: 1/8" = 1'0"

USE GROUP: R3	BUILDER: SBHLLC	HOME OWNER: SPEC	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	39 X 60 OFFICE BUILDING ELEVATIONS		REVISION: 2 — DATE: 7/17/2018		
DATE: 7/27/2018			REVISION: 4 — DATE: 7/26/2018		
SCALE: AS NOTED			REVISION: 4a — DATE: 7/27/2018		
PAGE: 2	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

PRELIMINARY ONLY- NOT FOR CONSTRUCTION



FOUNDATION NOTES:

1) THE FOUNDATION PLAN IS PROVIDED FOR FOUNDATION DESIGN PARAMETERS ONLY. COMPLETE FOUNDATION ENGINEERING BASED ON SPECIFIC SITE CONDITIONS, APPLICABLE LOCAL AND STATE CODES, TO BE REVIEWED AND APPROVED BY A REGISTERED ARCHITECT OR ENGINEER IN THE STATE OF HOUSE DESIGNATION.
2) THE BUILDER/PURCHASER SHALL B RESPONSIBLE FOR DESIGN, CONSTRUCTION AND CODE COMPLIANCE OF ALL FOUNDATION ELEMENTS INCLUDING (BUT NOT LIMITED TO) STRUCTURAL, PLUMBING, ELECTRICAL, HEATING, ENERGY CONSERVATION AND FIRE SEPARATION.
3) MINIMUM COLUMN FOOTING SIZE SHALL BE 2'-6" x 2'-6" x 10" DEEP.
4) CONCRETE STRENGTH TO BE A MINIMUM 3000 PSI.
5) LALLY COLUMN SHALL BE MINIMUM 3 1/2"9I STEEL PIPE.
6) FOUNDATION SILL SHALL BE PRESERVATIVE TREATED LUMBER (SUPPLIED AND INSTALLED BY B/P PRIOR TO HOUSE DELIVERY AND SET). THERE SHALL BE NO PROTRUSION ABOVE TOP OF SILL PLATE.

SCALE: 3/16" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	7/17/2018
4	7/26/2018
4a	7/27/2018

HOME OWNER
SPEC

SITE
ALLEN AVE
PORTLAND, ME

BUILDER
SBHLLC

39 X 60 OFFICE BUILDING
FOUNDATION

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP
R3

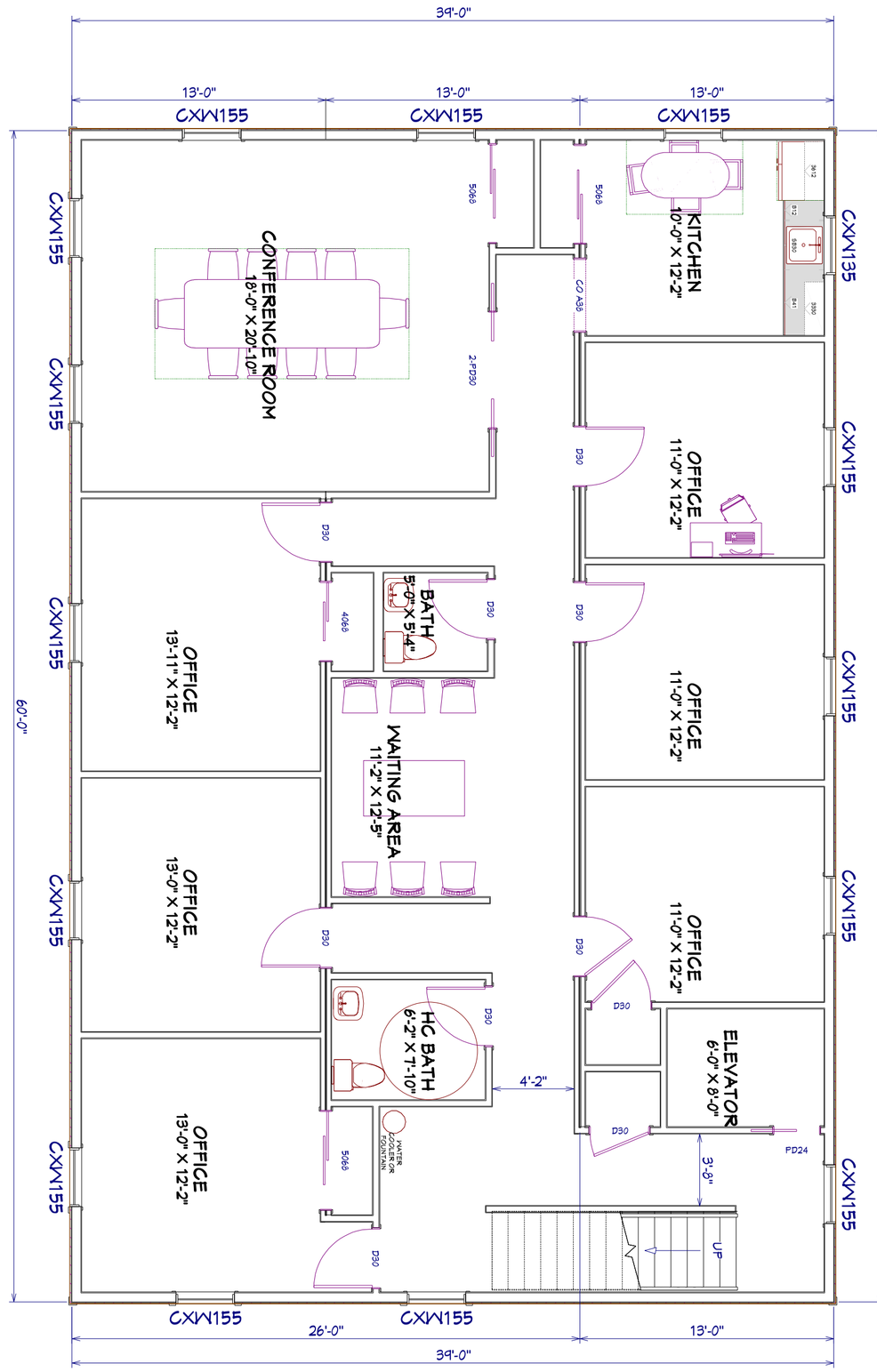
CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

DATE
7/27/2018

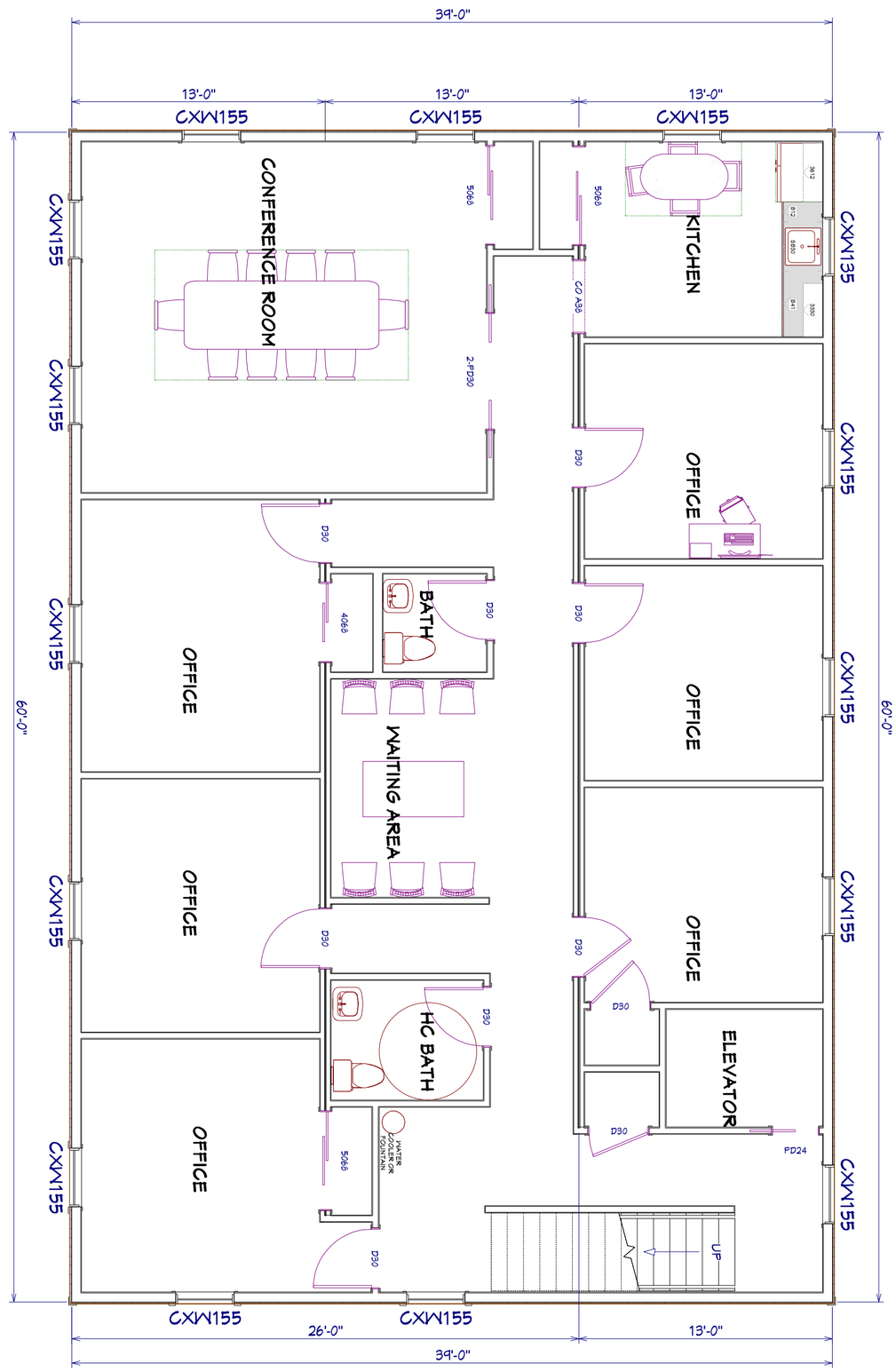
SCALE
AS NOTED

PAGE:
3



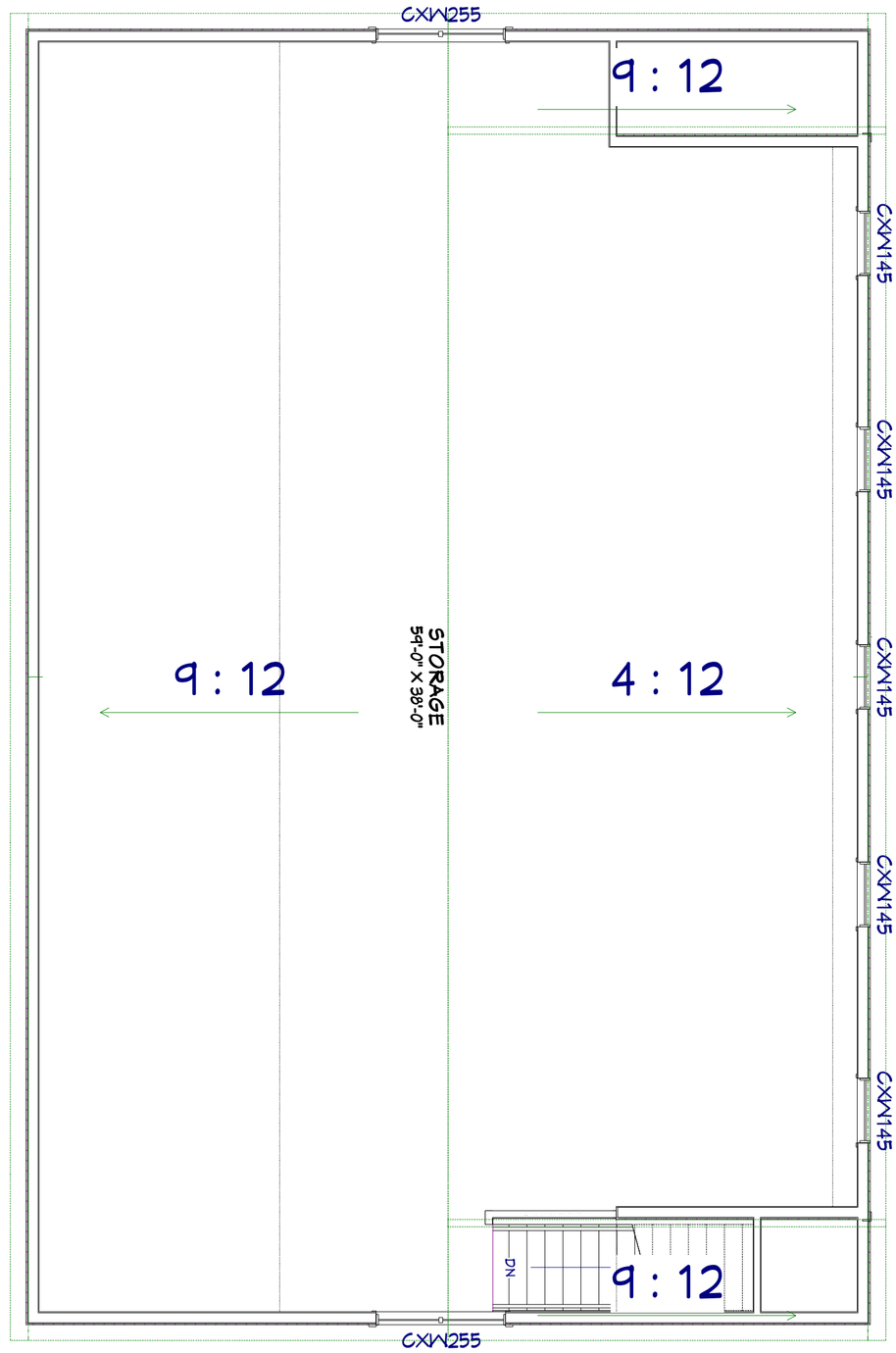
SCALE: 3/16" = 1'0"

USE GROUP: R3	BUILDER: SBHLLC	HOME OWNER: SPEC	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	39 X 60 OFFICE BUILDING		REVISION / DATE: 2 — 7/17/2018; 4 — 7/26/2018; 4a — 7/27/2018		
DATE: 7/27/2018	FIRST FLOOR				
SCALE: AS NOTED					
PAGE: 4	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				



SCALE: 3/16" = 1'0"

USE GROUP: R3	BUILDER: SBHLLC	HOME OWNER: SPEC	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	39 X 60 OFFICE BUILDING		REVISION / DATE: 2 — 7/17/2018; 4 — 7/26/2018; 4a — 7/27/2018		
DATE: 7/27/2018	SECOND FLOOR				
SCALE: AS NOTED					
PAGE: 5	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				



SCALE: 3/16" = 1'0"

USE GROUP: R3	BUILDER: SBHLLC	HOME OWNER: SPEC	SERIAL No:	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVE PORTLAND, ME	PRODUCTION No:		
DESIGNER: DWW	39 X 60 OFFICE BUILDING		REVISION / DATE: 2 — 7/17/2018; 4 — 7/26/2018; 4a — 7/27/2018		
DATE: 7/27/2018	THIRD FLOOR/ ROOF				
SCALE: AS NOTED					
PAGE: 6	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

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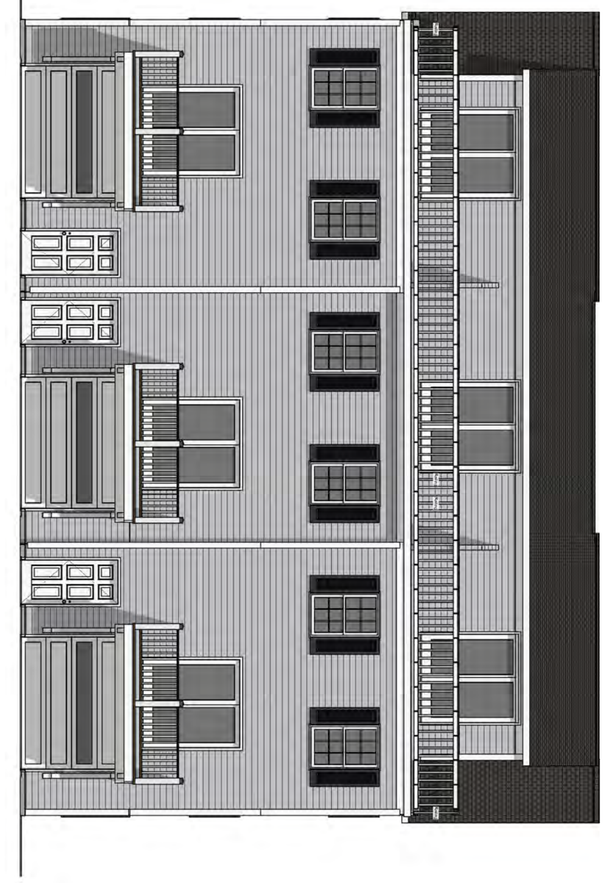
WESTCHESTER MODULAR HOMES, INC.

AN EMPLOYEE OWNED COMPANY

USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	TRIPLEX		REVISION: 2, 2a	DATE: 6/1/2018, 7/19/2018	
DATE: 7/19/2018					
SCALE: AS NOTED					
PAGE: 1	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

FRONT ELEVATION
SCALE: 1/8" = 1'0"



REAR ELEVATION
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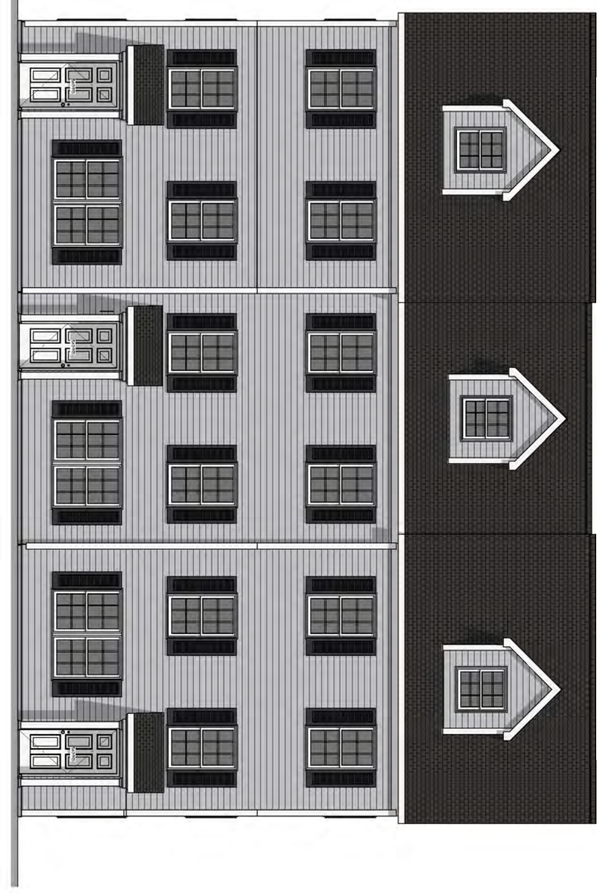

LEFT ELEVATION
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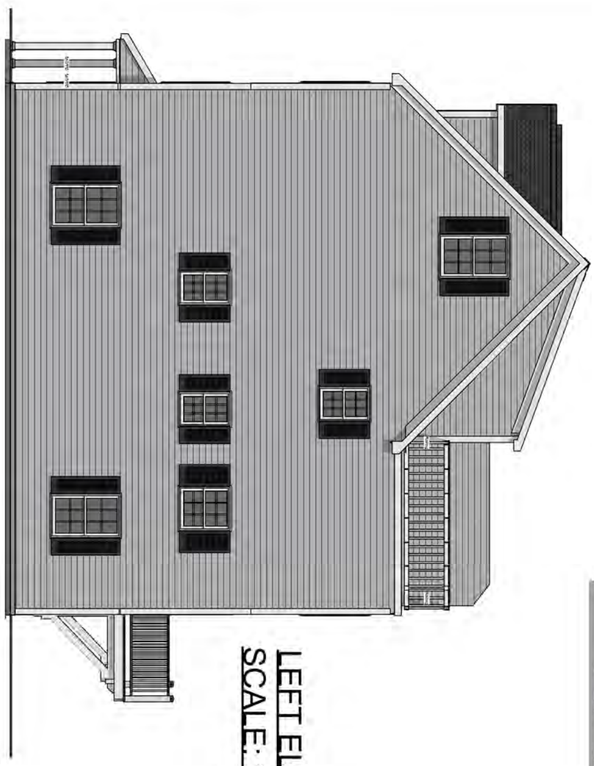

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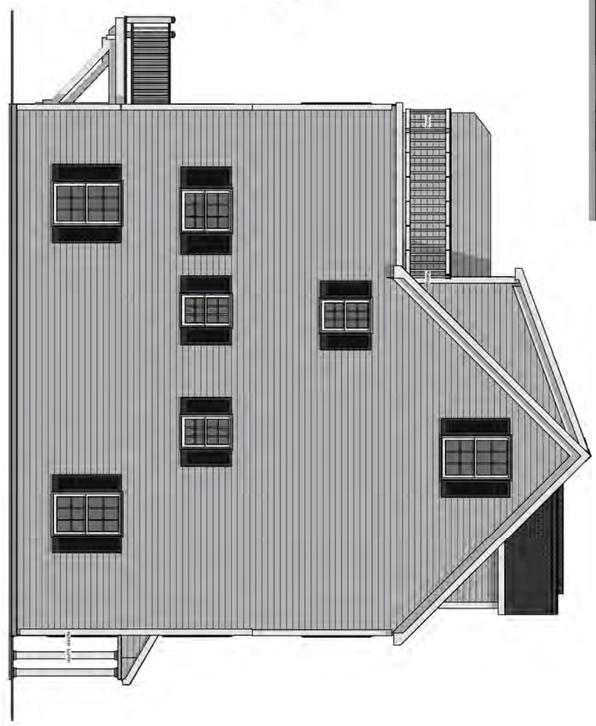

USE GROUP R3	BUILDER SILVER BEACH HOMES LLC	HOME OWNER SITE ALLEN AVENUE PORTLAND, ME	SERIAL No PRODUCTION No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE WOOD FRAME (VB)					
DESIGNER DWW	*TRIPLEX* ELEVATIONS		REVISION / DATE 2 — 6/1/2018 2a — 7/19/2018		
DATE 7/19/2018					
SCALE AS NOTED					
PAGE: 2	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

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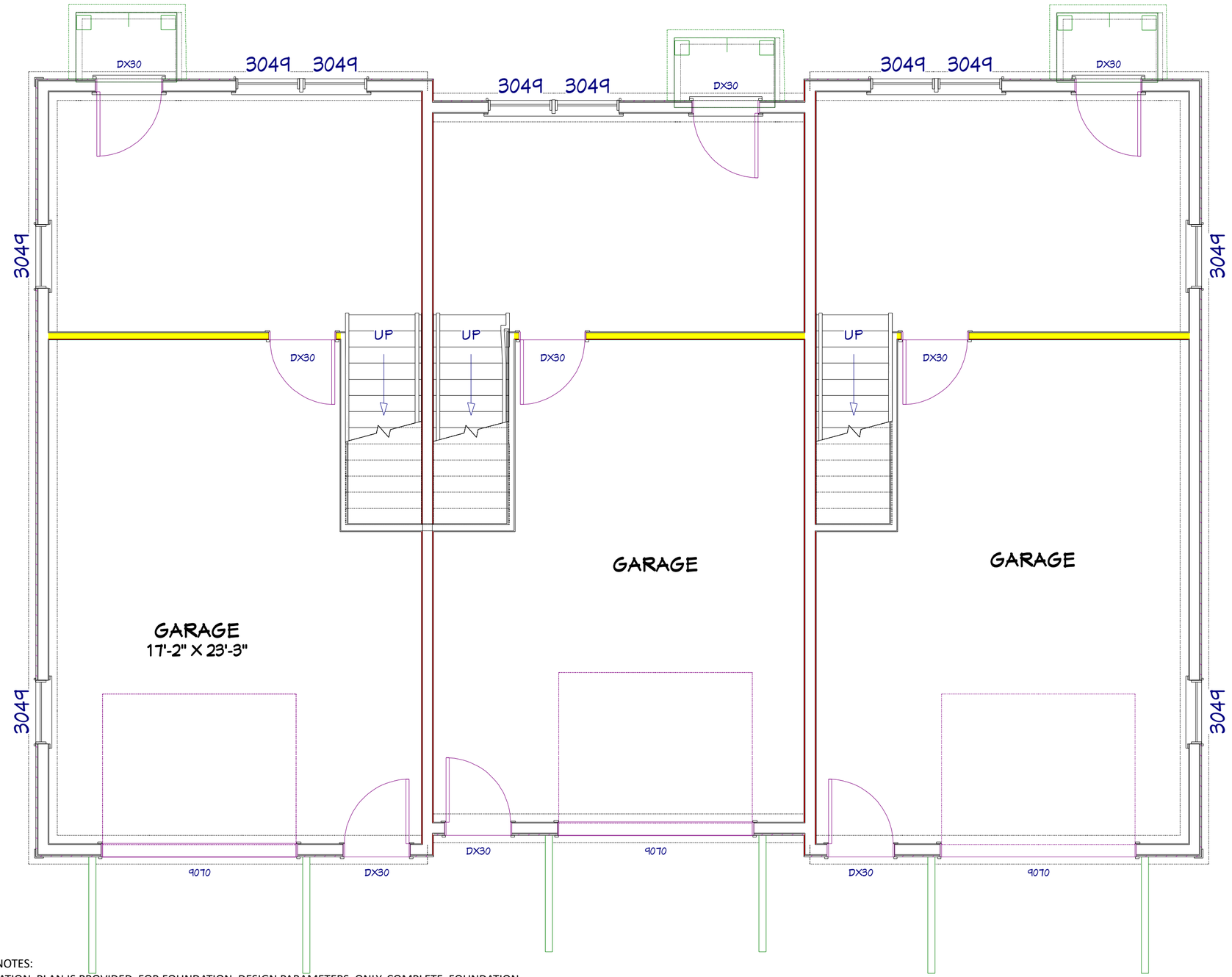

FOUNDATION NOTES:

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4) CONCRETE STRENGTH TO BE A MINIMUM 3000 PSI.
5) LALLY COLUMN SHALL BE MINIMUM 3 1/2"9I STEEL PIPE.
6) FOUNDATION SILL SHALL BE PRESERVATIVE TREATED LUMBER (SUPPLIED AND INSTALLED BY B/P PRIOR TO HOUSE DELIVERY AND SET). THERE SHALL BE NO PROTRUSION ABOVE TOP OF SILL PLATE.

SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	6/1/2018
2a	7/19/2018

HOME OWNER

SITE ALLEN AVENUE PORTLAND, ME

BUILDER SILVER BEACH HOMES LLC

TRIPLEX FOUNDATION

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP R3

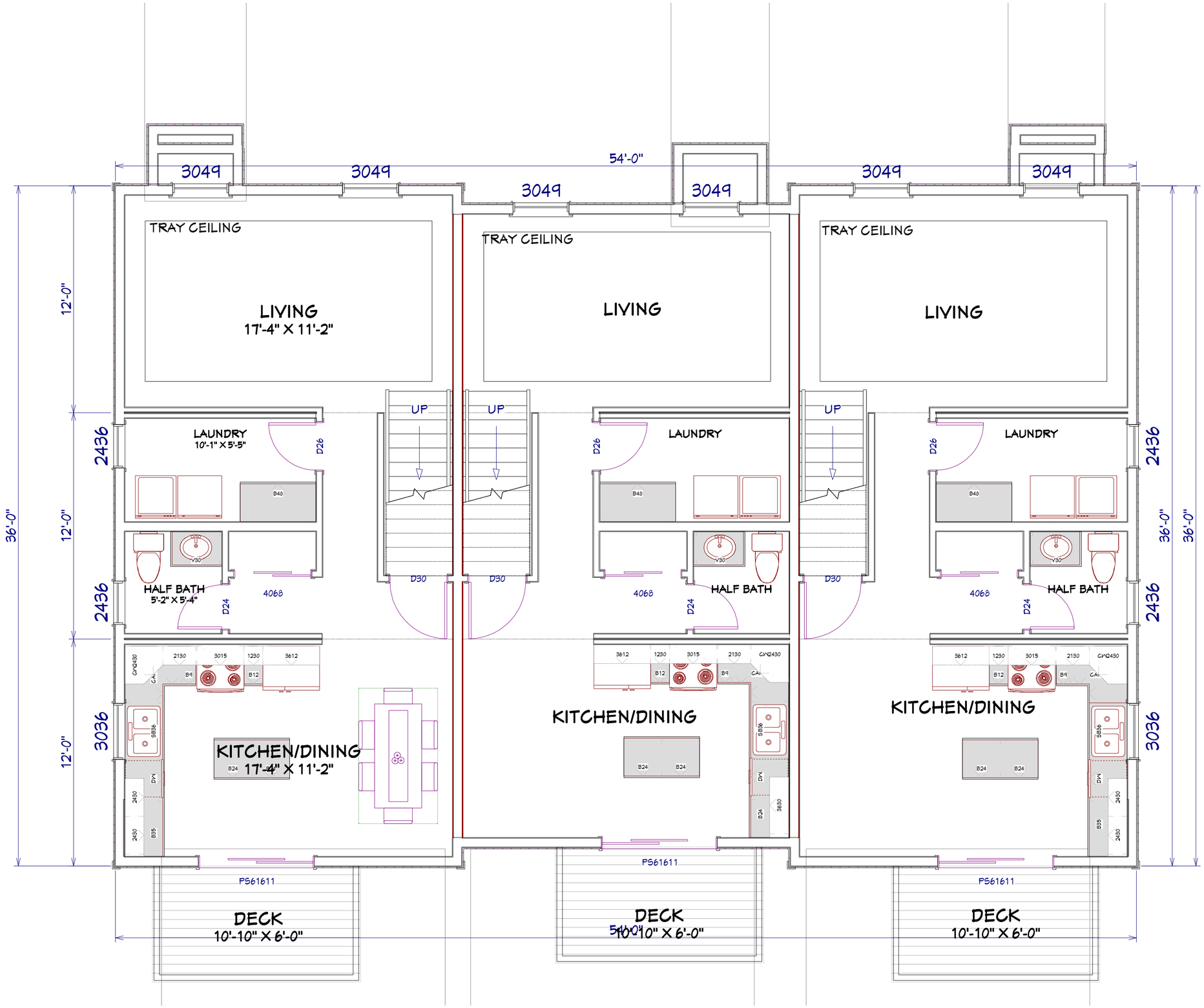
CONST TYPE WOOD FRAME (VB)

DESIGNER DWW

DATE 7/19/2018

SCALE AS NOTED

PAGE: 3



SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	6/1/2018
2a	7/19/2018

HOME OWNER

SITE ALLEN AVENUE
PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

TRIPLEX
FIRST FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP
R3

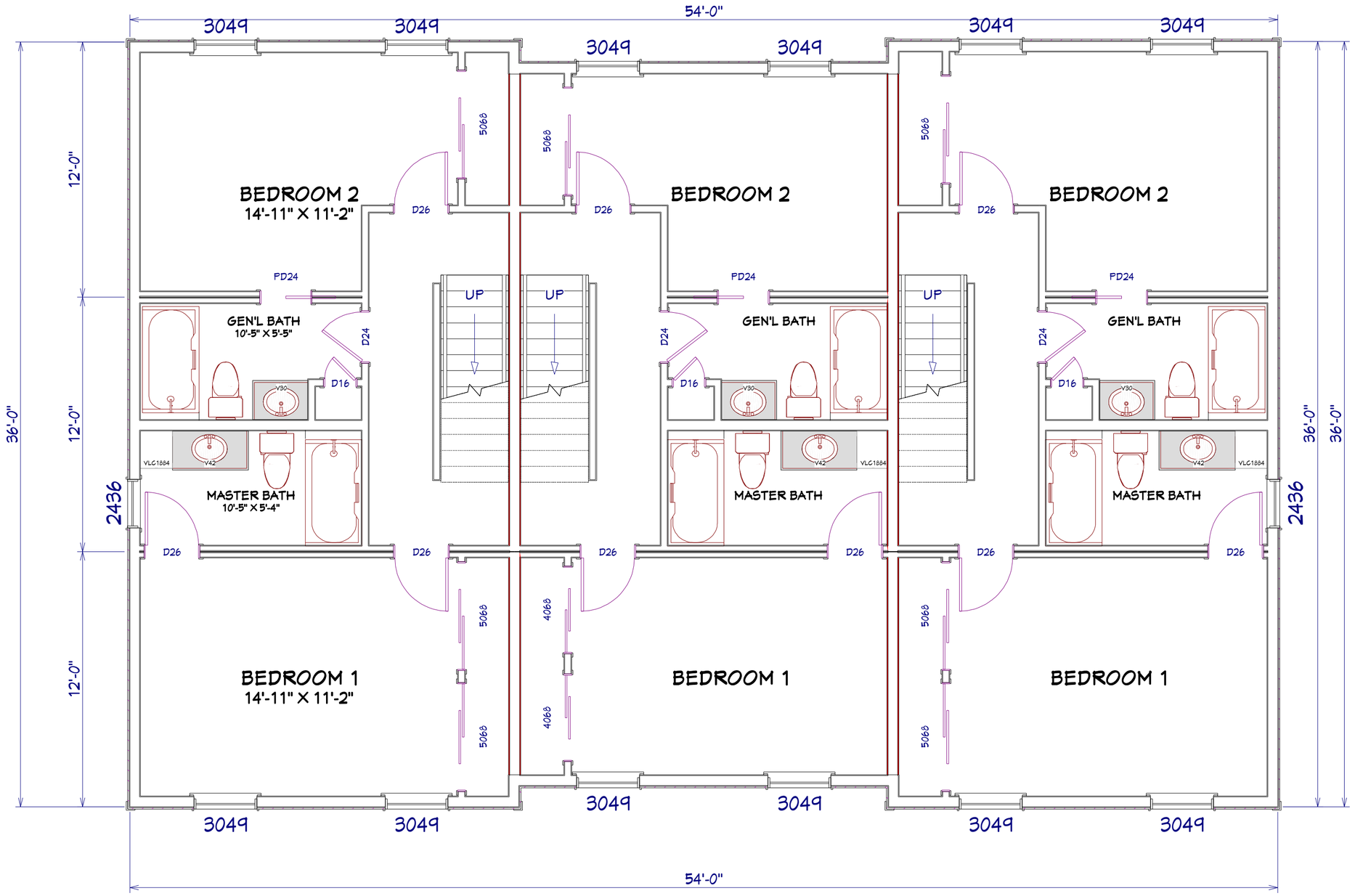
CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

DATE
7/19/2018

SCALE
AS NOTED

PAGE:
4



SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

REVISION	DATE
2	6/1/2018
2a	7/19/2018

SERIAL No

PRODUCTION No

HOME OWNER

SITE ALLEN AVENUE
PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

USE GROUP
R3

CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

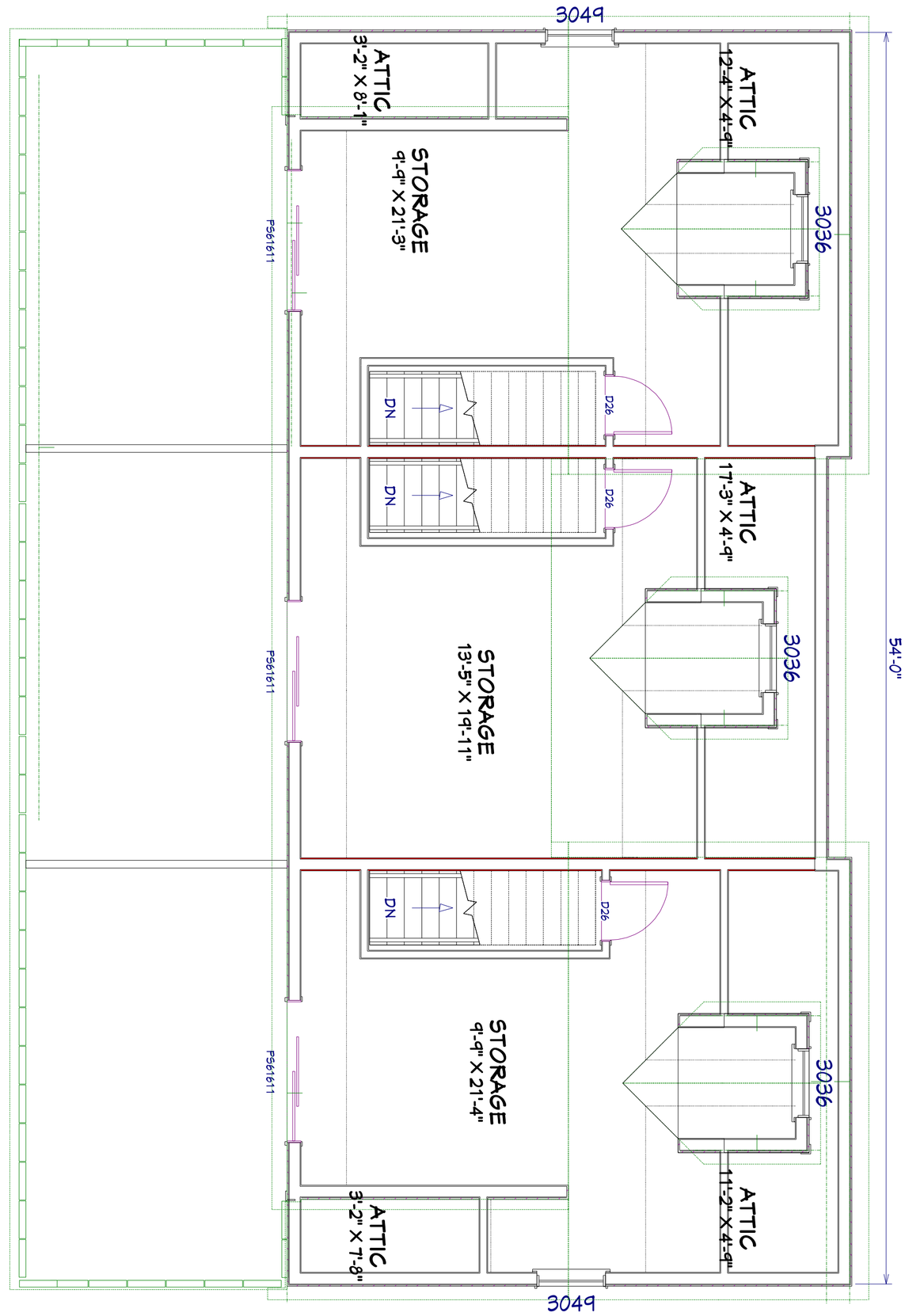
DATE
7/19/2018

SCALE
AS NOTED

PAGE:
5

TRIPLEX
SECOND FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698



USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	TRIPLEX		REVISION / DATE: 2 — 6/1/2018; 2a — 7/19/2018		
DATE: 7/19/2018					
SCALE: AS NOTED					
PAGE: 6	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

2014 N.E.C.

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* FOAM GASKETS ON ALL EXT. WALLS *

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	6/1/2018
2a	7/19/2018

HOME OWNER

SITE ALLEN AVENUE PORTLAND, ME

BUILDER SILVER BEACH HOMES LLC

USE GROUP R3

CONST TYPE WOOD FRAME (VB)

DESIGNER DWW

DATE 7/19/2018

SCALE AS NOTED

PAGE: 7

TRIPLEX

1ST FLOOR ELECTRICAL PLAN

WESTCHESTER MODULAR HOMES INC.
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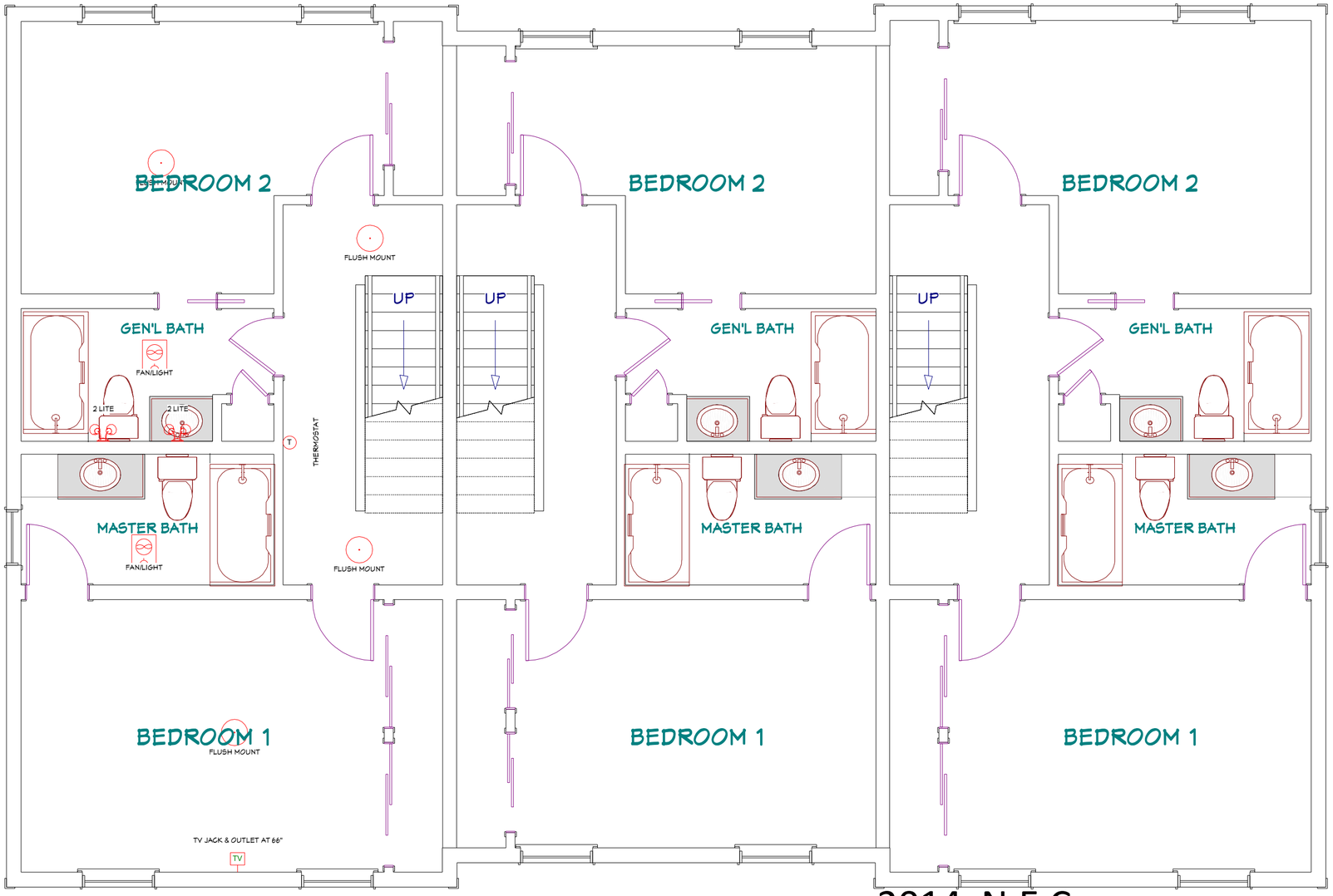
Tel (845)832-9400 Fax (845)832-6698



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THIRD PARTY INSPECTION AGENCY

PE/RA

REVISION	DATE
2	6/1/2018
2a	7/19/2018

SERIAL No

PRODUCTION No

HOME OWNER

SITE ALLEN AVENUE PORTLAND, ME

BUILDER SILVER BEACH HOMES LLC

TRIPLEX

2ND FLOOR ELECTRICAL PLAN

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP R3

CONST TYPE WOOD FRAME (VB)

DESIGNER DWW

DATE 7/19/2018

SCALE AS NOTED

PAGE: 8

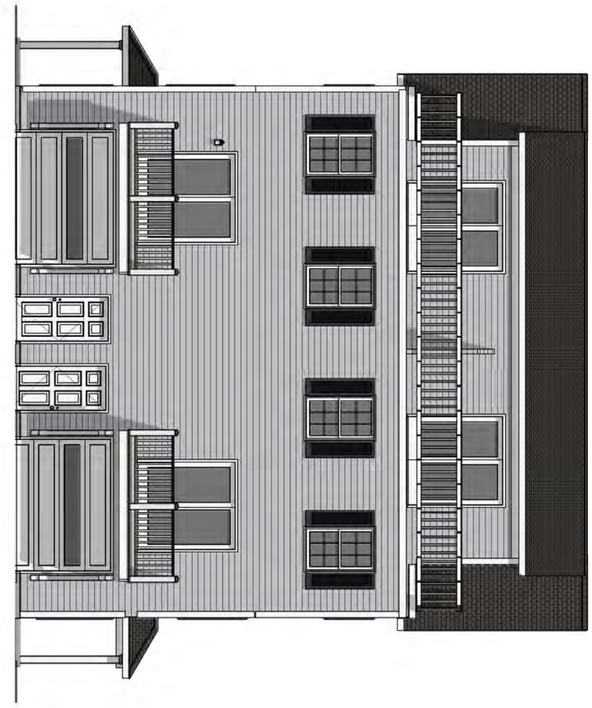
3D's ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY SHOW OPTIONAL OR SITE BUILT ITEMS. THEY ARE AN ARTISTIC INTERPRETATION OF THE GENERAL APPEARANCE AND NOT MEANT TO BE AN EXACT RENDITION. PLEASE REFER TO BUILDER CONTRACTS FOR PRODUCTS INCLUDED.

WESTCHESTER MODULAR HOMES, INC.

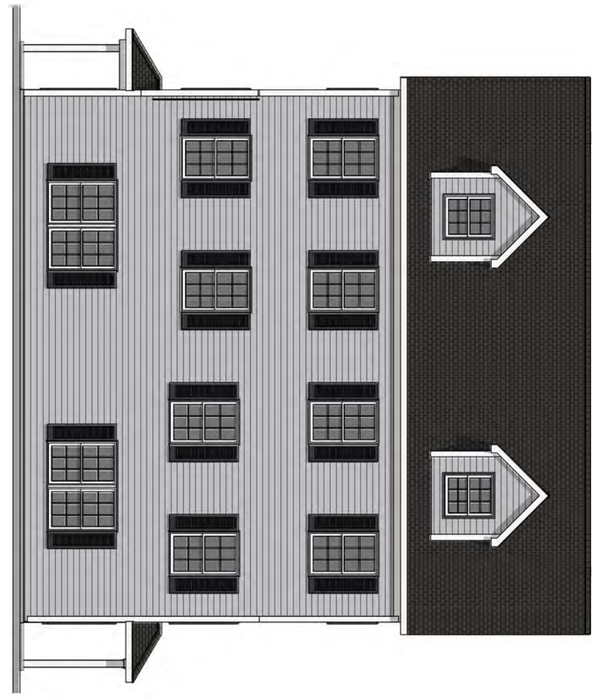
AN EMPLOYEE OWNED COMPANY

USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	DUPLEX		REVISION / DATE		
DATE: 6/28/2018					
SCALE: AS NOTED					
PAGE: 1	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

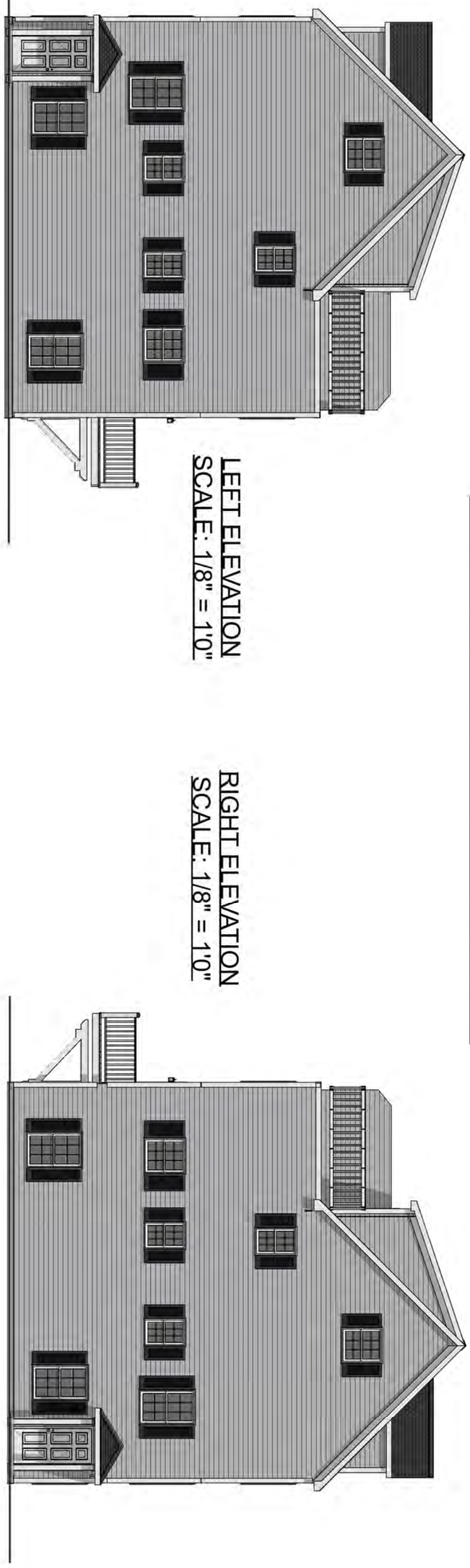
FRONT ELEVATION
SCALE: 1/8" = 1'0"



REAR ELEVATION
SCALE: 1/8" = 1'0"



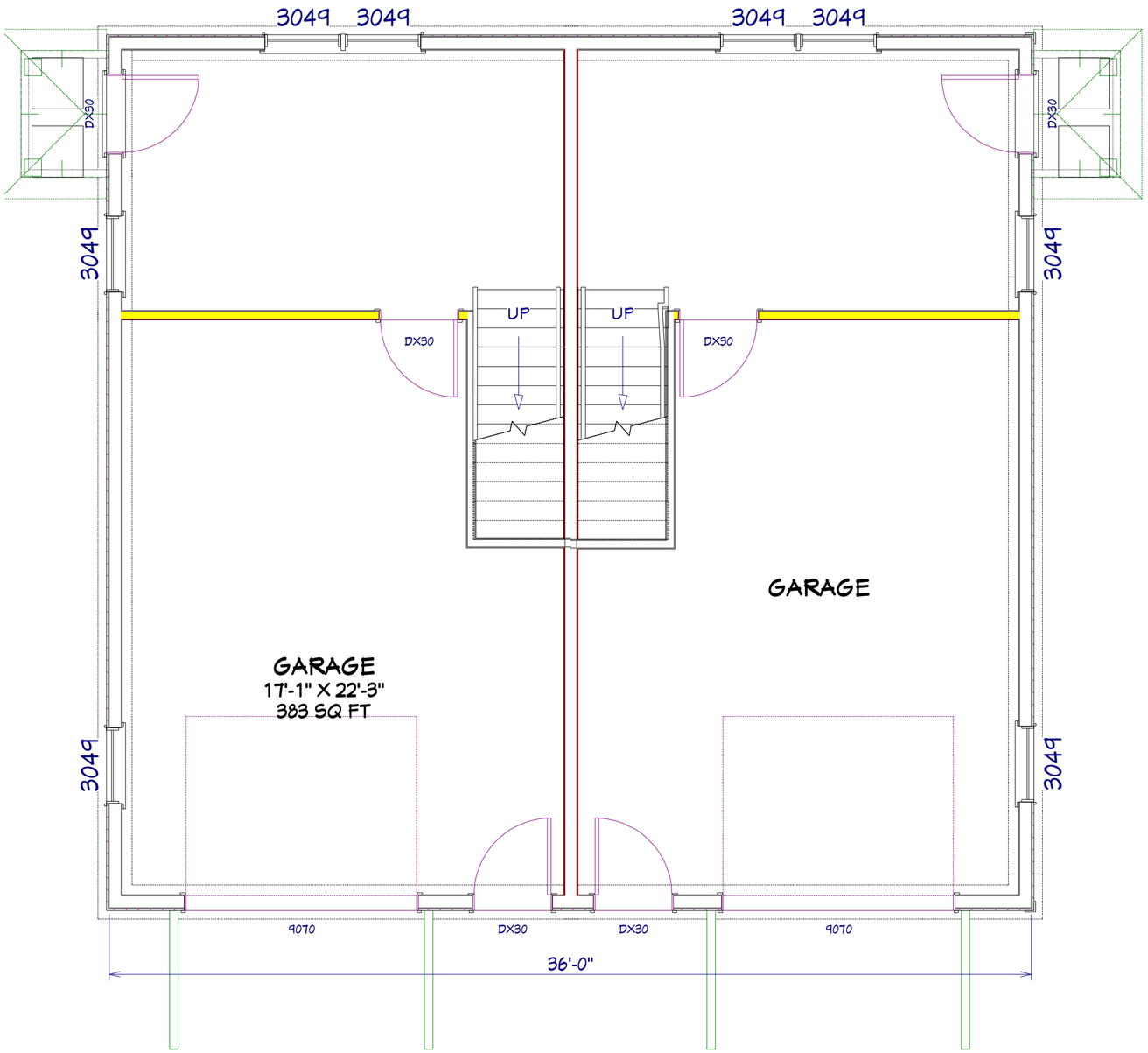
LEFT ELEVATION
SCALE: 1/8" = 1'0"



RIGHT ELEVATION
SCALE: 1/8" = 1'0"

USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	*DUPLEX* ELEVATIONS		REVISION / DATE		
DATE: 6/28/2018					
SCALE: AS NOTED					
PAGE: 2	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

PRELIMINARY ONLY- NOT FOR CONSTRUCTION



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SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION | DATE

HOME OWNER

SITE ALLEN AVENUE PORTLAND, ME

BUILDER SILVER BEACH HOMES LLC

USE GROUP R3

CONST TYPE WOOD FRAME (VB)

DESIGNER DWW

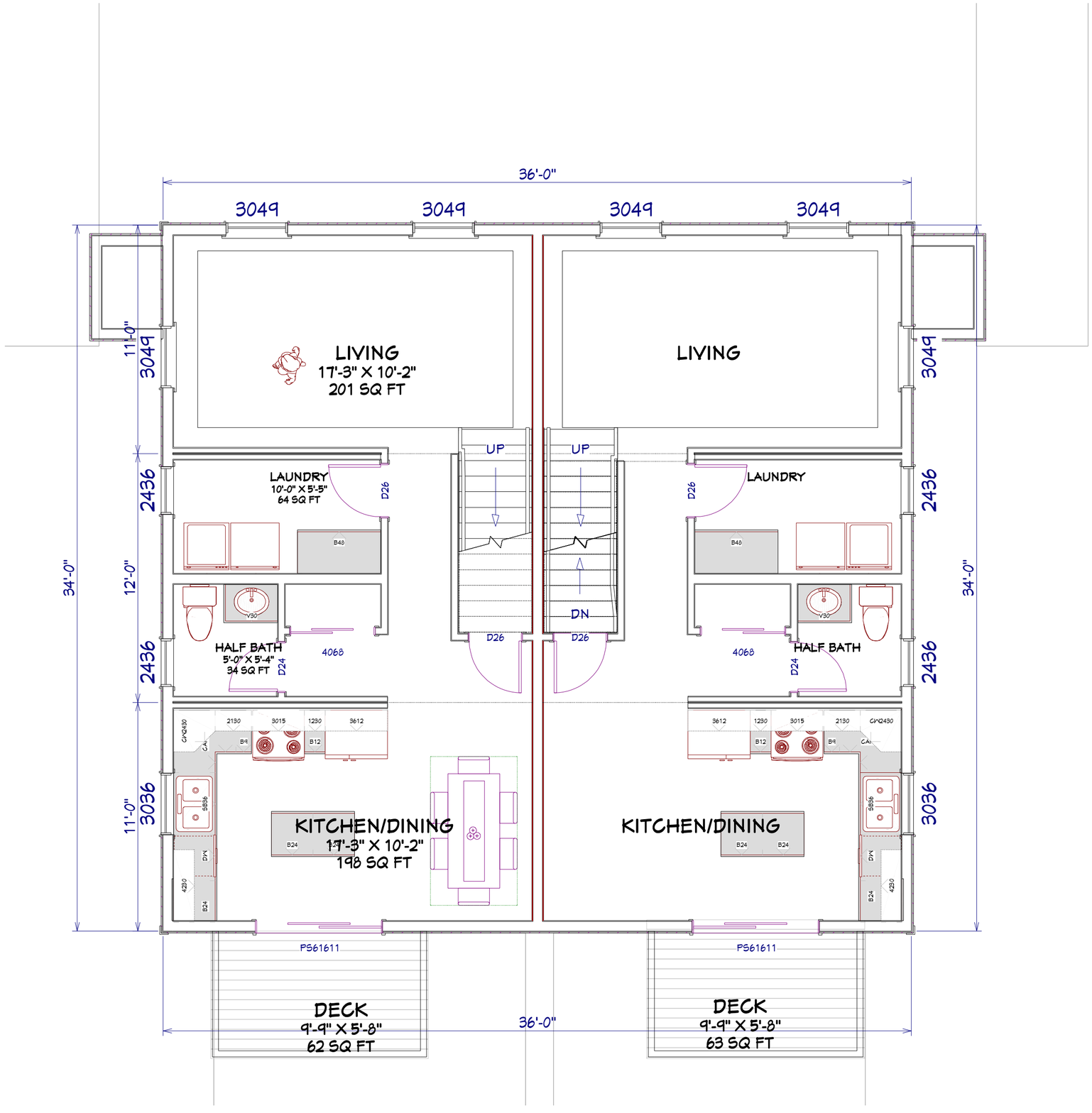
DATE 6/28/2018

SCALE AS NOTED

PAGE: 3

DUPLEX
FOUNDATION

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698



SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE

HOME OWNER

SITE

ALLEN AVENUE
PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

DUPLEX FIRST FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP
R3

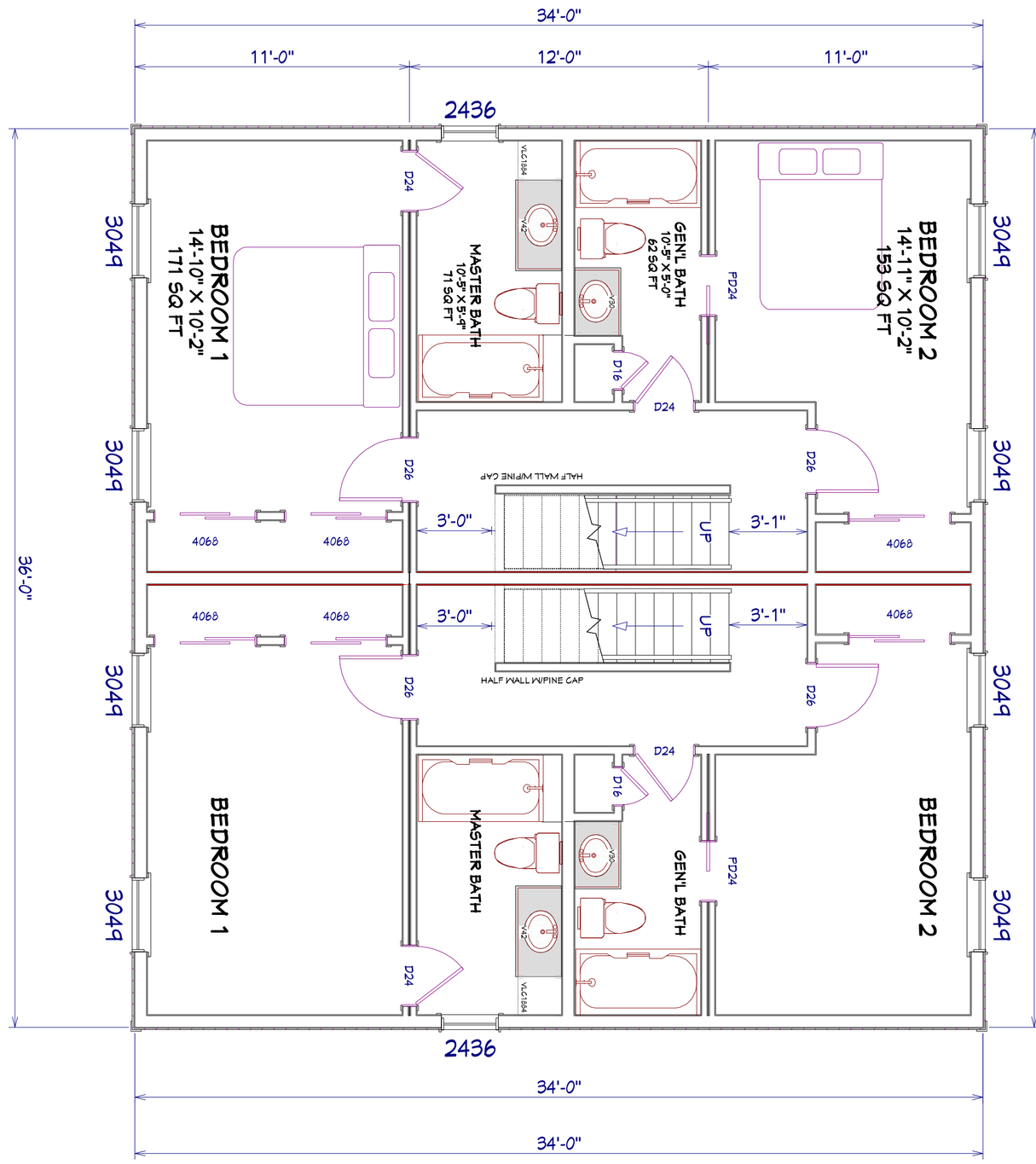
CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

DATE
6/28/2018

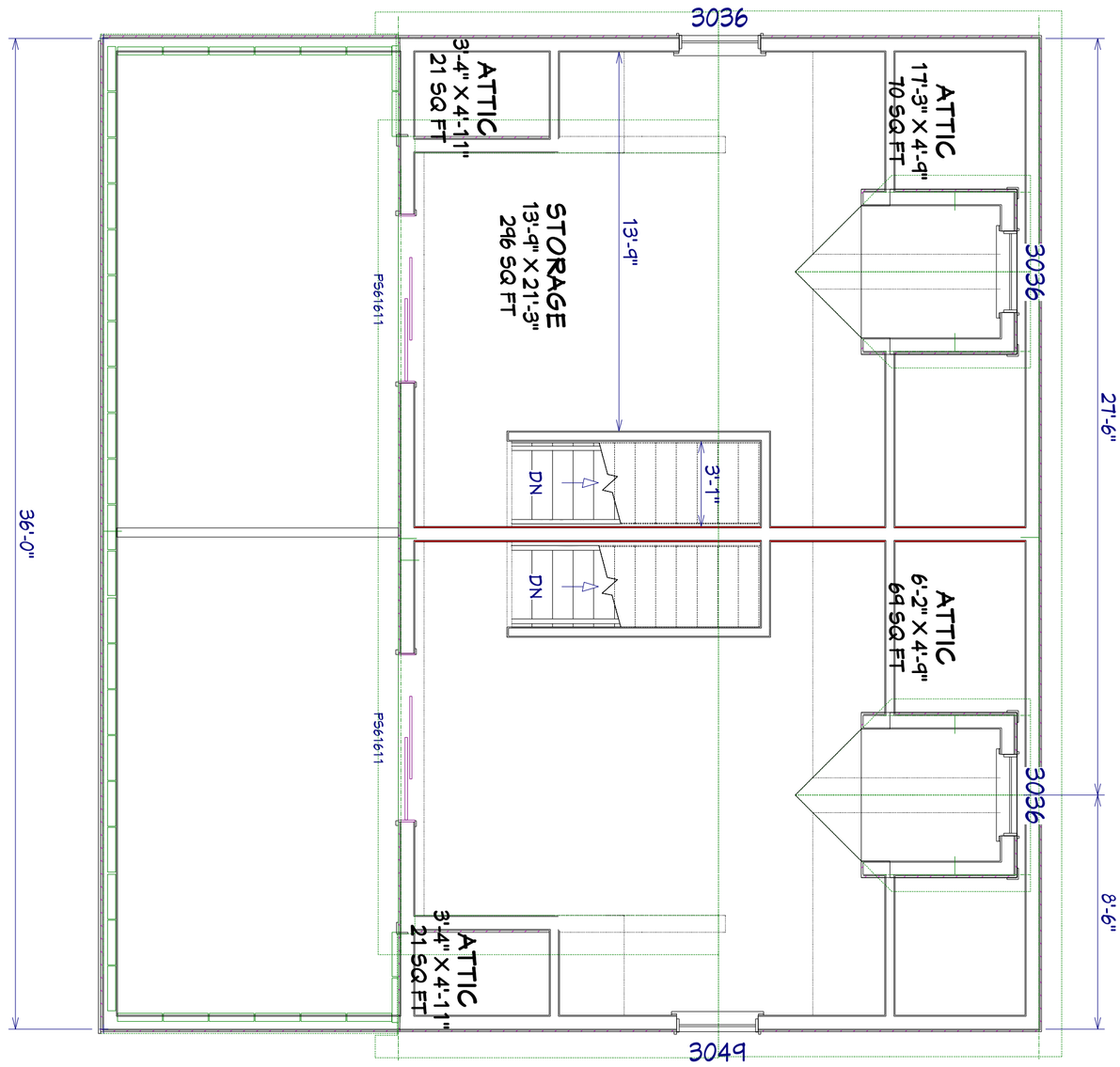
SCALE
AS NOTED

PAGE:
4

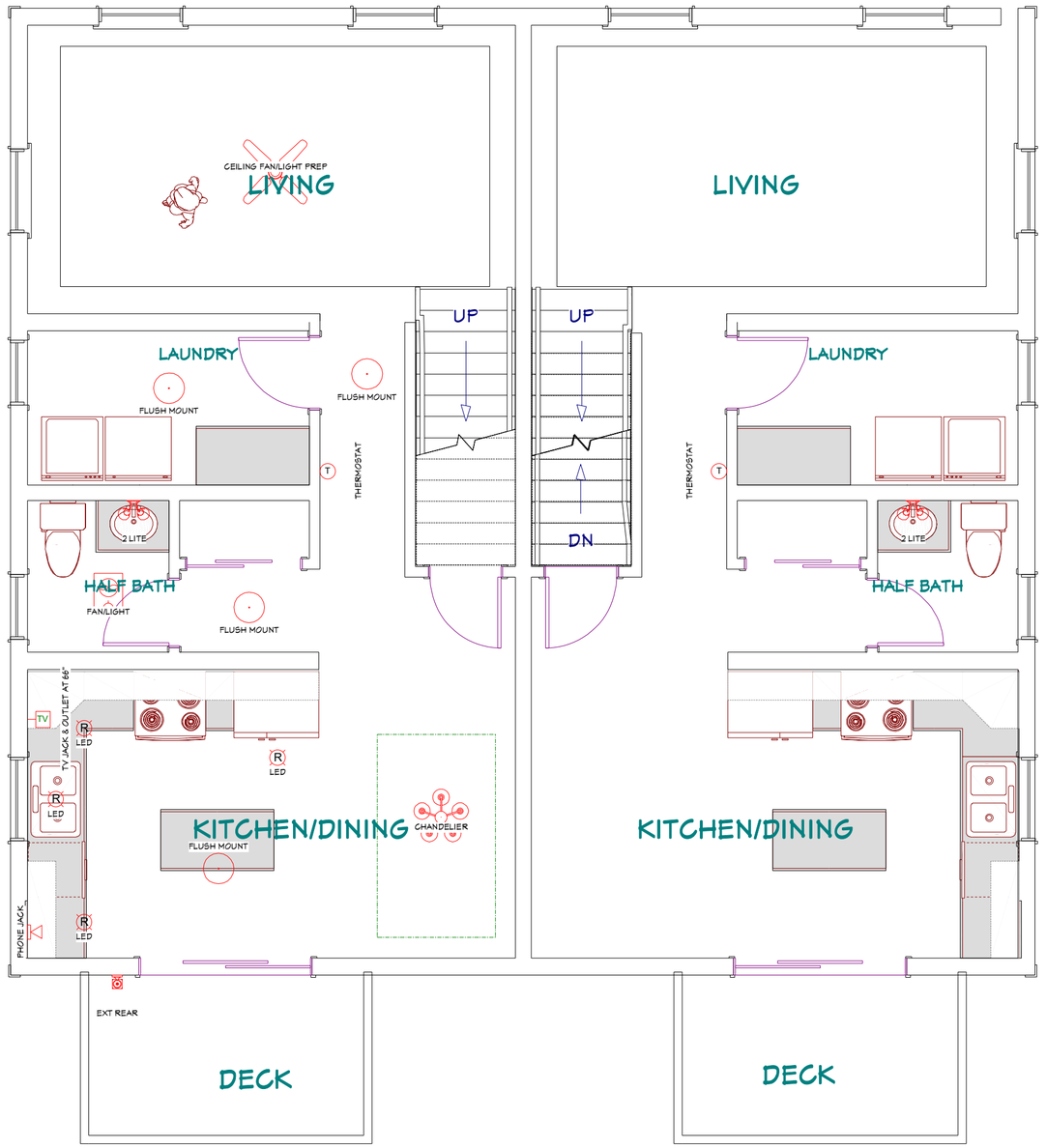


SCALE: 1/4" = 1'0"

USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	DUPLEX SECOND FLOOR		REVISION / DATE		
DATE: 6/28/2018					
SCALE: AS NOTED					
PAGE: 5	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				



USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	DUPLEX		REVISION / DATE		
DATE: 6/28/2018					
SCALE: AS NOTED					
PAGE: 6	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				



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THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE

HOME OWNER

SITE ALLEN AVENUE
PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

USE GROUP
R3

CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

DATE
6/28/2018

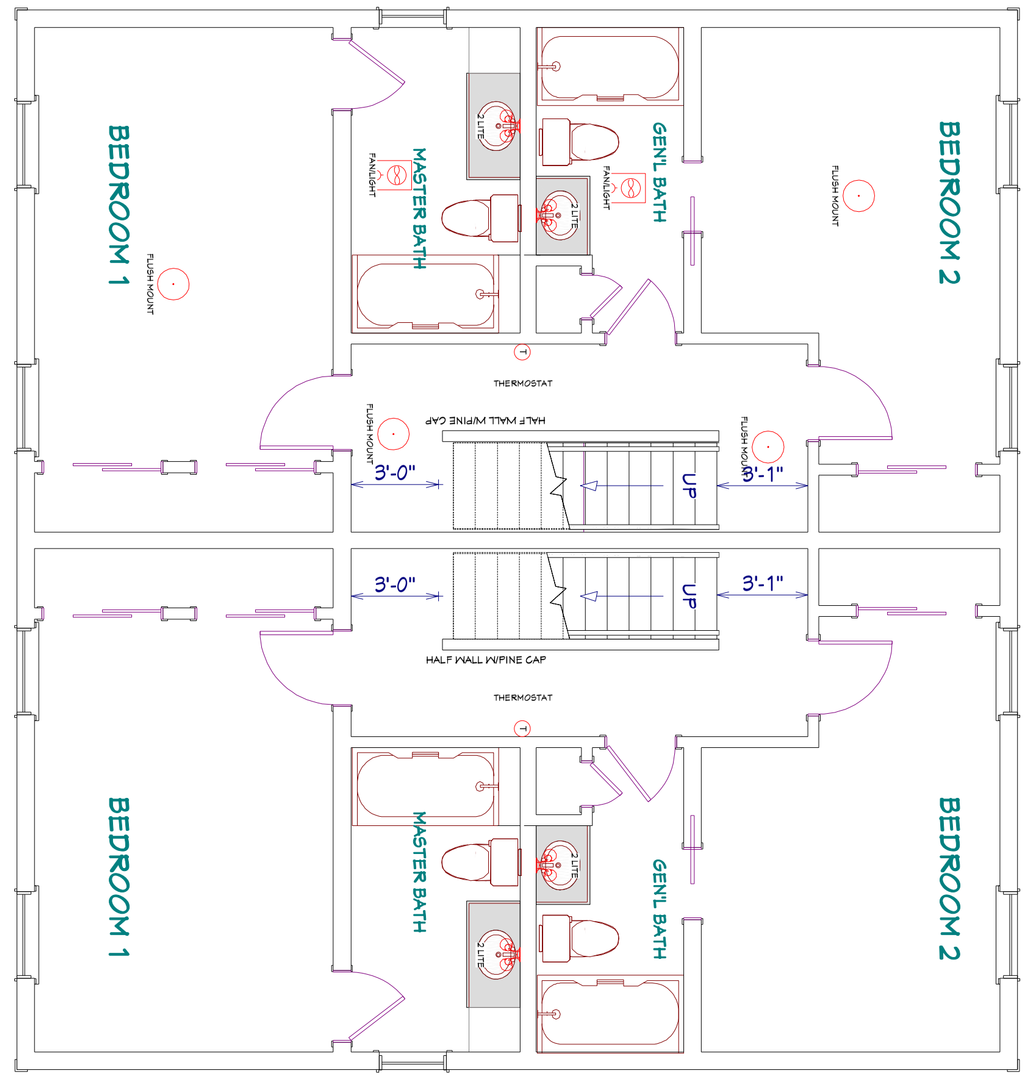
SCALE
AS NOTED

PAGE:
7

DUPLEX

1ST FLOOR ELECTRICAL PLAN

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698



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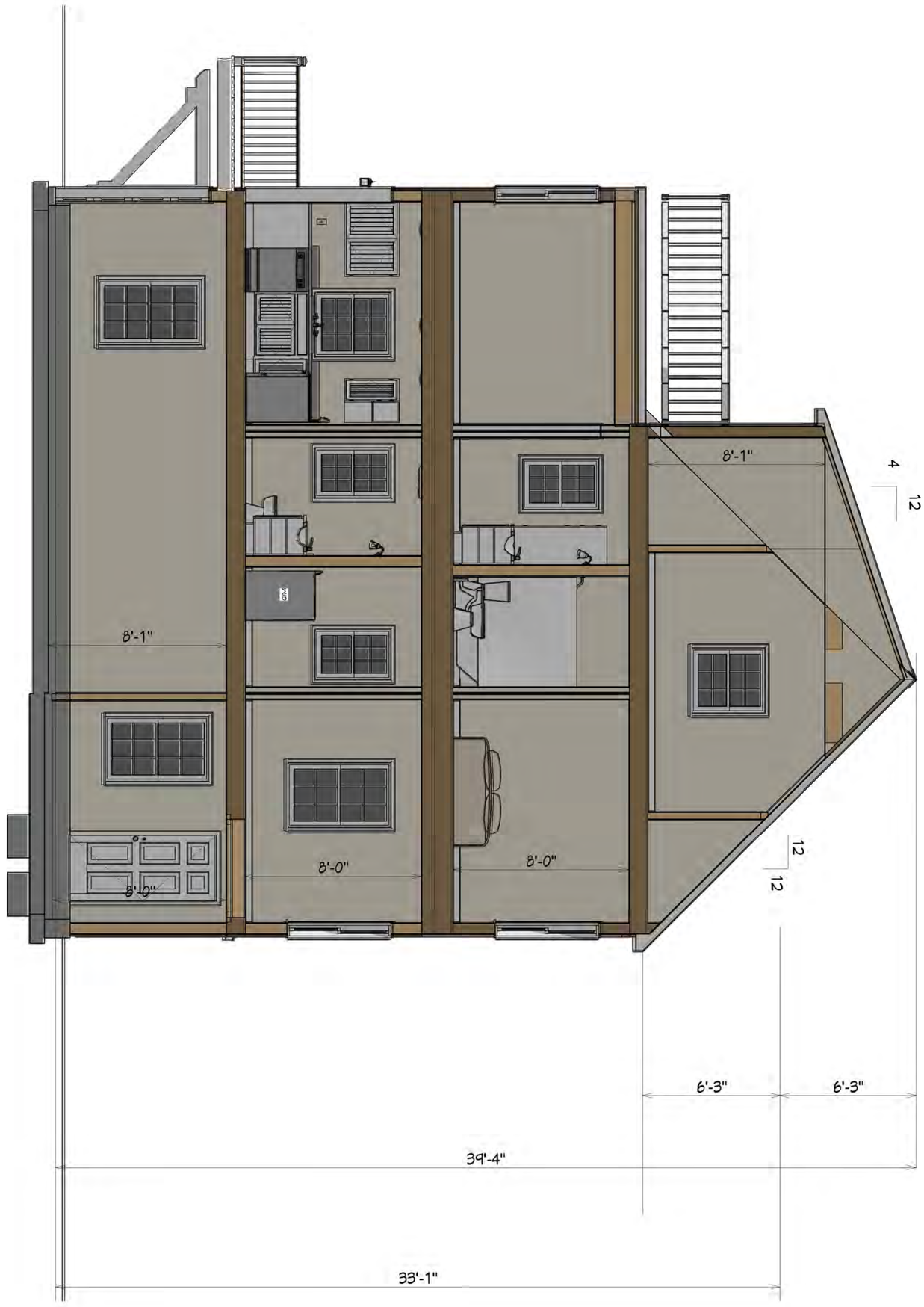
USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	DUPLEX		REVISION / DATE		
DATE: 6/28/2018	2ND FLOOR ELECTRICAL PLAN				
SCALE: AS NOTED					
PAGE: 8	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				



SCALE: 1/4" = 1'0"

USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	DUPLEX		REVISION / DATE		
DATE: 6/28/2018					
SCALE: AS NOTED					
PAGE: 9	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

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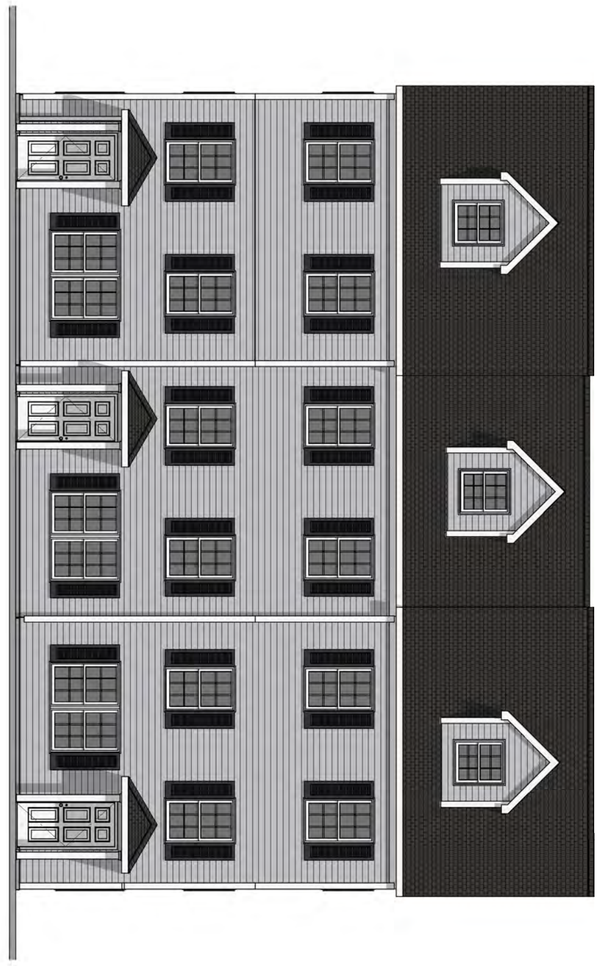
WESTCHESTER MODULAR HOMES, INC.

AN EMPLOYEE OWNED COMPANY

USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	TRIPLEX		REVISION: 2 — DATE: 6/1/2018		
DATE: 6/1/2018					
SCALE: AS NOTED					
PAGE: 1	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

FRONT ELEVATION
SCALE: 1/8" = 1'0"

REAR ELEVATION
SCALE: 1/8" = 1'0"



LEFT ELEVATION
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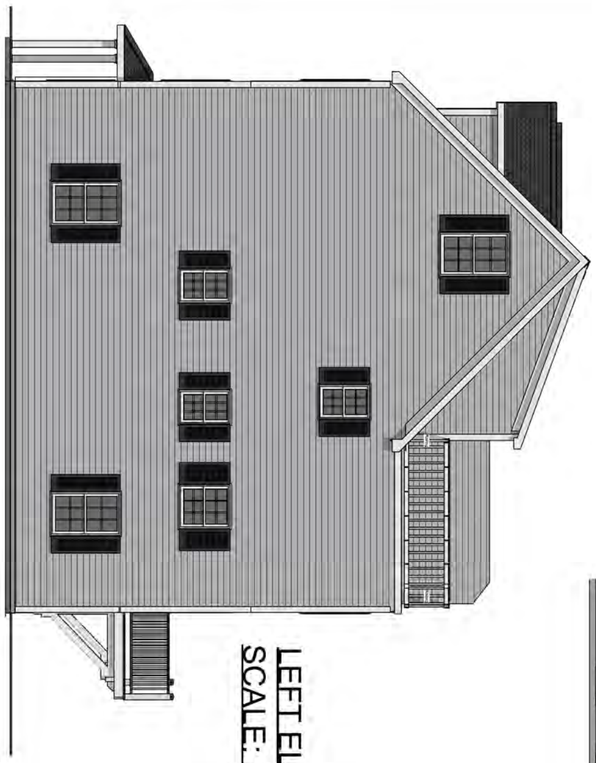
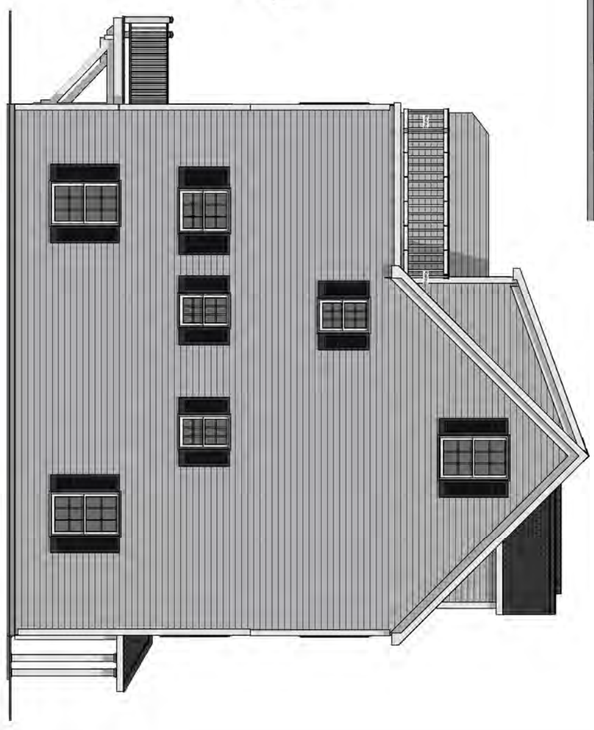


RIGHT ELEVATION
SCALE: 1/8" = 1'0"



USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	*TRIPLEX* ELEVATIONS		REVISION: 2 — DATE: 6/1/2018		
DATE: 6/1/2018					
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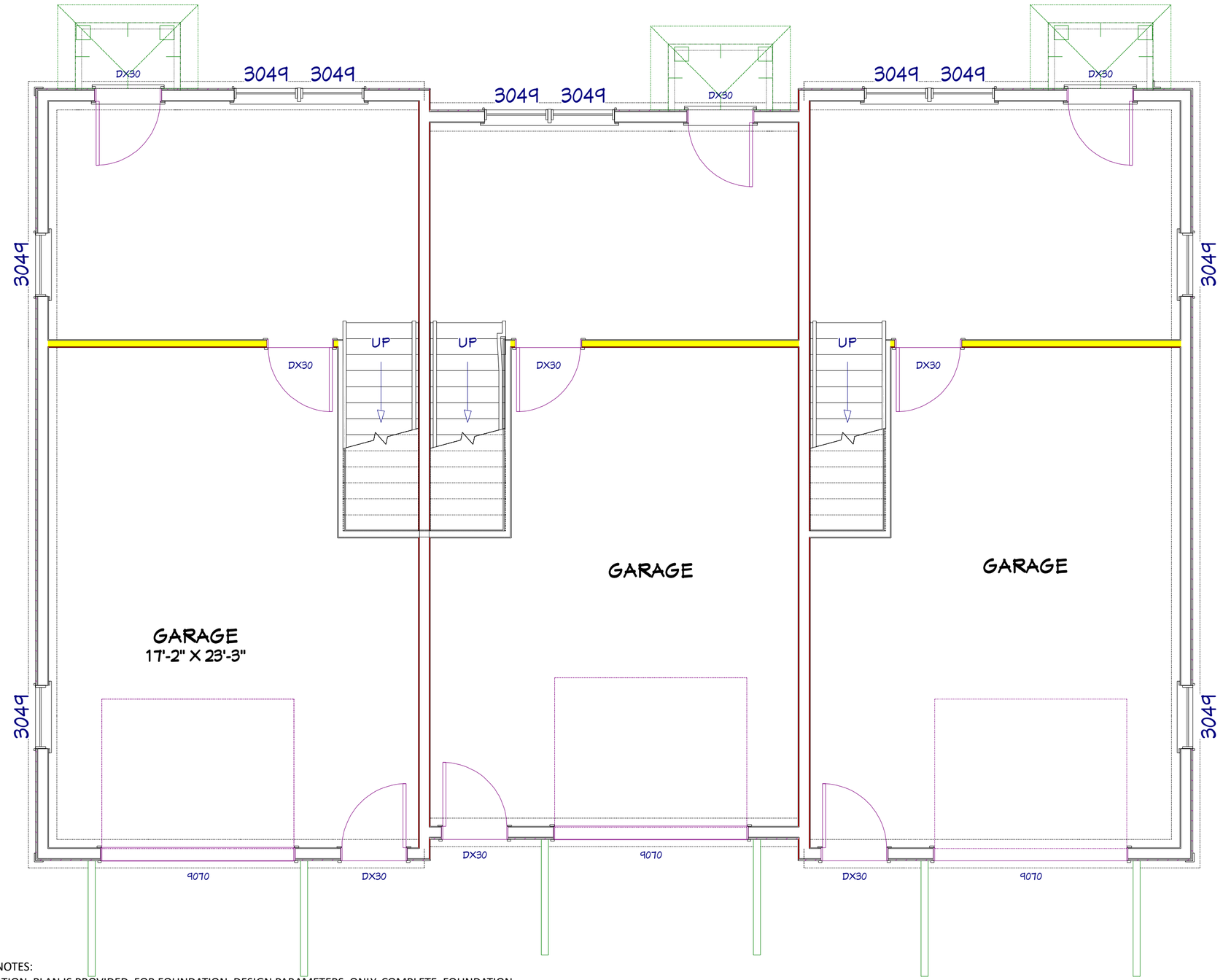
PAGE: 2	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

PRELIMINARY ONLY- NOT FOR CONSTRUCTION



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SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	6/1/2018

HOME OWNER

SITE ALLEN AVENUE PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

USE GROUP
R3

CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

DATE
6/1/2018

SCALE
AS NOTED

PAGE:
3

TRIPLEX
FOUNDATION

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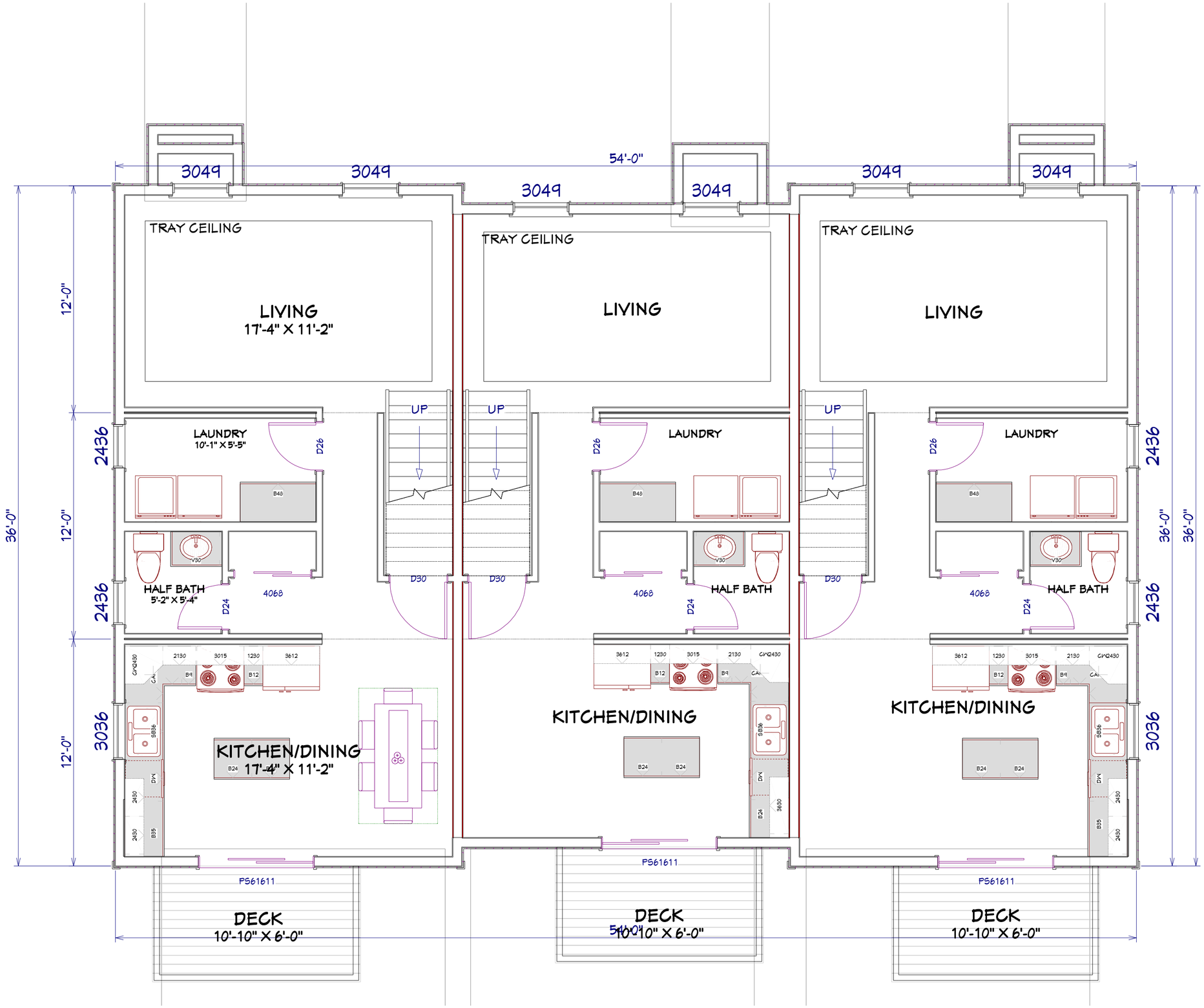

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PE/RA

SERIAL No

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HOME OWNER

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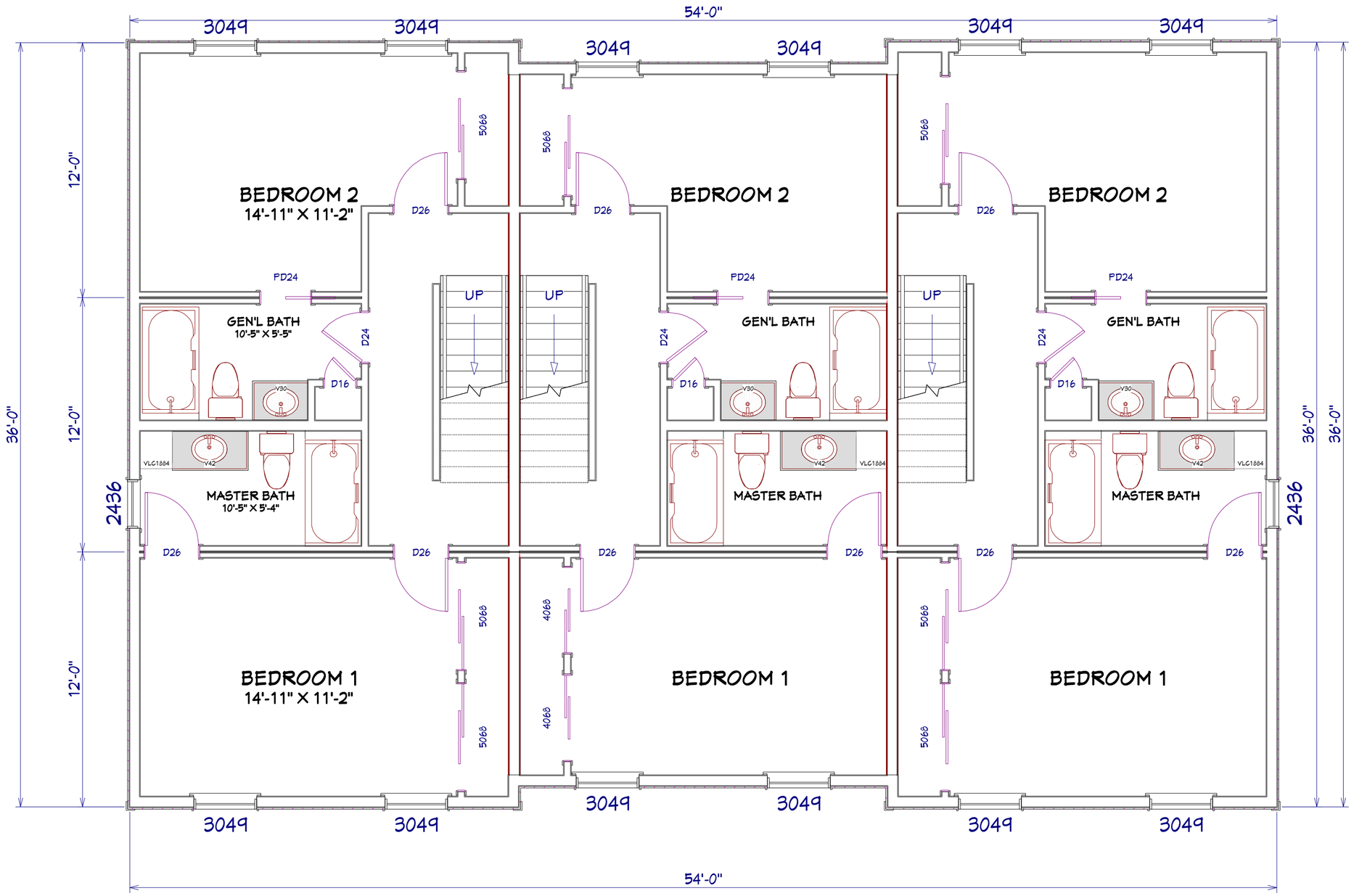
PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

TRIPLEX
FIRST FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP	CONST TYPE	DESIGNER	DATE	SCALE	PAGE:
R3	WOOD FRAME (VB)	DWW	6/1/2018	AS NOTED	4



SCALE: 1/4" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

SERIAL No

PRODUCTION No

REVISION	DATE
2	6/1/2018

HOME OWNER

SITE ALLEN AVENUE
PORTLAND, ME

BUILDER
SILVER BEACH HOMES LLC

TRIPLEX
SECOND FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP R3

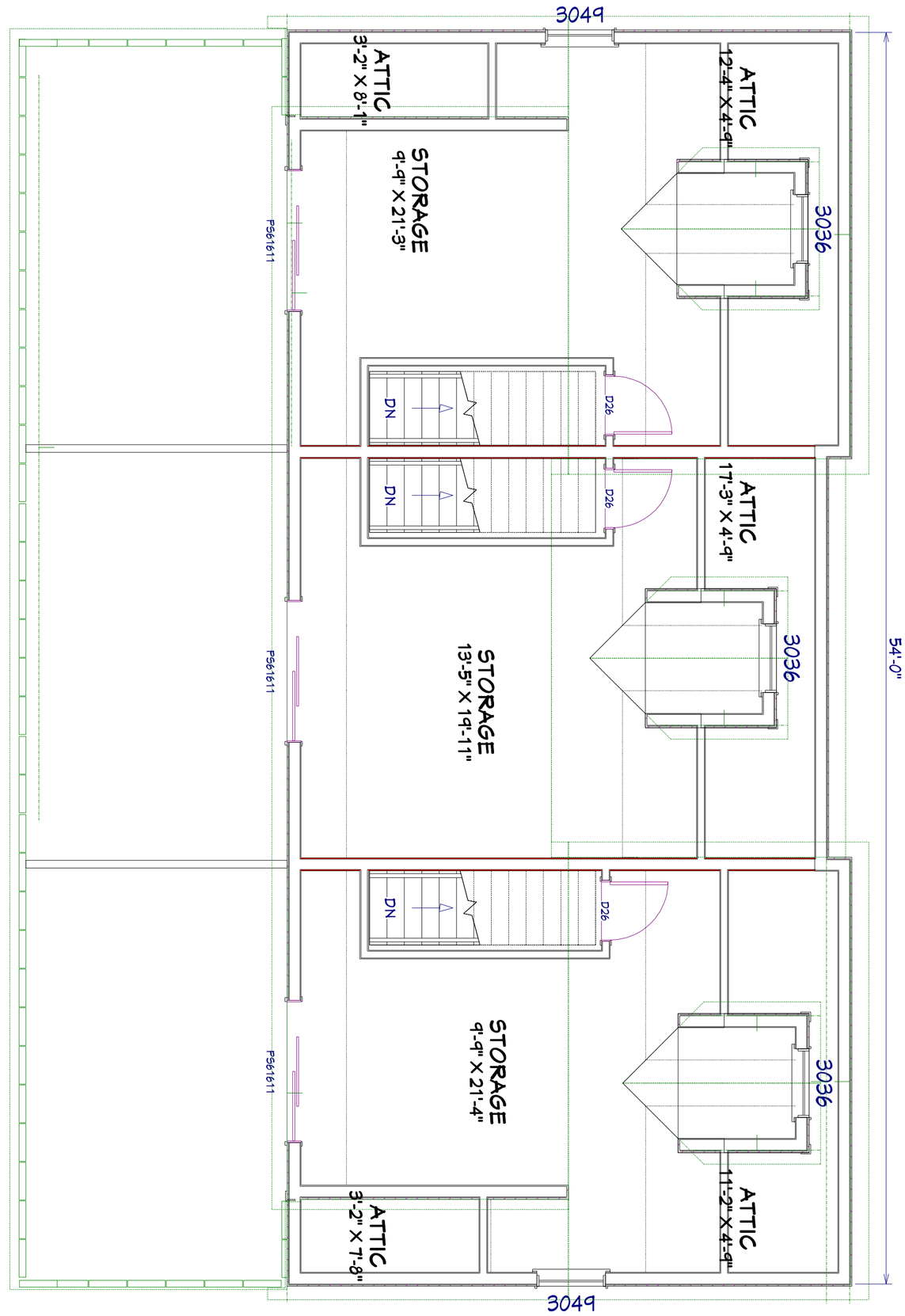
CONST TYPE WOOD FRAME (VB)

DESIGNER DWW

DATE 6/1/2018

SCALE AS NOTED

PAGE: 5



USE GROUP: R3	BUILDER: SILVER BEACH HOMES LLC	HOME OWNER	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVENUE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	TRIPLEX		REVISION: 2 — DATE: 6/1/2018		
DATE: 6/1/2018					
SCALE: AS NOTED					
PAGE: 6	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

3D's ARE FOR ILLUSTRATION PURPOSES ONLY AND MAY SHOW OPTIONAL OR SITE BUILT ITEMS. THEY ARE AN ARTISTIC INTERPRETATION OF THE GENERAL APPEARANCE AND NOT MEANT TO BE AN EXACT RENDITION. PLEASE REFER TO BUILDER CONTRACTS FOR PRODUCTS INCLUDED.

WESTCHESTER MODULAR HOMES, INC.

AN EMPLOYEE OWNED COMPANY

30 REAGANS MILL RD. WINGDALE, NY 12594

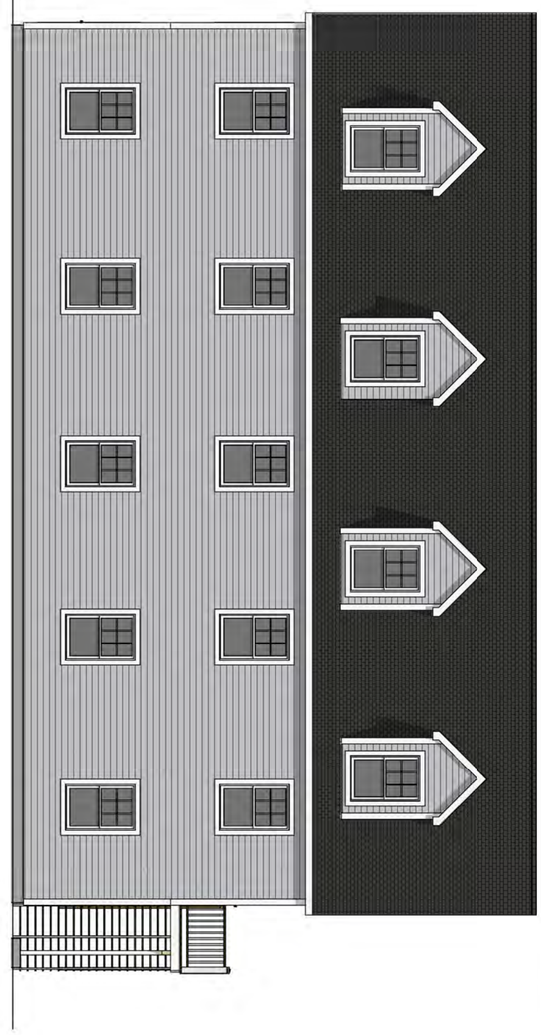
Tel (845)832-9400 Fax (845)832-6698

www.westchestermodular.com

USE GROUP R3	BUILDER SBHLLC	HOME OWNER SPEC	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE WOOD FRAME (VB)		SITE ALLEN AVE PORTLAND, ME	PRODUCTION No		
DESIGNER DWW	39 X 60 OFFICE BUILDING		REVISION / DATE		
DATE 6/29/2018					
SCALE AS NOTED					
PAGE: 1	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

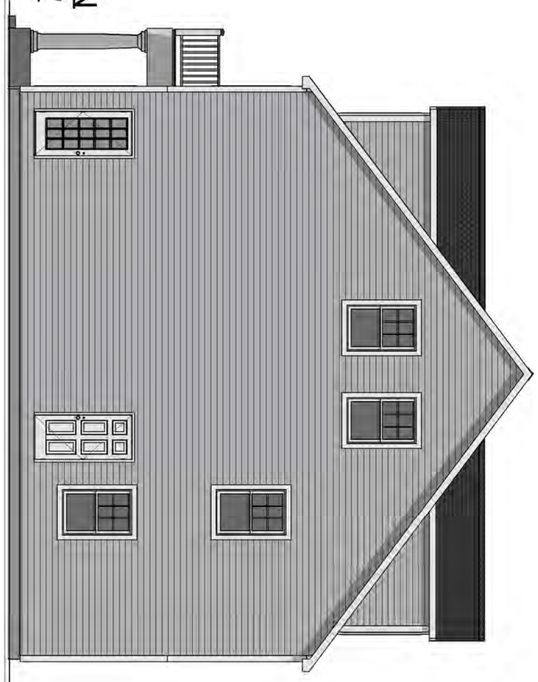
FRONT ELEVATION
SCALE: 1/8" = 1'0"

REAR ELEVATION
SCALE: 1/8" = 1'0"



LEFT ELEVATION
SCALE: 1/8" = 1'0"

RIGHT ELEVATION
SCALE: 1/8" = 1'0"



USE GROUP R3	BUILDER SBHLLC	HOME OWNER SPEC	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE WOOD FRAME (VB)		SITE ALLEN AVE PORTLAND, ME	PRODUCTION No		
DESIGNER DWW	39 X 60 OFFICE BUILDING ELEVATIONS		REVISION / DATE		
DATE 6/29/2018					
SCALE AS NOTED					
PAGE: 2	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

PRELIMINARY ONLY- NOT FOR CONSTRUCTION

FOUNDATION NOTES:

1) THE FOUNDATION PLAN IS PROVIDED FOR FOUNDATION DESIGN PARAMETERS ONLY. COMPLETE FOUNDATION ENGINEERING BASED ON SPECIFIC SITE CONDITIONS, APPLICABLE LOCAL AND STATE CODES, TO BE REVIEWED AND APPROVED BY A REGISTERED ARCHITECT OR ENGINEER IN THE STATE OF HOUSE DESIGNATION.
2) THE BUILDER/PURCHASER SHALL B RESPONSIBLE FOR DESIGN, CONSTRUCTION AND CODE COMPLIANCE OF ALL FOUNDATION ELEMENTS INCLUDING (BUT NOT LIMITED TO) STRUCTURAL, PLUMBING, ELECTRICAL, HEATING, ENERGY CONSERVATION AND FIRE SEPARATION.
3) MINIMUM COLUMN FOOTING SIZE SHALL BE 2'-6" x 2'-6" x 10" DEEP.
4) CONCRETE STRENGTH TO BE A MINIMUM 3000 PSI.
5) LALLY COLUMN SHALL BE MINIMUM 3 1/2"9I STEEL PIPE.
6) FOUNDATION SILL SHALL BE PRESERVATIVE TREATED LUMBER (SUPPLIED AND INSTALLED BY B/P PRIOR TO HOUSE DELIVERY AND SET). THERE SHALL BE NO PROTRUSION ABOVE TOP OF SILL PLATE.

SCALE: 3/16" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

REVISION	DATE

SERIAL No

PRODUCTION No

HOME OWNER

SPEC

SITE

ALLEN AVE
PORTLAND, ME

BUILDER

SBHLLC

39 X 60 OFFICE BUILDING
FOUNDATION

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP R3

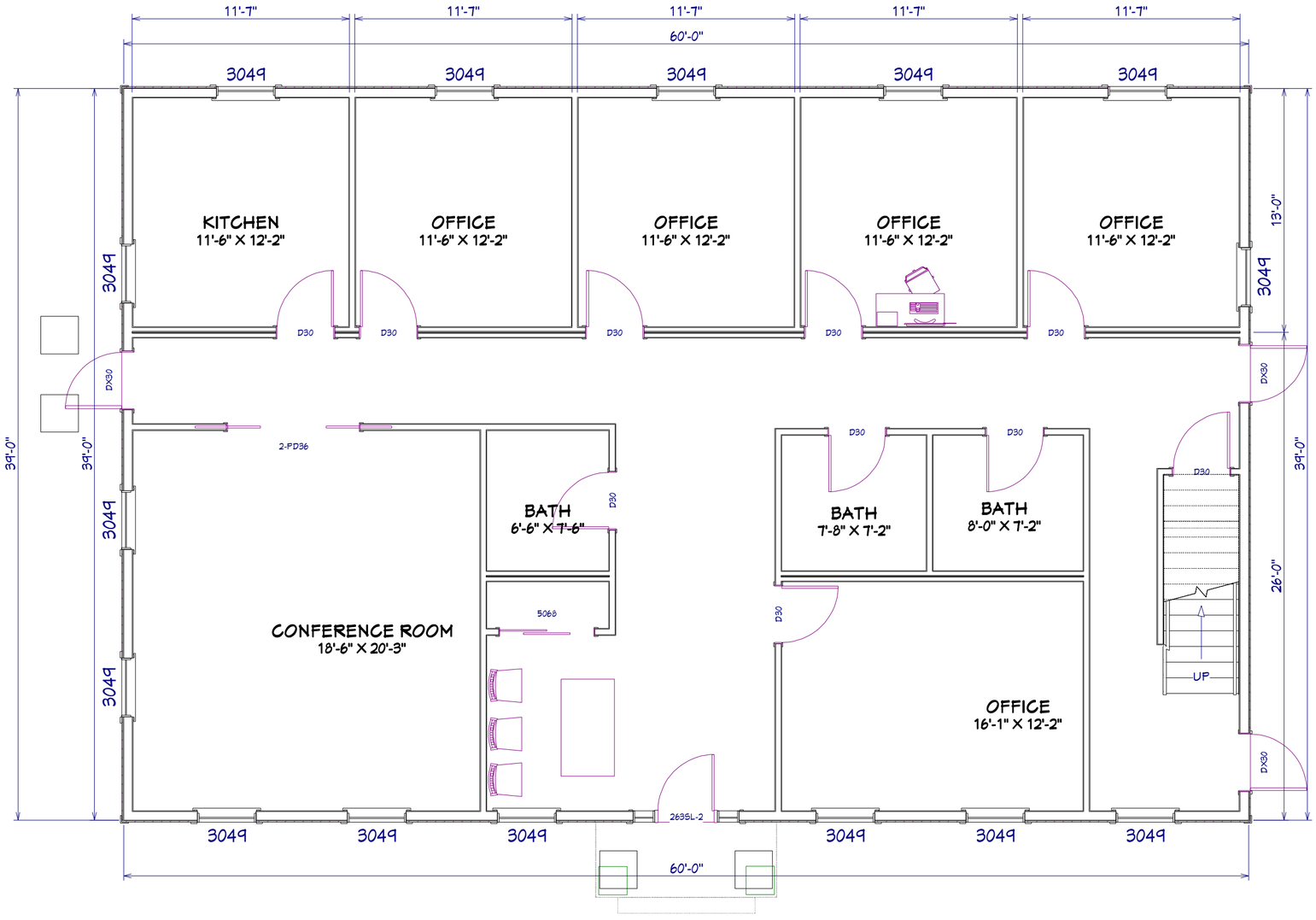
CONST TYPE WOOD FRAME (VB)

DESIGNER DWW

DATE 6/29/2018

SCALE AS NOTED

PAGE: 3



SCALE: 3/16" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

REVISION	DATE

SERIAL No

PRODUCTION No

HOME OWNER

SPEC

SITE

ALLEN AVE
PORTLAND, ME

BUILDER

SBHLLC

39 X 60 OFFICE BUILDING
FIRST FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP
R3

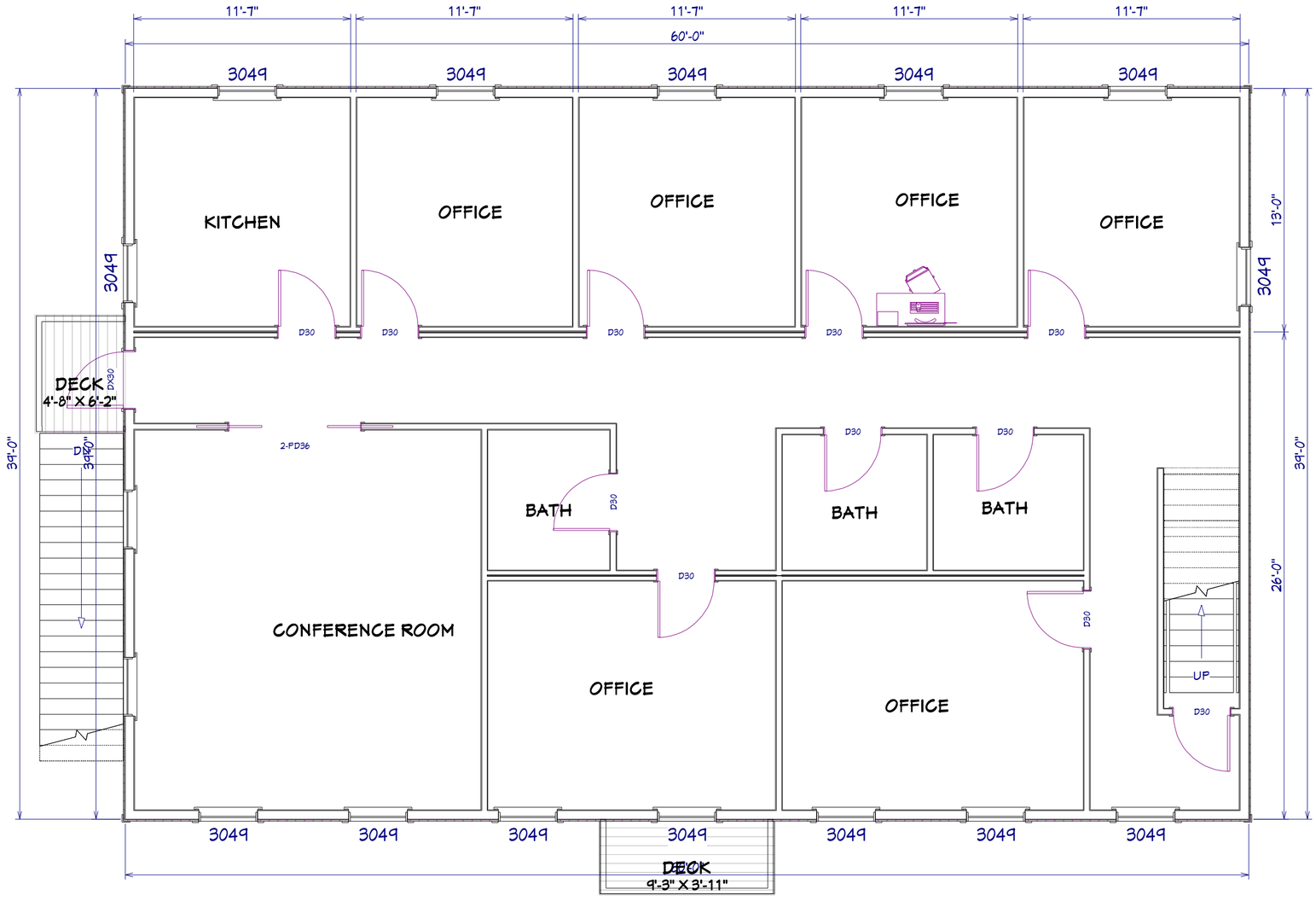
CONST TYPE
WOOD FRAME (VB)

DESIGNER
DWW

DATE
6/29/2018

SCALE
AS NOTED

PAGE:
4



SCALE: 3/16" = 1'0"

THIRD PARTY INSPECTION AGENCY

PE/RA

REVISION	DATE

SERIAL No

PRODUCTION No

HOME OWNER

SPEC

SITE

ALLEN AVE
PORTLAND, ME

BUILDER

SBHLLC

39 X 60 OFFICE BUILDING
SECOND FLOOR

WESTCHESTER MODULAR HOMES INC.
30 REAGANS MILL RD. WINGDALE, NY 12594
Tel (845)832-9400 Fax (845)832-6698

USE GROUP: R3

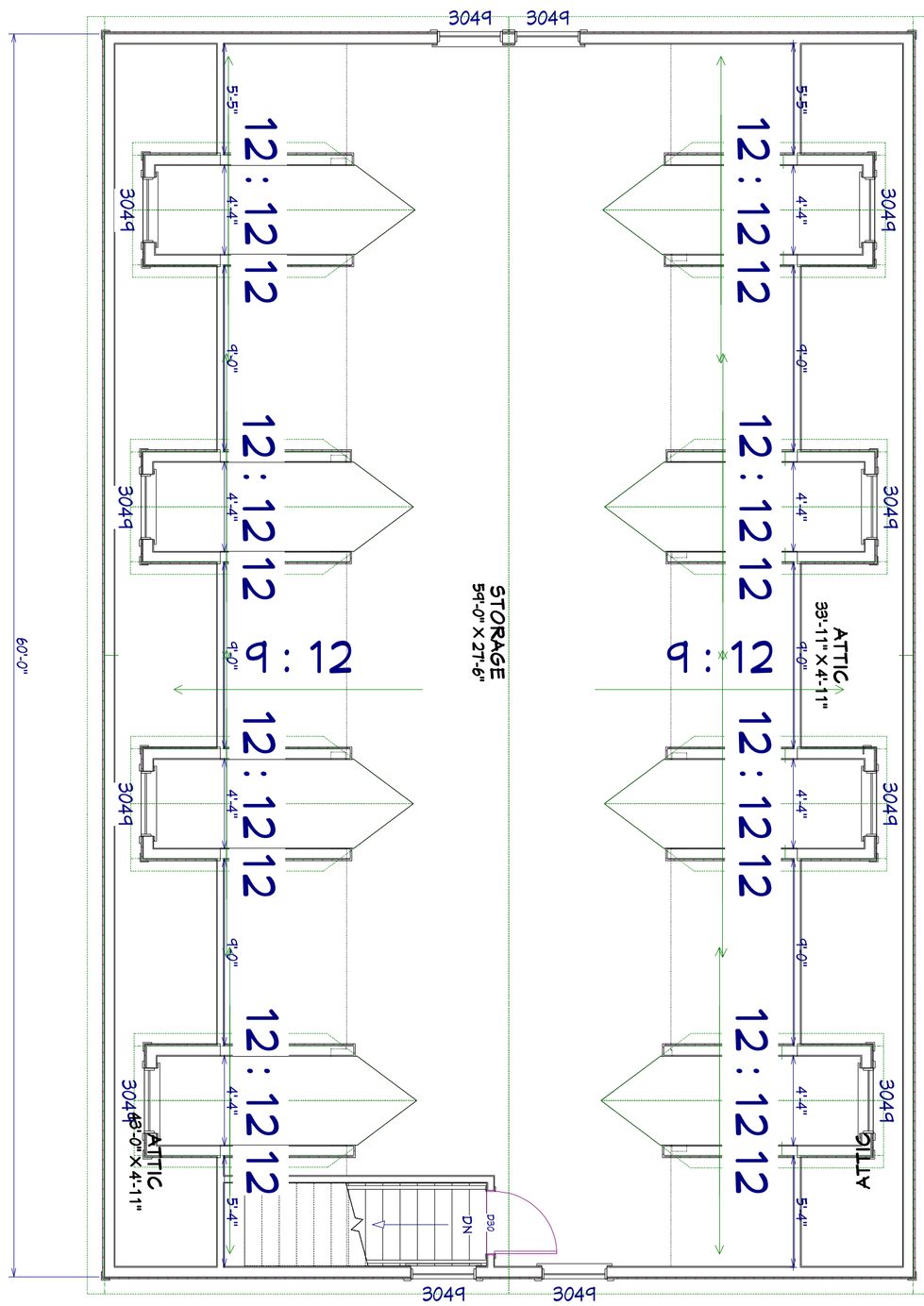
CONST TYPE: WOOD FRAME (VB)

DESIGNER: DWW

DATE: 6/29/2018

SCALE: AS NOTED

PAGE: 5



SCALE: 3/16" = 1'0"

USE GROUP: R3	BUILDER: SBHLLC	HOME OWNER: SPEC	SERIAL No	PE/RA	THIRD PARTY INSPECTION AGENCY
CONST TYPE: WOOD FRAME (VB)		SITE: ALLEN AVE PORTLAND, ME	PRODUCTION No		
DESIGNER: DWW	39 X 60 OFFICE BUILDING		REVISION / DATE		
DATE: 6/29/2018	THIRD FLOOR/ ROOF				
SCALE: AS NOTED					
PAGE: 6	WESTCHESTER MODULAR HOMES INC. 30 REAGANS MILL RD. WINGDALE, NY 12594 Tel (845)832-9400 Fax (845)832-6698				

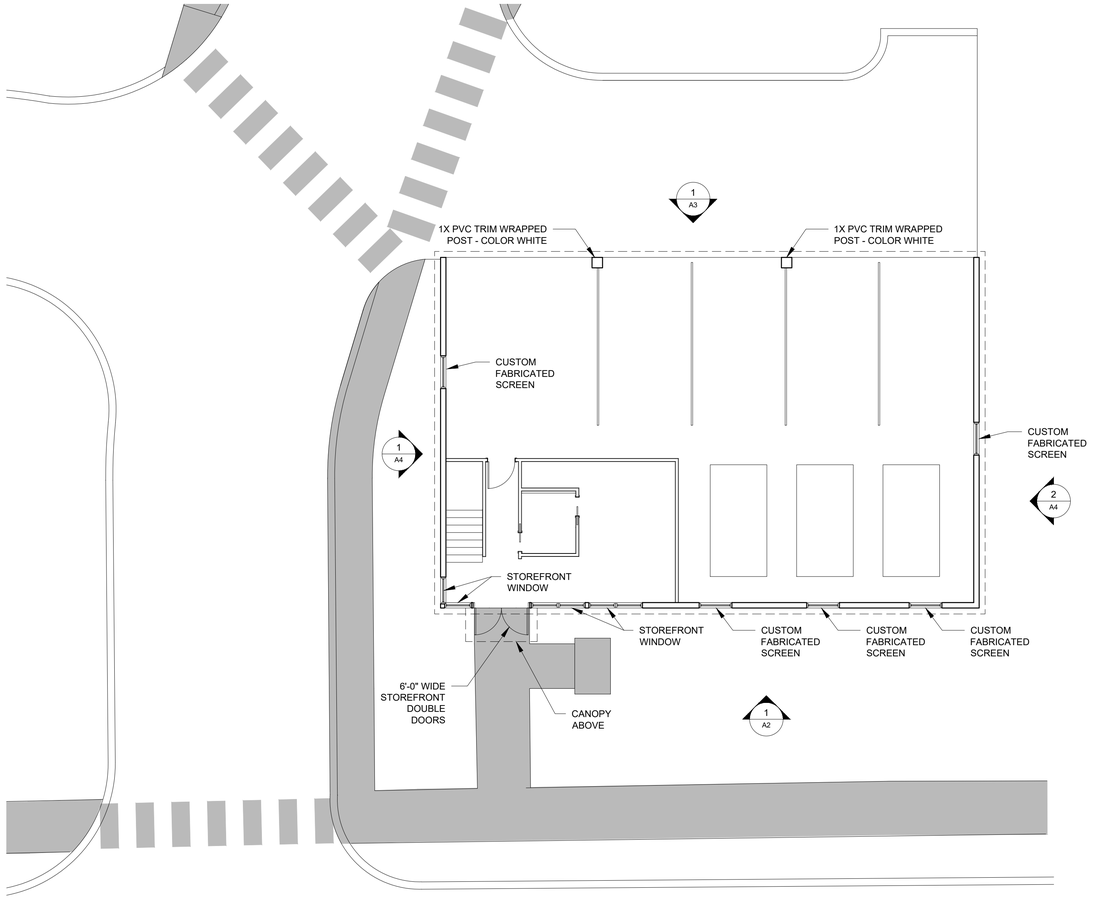
300 ALLEN AVE.

PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction



300 ALLEN AVENUE

1 FIRST FLOOR PLAN WITH SITE CONTEXT
1/8" = 1'-0"

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

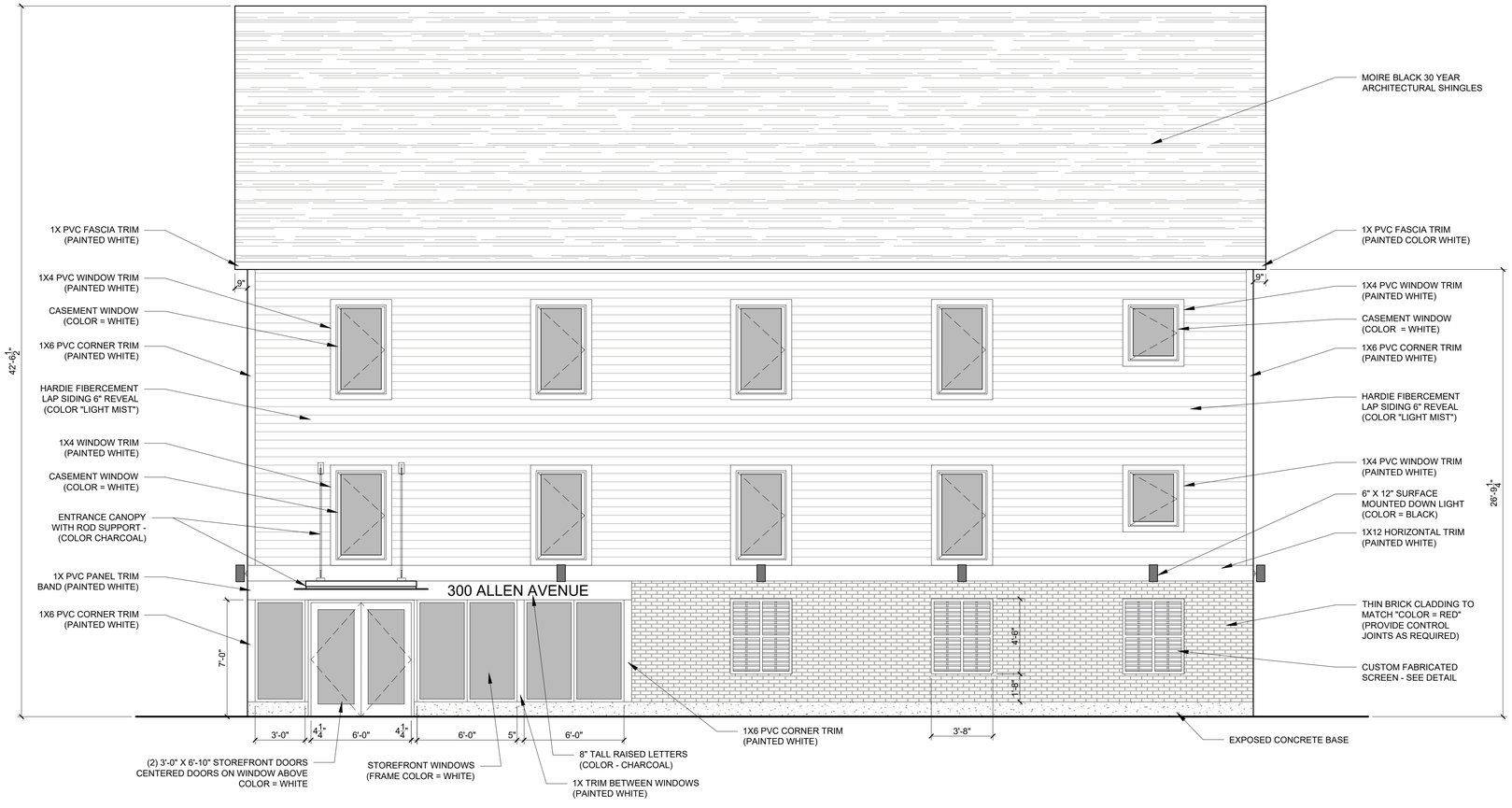
A1

300 ALLEN AVE.
PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction



1 FRONT ELEVATION
1/4" = 1'-0"

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

A2

300 ALLEN AVE.

PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction

1 REAR ELEVATION
1/4" = 1'-0"

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

A3

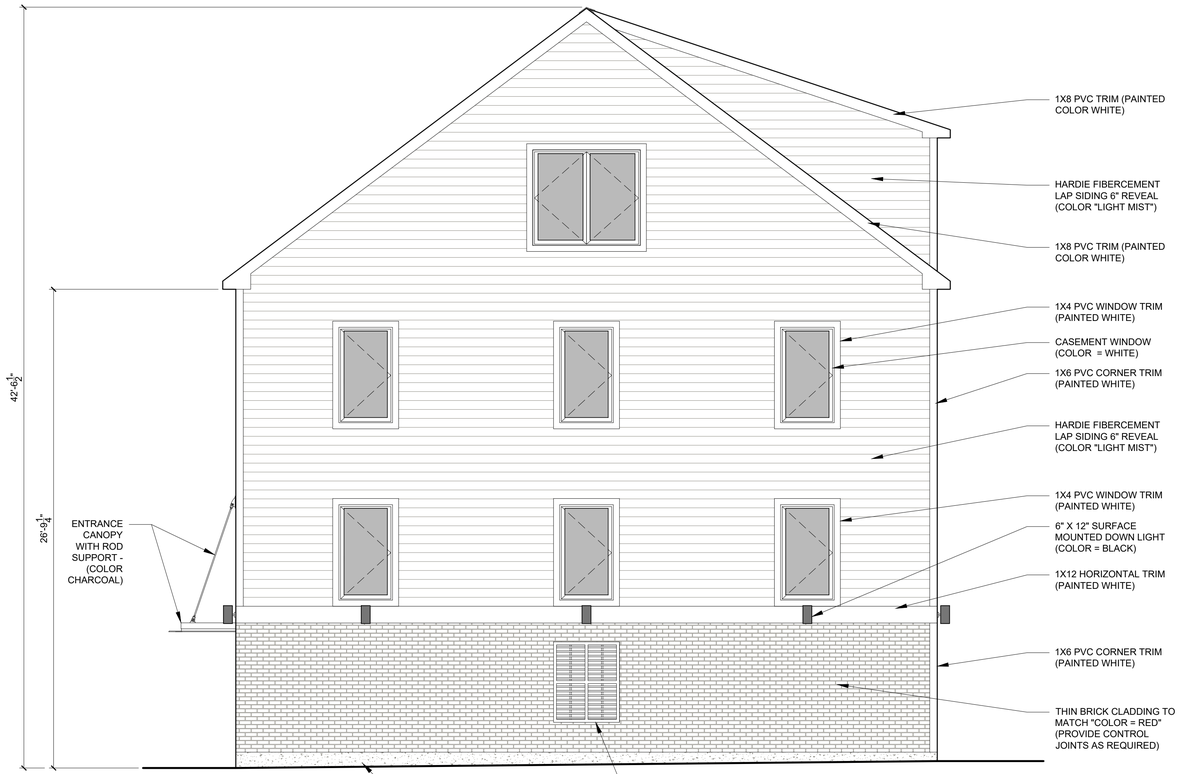
300 ALLEN AVE.

PORTLAND, ME

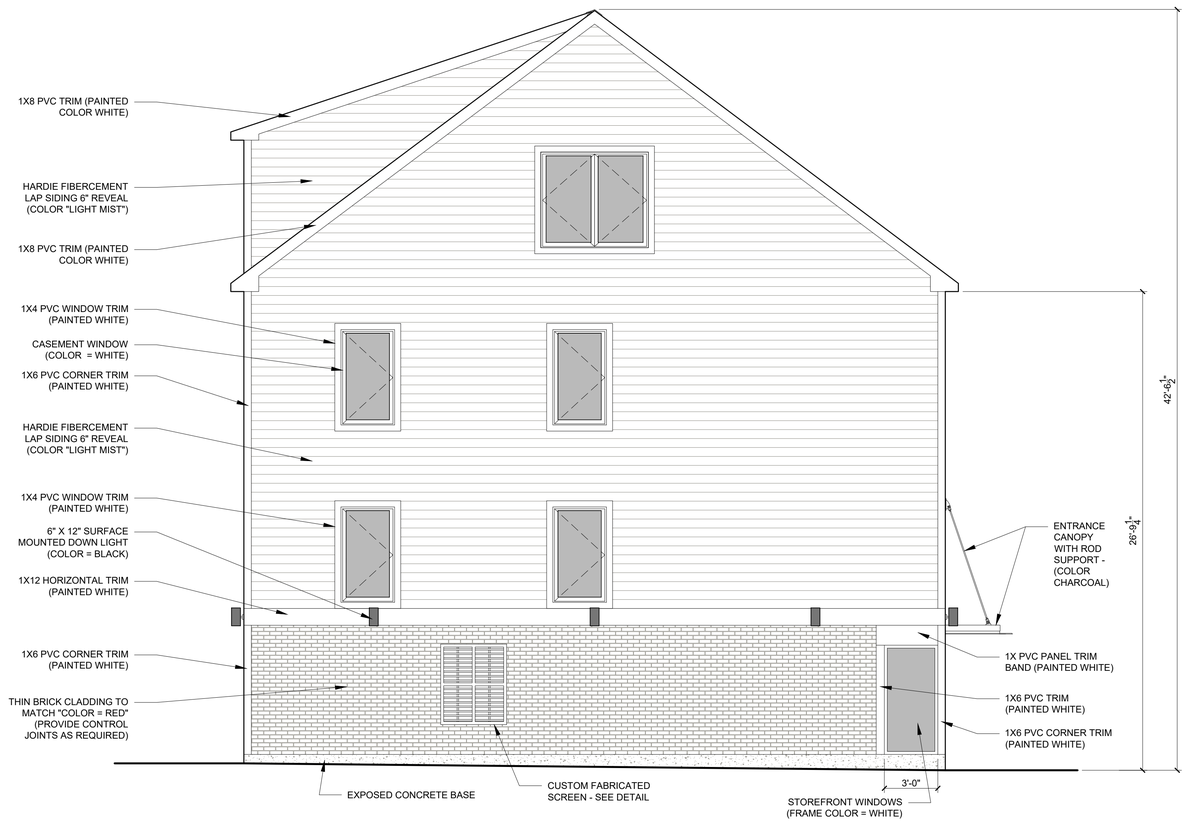
EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction



2 LEFT ELEVATION
1/4" = 1'-0"



1 RIGHT ELEVATION
1/4" = 1'-0"

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

A4

300 ALLEN AVE.

PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction

1 FRONT ELEVATION
NTS

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

A5

300 ALLEN AVE.

PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction

1 CORNER PERSPECTIVE IMAGE
NTS

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

A6

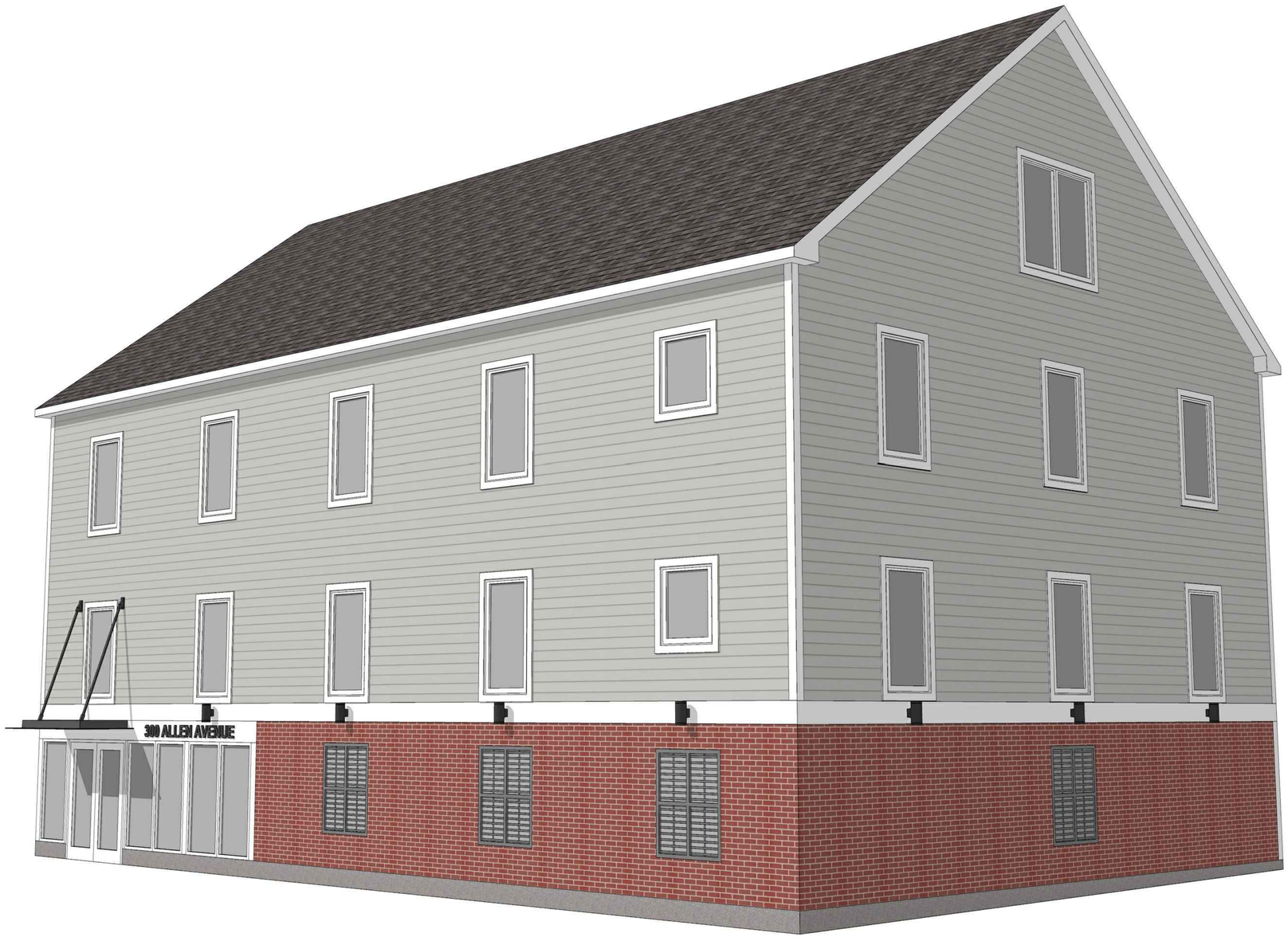
300 ALLEN AVE.

PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction



1 CORNER PERSPECTIVE IMAGE
NTS

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

ESTELLE ESTATES, LLC

A7

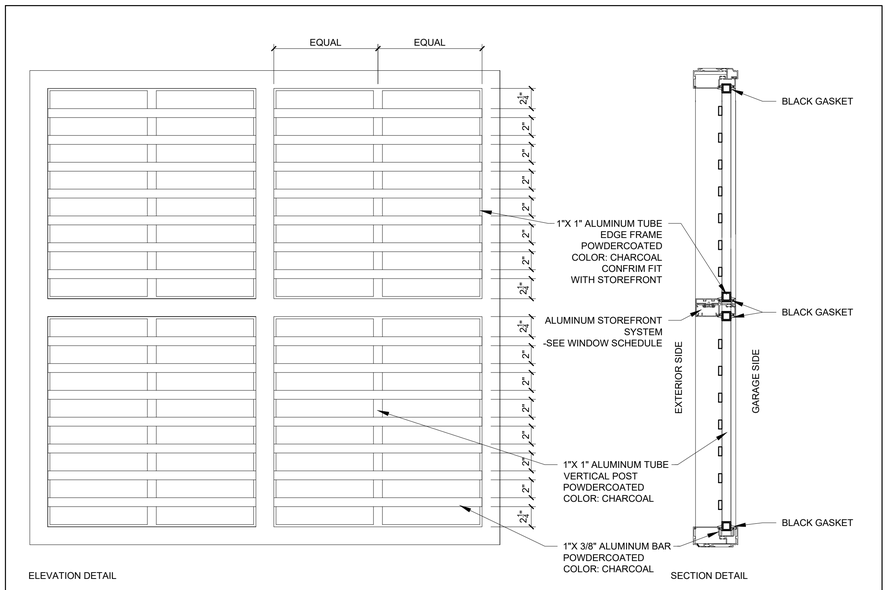
300 ALLEN AVE.
PORTLAND, ME

EXTERIOR FINISHES

AUGUST 31, 2018

PROGRESS PRINT ONLY
Not for Construction

CUSTOM PARKING SCREEN



1 CUSTOM PARKING SCREEN INFILL PANEL DETAILS
1 1/2" = 1'-0"

EXTERIOR DOWN LIGHT

houzz

All Products / Outdoor / Outdoor Lighting / Outdoor Wall Lights & Sconces

Progress Lighting Cylinder 6" Outdoor Wall Lantern

7 Designs: Black and Metal shade

Product Specifications

Manufactured By	Hubbell Lighting Inc.
Sold By	LAMPS EXPO
Size/Weight	W 6" / D 8.88" / H 12" / 4 lb.
Category	Outdoor Wall Lights And Sconces
Style	Contemporary
Commercial-grade	Yes

Need more info? Ask a question ›

2 SAMPLE OF EXTERIOR DOWN LIGHT
NTS

ESTELLE ESTATES, LLC

NOTE: ALL DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY - ALL CONSTRUCTION DETAILS, MATERIALS AND STRUCTURAL TO BE BY G.C. AND OWNER

A8

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

July 2, 2018

Matthew Grooms
Planning and Urban Development Department
City of Portland
Fourth Floor, City Hall
389 Congress Street
Portland, Maine 04101

Subject: 300 Allen Ave – Portland, ME
Request for Additional Information

Dear Matthew,

Based on correspondence with you, peer reviewers, and a preliminary review memo dated May 10, 2018, additional information has been requested relative to the permitting for the 300 Allen Ave Level III Site Plan Application. The items that you requested are listed below followed by additional information, if appropriate.

Preliminary Staff Review Memo from City Staff

Comment (1): *The proposed condition peak flow rates of the 2- and 10-year storm events exceed the existing conditions peak flow rates at Point of Interest #2. We agree that the proposed total flow and the proposed increase in these storm events is minor. This point of interest is for the connection of new stormdrain to an existing stormdrain system. The Applicant should confirm that there are no existing condition or capacity issues with that system.*

Response: The existing system was constructed in 2015. Based on discussions with the Department of Public Works, there are no known capacity or existing condition issues associated with the system.

Comment (2): *The HydroCAD model uses very small time of concentration values that are less than the 5-6 minute minimum typically utilized for the modeling methods. The TC values may not have a significant impact on the overall modeling results, but please clarify the TC values and either adjust or provide justification for the small values.*

Response: TC values have been revised to be a minimum of 5 minutes. Please refer to the revised Stormwater Management Report that includes revised HydroCAD calculations attached to this letter.

Comment (3): *The total area of the pre-development model (140,820 SF) is not equal to the total area of the post-development model (137,344 SF). The Applicant should evaluate the total watershed areas and provide a model with equal pre- and post-development areas.*

Response: A revised HydroCAD model with equal pre and post watershed areas is provided in the attached Stormwater Management Report.

Comment (4): *Verification of utility ability to serve is required.*

Response: Ability to Serve letters from all utilities within the site will be provided upon receipt.

Comment (5): *The Applicant provides three ponds, identified as P14, P15, and P17 in the model, which receive no inflow or discharge any outflow. These ponds are not identified on the Routing Diagram or in the report. The Applicant should clarify the purpose of these pond nodes.*

Response: The ponds are part of the working design process and are duplicates. A revised HydroCAD model and report is provided in the Stormwater Management Report

Comment (6): *Applicant has submitted a NRPA permit application to the Maine DEP for wetland impacts. Copies of correspondence that results in changes to the project, and copies of the final permit should be provide to the City when available. A copy of the Maine Construction General Permit Notice of Intent should also be provided when available.*

Response: The approved MDEP NRPA permit for wetland impact is provided in Attachment 6. All remaining permits from reviewing authorities will be provided upon receipt.

Comment (7): *The Applicant should note a location for snow storage or provide a plan for snow management. The snow storage location should be sited outside of existing and proposed drainage courses.*

Response: Note 3 on the Site Plan states the Snow Removal Contractor will remove snow from the site due to the limited available space.

Comment (8): *The City of Portland Technical manual only allows for 12.5 mm HMA surface material for work within the ROW. The detail for asphalt pavement currently calls for 9.5 mm HMA.*

Response: The detail has been revised to include 12.5mm HMA surface material for work within the ROW.

Comment (9): *The Stormwater Management Plan should include a stormwater inspection and maintenance plan and a Stormwater Agreement developed in accordance with and in reference to MaineDEP Chapter 500 guidelines and Chapter 32 of the City of Portland Code of Ordinances.*

Response: A stormwater management maintenance plan and agreement will be provided to the City.

Comment (10): *The project site includes significant natural features. The site plan should be revised to the extent possible to better preserve and protect significant natural features by incorporating them into site design.*

Response: The site plan has been revised to preserve and protect significant natural features to the greatest extent practical. Revisions to the plan include removal of parking spaces and relocation of the duplex buildings to the west of the property, minimizing wetland impacts. A revised plan set is included with this submission.

Comment (11): *Based upon specifications listed under Section 4.6 of the City's Technical Manual, street trees are required at a rate of two street trees per residential unit for PRUDs for a total requirement of 24 trees. In the event that site constraints prevent the planting of all required trees, the applicant shall provide an acceptable alternative as listed in the site plan ordinance.*

Response: Approximately 8 street trees, 11 shade trees and 10 flowering trees are provided, totaling 29 trees on the site. A revised landscape plan can be found in the attached plan set.

Comment (12): *Please note, the proposed development is being reviewed as a Multiplex development. The proposed development appears to meet most of the dimensional standards for the R-5 and R-P zone, with the exception of the front-yard setback. The applicant's analysis shows average setback based upon 278 and 292 Allen Avenue, for an average yard depth of 12.5' feet. Given that the structure at 292 Allen Avenue is being demolished as part of this proposal, that property cannot be referenced under the alternative standard. The standard also requires that the measurement be taken from the property on either side of the lot to be developed, which would be 308 Allen Avenue. Based upon the site plan, the front yard setback appears to be approximately 22.63' feet. This would provide an average front yard setback of 17.8' feet. The site plan shall be revised to reflect this requirement.*

Response: The site plan has been revised to include a 17.8 ft front yard setback. A revised plan set is included with this submission.

Comment (13): *Snow storage areas shall be indicated on the site plan.*

Response: Note 3 on the Site Plan states the Snow Removal Contractor will remove snow from the site due to the limited available space.

Comment (14): *Prior to the issuance of any building permits, a copy of all 'ability to serve' letters shall be provided to the Planning Authority, which demonstrate adequate utility capacity for the project.*

Response: Ability to Serve letters from all utilities within the site will be provided upon receipt.

Comment (15): *Based upon the proposed parking count which exceeds zoning requirements by 10% or more, the applicant shall provide a parking analysis justifying the need for additional parking. Staff further recommends that parking be reduced to the extent practicable to reduce wetland impacts on-site.*

Response: The proposed parking count has been revised due to wetland minimization efforts. A revised site plan showing the parking space count at the zoning requirement can be found in the attached plan set.

Comment (16): *The construction management plan shall include adequate measures to protect vegetation that is to be preserved within the project site.*

Response: The construction management plan will place appropriate erosion and sedimentation control measures to preserve the undisturbed vegetation on site. Specifically, a double row of silt fence shall be placed near the wetland area that will not be disturbed during the project. A limit of disturbance line has been added

to the grading plan. Please see the revised Grading, Drainage and Erosion Control Sheet included in the plan set submitted with this letter.

Comment (17): *The applicant shall indicate the location and type of all site lighting on applicable plan sheets, and shall include lighting details. All proposed lighting shall be full cutoff and shall be in compliance with Section 12 of the City's Technical Manual.*

Response: Lighting cut sheets are provided in Attachment 4 with this letter.

Comment (18): *The applicant's site plan and documentation shows vegetation removal within the required building setbacks. The applicant shall provide evidence that 30% of existing trees sized ten inches DBH or greater within those required setbacks are being preserved.*

Response: Based on the tree line from the available site survey topography, approximately 40% of the existing trees within the required building setbacks are to remain undisturbed from this project.

Comment (19): *The Applicant should provide an opinion on the location of the driveway as it relates to the Allen Avenue cross-section and the transition from a two-lane section to a three-lane section.*

Response: Striping from Contract Drawings from *Washington Ave and Allen Ave MPI Paving and Signal Modifications* plan set show the center left turn lane shifting towards the Allen Ave and Washington Ave intersection. The driveway is no longer within the three lane section and will operate similar to other driveways along this road.

Comment (20): *Sight distance from the driveway shall be provided.*

Response: Site distances from the driveway are provided on the revised Site Plan. The required site distance is 305 ft, and a minimum of 460 ft are provided in both directions. A revised plan set is included with this submission. A summary of the site distances are provided in the Traffic memo in Attachment 3.

Comment (21): *The Applicant shall provide a parking analysis that documents parking demand. Shared parking should be a consideration.*

Response: The number of parking spaces has been reduced due to wetland minimization efforts. A revised Site plan is included with this submission.

Comment (22): *A pedestrian sidewalk shall be provided between the Duplex buildings and Allen Avenue.*

Response: A sidewalk has been added to connect the duplexes and Allen Avenue. Please refer to the revised Site Plan included with this letter.

Comment (23): *Crash data for Allen Avenue in the vicinity of the project should be provided with a safety analysis of conditions.*

Response: A summary and crash data for Allen Ave in the vicinity of the project can be found in Attachment 3.

Comment (24): *The parking layout generally meets City Technical standards with the exception of the parking aisle width where a 20-foot width is provided. The Applicant should formally request a waiver and provide supporting documentation.*

Response: A formal waiver for the parking isle width to be reduced from 24 ft to 20 ft is requested. The 20 foot isle width shown is adequate distance for a parked passenger vehicle to turn out of a parking space. The reduced width will protect further disturbances to the adjacent wetland on the northern side of the roadway.

Comment (25): *A trip generation estimate shall be provided.*

Response: A summary and calculations of the trip generation estimates are provided in Attachment 3.

Comment (26): *The business building will have a street number independent of the residential complex. The residential units shall have one street address with individual building and unit designations. All structures are required to display the assigned street and/or building designations. Street numbers and building designations shall be clearly visible from the public right of way.*

Response: The building and development number system will be designed to conform to the above comment.

Comment (27): *The dead end of each road shall provide a 30'x30' turnaround.*

Response: It is our understanding that the Fire Department will allow the Triplex driveway to not include a turnaround. The radii at the triplex driveway has been increased to easily allow backing of the firetruck from the Duplex driveway. The duplex driveway is only slightly longer than 150 ft when considering this increased ability to use the Triplex driveway as the turnaround. Providing a turnaround on the duplex driveway would significantly increase the impervious surface on the parcel and would ultimately eliminate a duplex, then eliminate the need for the turnaround.

Comment (28): *All residential units shall be sprinklered. A private fire hydrant shall be installed in the subdivision on the North side of the road split.*

Response: A revised utility plan showing sprinklered residential units and a private fire hydrant at the location requested can be found in the attached plan set.

Preliminary Planning Board Hearing – Staff Comments

The following comments came from Planning Board Staff from the June 12th Planning Board Meeting:

Comment (27): *More open and habitable space should be provided.*

Response: The grading has been revised to allow more usable open space between the duplex units, and around the parking and sidewalk areas. The revised grading provides level spaces for potential gathering areas. Revised Building elevations, found in Attachment 7, show two decks on the 1st and 3rd levels of the buildings to increase usable open space.

Comment (28): *Please move the triplex building out of the sewer and drainage easement.*

Response: The triplex building has been moved off the sewer and drainage easement.

Comment (29): *The project does not go far enough to meet the standard consistency with the established architectural character.*

Response: Revised building elevations to enhance the presence of the buildings and match the surrounding neighborhood are provided in Attachment 7.

Neighborhood Meeting Comments

As required by the City of Portland, a neighborhood meeting was held on June 25th at Lyman Moore Middle School Library, from 6:00 PM to 6:45 PM. Approximately 13 neighbors attended the meeting. The following comments on the project were received:

Comment (30): *Barbara Pileggi: Concerns on traffic increase on Allen Ave, it is already tough to take lefts out of Pennell Ave.*

Response: Trip generations and peer review confirm that the traffic increase due to the development are minimal and will not create additional traffic issues. A traffic memo can be found in Attachment 3.

Comment (31): *Multiple Attendees: What are the landscaping buffers you are proposing for abutting properties? Can you provide more?*

Response: Two sets of fencing is proposed: one along the western boundary near Short St, and one along the north eastern boundary near the abutting apartment building. The fencing has been revised from aluminum fencing to shadowbox fencing for additional privacy. Additional trees along abutting properties have been added to the landscape plan based on abutter requests. A revised landscape plan can be found in the revised plan set submitted with this response.

Comment (32): *Katherine Kimball, rear abutter, Cypress St: The abutting properties are opposed of the construction of a path to connect Cypress St and the development from this project.*

Response: The proposed project is not proposing a pedestrian pathway to Cypress St due to the negative responses received from Public Meetings.

Attachments:

Attachment 1 – Revised Stormwater Management Report
Attachment 2 – Revised Plan Set
Attachment 3 – Traffic Memo, Trip Generations, and Crash Data
Attachment 4 – Lighting Cut Sheets
Attachment 5 – Autoturn Plan
Attachment 6 – MDEP NRPA Permit
Attachment 7 – Revised Building Elevations

The applicant appreciates the City staff comments to date and looks forward to continue to work with the staff on this project.

If you have any further questions please contact us.

Sincerely,
Gorrill Palmer

Douglas E Reynolds P.E.
Project Manager

Copy: Peter Bouchard, ESTELLE ESTATES, LLC

DER/djg/U:\801.06 Allen Ave - Bouchard\P Applications\Local\Level III Final Site Plan\Response 5-22-18\2018 05 22 comment response letter.doc

Portland Maine Yes. Google's good here.

Jennifer Munson <jmy@portlandmaine.gov>

Fwd: Comments and requests on 300 Allen Avenue, Estelle Estates Development

Matthew Grooms <mgrooms@portlandmaine.gov> Tue, Jun 12, 2018 at 8:12 AM
To: Jennifer Munson <jmy@portlandmaine.gov>

Hi Jen,

I am forwarding a public comment for 300 Allen Avenue.

Thanks,

Matt

---------- Forwarded message ----------
From: **Jane Orbeton** <mckorb1@gmail.com>
Date: Mon, Jun 11, 2018 at 11:25 PM
Subject: Comments and requests on 300 Allen Avenue, Estelle Estates Development
To: mgrooms@portlandmaine.gov
Cc: Jane Orbeton <mckorb1@gmail.com>, Susan McKenna <susie.mckenna@gmail.com>, Jim McKenna <jimmckenna3@gmail.com>

Hello, Portland Planning Board and Planning Staff,

We are Susan McKenna, James McKenna and Jane Orbeton, owners of a single family home at 7 Short Street that immediately abuts the back side of the Estelle Estates Property at 300 Allen Avenue. We are unable to attend the workshop on June 12 and hope that you will seriously consider our comments and requests. The Estelle Estates development merits careful consideration because (1) it abuts and by its density, paving and scale it will have an impact on, neighboring residences and (2) the properties in the neighborhood and the property at 300 Allen Avenue are often wet enough that ducks swim in our yards on ponds newly formed by rain or snow melt, right over our grass. We cannot accept any more water from Estelle Estates and the development should be designed to avoid such a result. This is a very serious problem that the whole neighborhood needs the Planning Board to address.

To make the Estelle Estates development compatible with our property and the other residences nearby, we ask for the City to require the following:
1. **A metal perimeter fence** at least 4 feet high supported by metal posts set in concrete along the property line everywhere that the development abuts residential property and shrubbery plantings along all property lines;
2. **A lighting plan** that is considerate of and compatible with neighboring residences, that is "dark sky" lighting and that does not direct lighting at abutting properties;
3. **A drainage plan** that ensures that the development absorbs and disposes of its own water runoff, specifically requiring no runoff onto adjacent properties and no increase in the amount of surface water that those properties experience;
4. **Limitation of the amount of on site parking and paving** to the amount required by the zoning ordinance; and
5. **Required use of a permeable paving system** for all or part of the parking and paved areas that will address the neighborhood water issue, that is permeable paving, such as pervious concrete, porous asphalt, paving stones or grass pavers.

Please confirm receipt of this email in time for consideration at the workshop on June 12.
Thank you for your assistance. We would be happy to speak with your staff at any time.
Susan McKenna, 629-7943
James McKenna, 318-3035
Jane Orbeton, 420-6265

--
Matthew Grooms
Planner
Planning Division
City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101
(207) 874-8725 (T)
(207) 756-8258 (F)
mgrooms@portlandmaine.gov

Google Groups

Additional Comments for 300 Allen Avenue

Christopher Ellingwood <cellingwood@berrydunn.com> Jun 12, 2018 1:56 PM
Posted in group: **Planning Board**

Good afternoon Matt and members of the Planning Board,

Due to a business trip, I am out of town and will not be able to attend tonight's workshop.

In addition to our original comments, which we thank you for addressing some of those concerns in the agenda for this evening, I would like to share two other items.

1) We are still very concerned about adding another driveway with additional traffic to the location. Please see attached for a photo from Friday, June 8 of Allen Avenue at 7:50 AM. As you can see, when school is in session at Casco Bay High School, the traffic backs up like this most mornings. It is nearly impossible for the residents of Pennell to turn from our street. Additional traffic will contribute to further congestion.

2) We are also concerned over the condition of the lots at both 300 and 280 Allen Ave. For years, the commercial lot has been neglected and was not mowed or maintained. By Midsummer the sidewalk is impassable because the weeds have taken over. Since Estelle Estates purchased the single family home and vacant lot, it has gone unmaintained and the grass is currently pushing waist height. We understand the zoning and approval process may take some time and would like to request the Estelle Estates maintain the property and mow the lawn on a regular basis.

We thank you for your consideration and look forward to hearing the responses of Estelle Estates and reviewing final plans. We look forward to the neighborhood meeting when that is scheduled.

Please don't hesitate to contact me with any questions or further information needed –

Chris Ellingwood

Abutting neighbor and homeowner – 19 Pennell Avenue

802-310-0361

Google Groups

300 Allen Avenue Proposal

Christopher Ellingwood <cellingwood@berrydunn.com> Aug 9, 2018 1:39 PM
Posted in group: **Planning Board**

Good Day,

I am following up to email I sent to Matt Grooms on August 6 – We received a notice for an additional workshop related to the 300 Allen Avenue proposed development for August 14, 2018. I will be unable to attend due to commitments with a business trip in Maryland.

The link provided on the notice of the meeting does not include any updated documents or site plans that address previous comments from the planning board. I am wondering why there is an additional workshop on the 14th, and if updated documents are going to be made available for the property abutters to review and, like last time, provide comments on. The minutes and notes from the neighborhood workshop have also not been upload and provided on the portal.

As a direct abutter to the development, this would be much appreciated and is important to us. I'd also like to express concern over the condition of lot as it lies now, no one has mowed the lawns or maintained the property. The sidewalks are nearly blocked by overgrowth and the grass in up to my waist right now. It's our opinion that Estelle Estates is not "making any friends" of the neighborhood by managing their property this way and the lots are becoming an eye sore.

I appreciate any information you can provide to us and look forward to seeing revised site plans.

- Chris

Christopher S. Ellingwood, CISA | Senior Manager

Information Technology Assurance Services

d/f: 207.541.2290 | **c:** 802.310.0361

berrydunn.com

Portland Maine | Yes. Google's good here.

Jennifer Munson <jmy@portlandmaine.gov>

RE: 300 Allen Avenue Proposal

Christopher Ellingwood <cellingwood@berrydunn.com> Mon, Aug 13, 2018 at 3:20 PM
To: Matthew Grooms <mgrooms@portlandmaine.gov>, "Peter Vachon (peter.vachon@martinspoint.org)" <peter.vachon@martinspoint.org>
Cc: "kcook@portlandmaine.gov" <kcook@portlandmaine.gov>, "jduson@portlandmaine.gov" <jduson@portlandmaine.gov>, Planning Board <planningboard@portlandmaine.gov>

Good afternoon,

Once again, thank you for providing the documents as requested. I would like to submit the following comments for consideration and addressment.

1) We appreciate the landscape considered as presented in the plan. I still feel as though a fence should be considered along the property line because the parking lot and garages are in our backyards. Headlights and noise will still be viable from our homes, especially in the winter months as vegetation thins.

2) I like the new designs of the triplexes as shown on page 7 of the renderings (elevation heights), however am questioning the third-story deck. The buildings would already stand much higher than our current homes in the neighborhood and would look down on our yards and homes, imposing on our privacy. Come summer and warmer weather, if residents of those units were entertaining, the noise would carry.

3) If approved, how will Estelle Estates help ensure minimal noise and traffic (on Allen) impact to our homes and neighborhood? How will run off also be considered while site work is done?

4) What will the type of residency be? (will these units be rentals or owner occupied condos?) If owner occupied will there be a formed association, or will the property be maintained by Estelle Estates?

5) During the permitting and zoning process, we'd also like to encourage Estelle Estates to maintain the empty lots as they are severely overgrown. Many people in our neighborhood often walk to nearby stores and the sidewalk along Allen Avenue where the lots lie in overgrown and can be difficult to get through.

We very much appreciate the thoughtful consideration Estelle Estates has shown in their design and appreciate the opportunity to share additional comments. I would be happy to discuss any of my concerns with the representatives of Estelle Estates if requested.

Chris Ellingwood

19 Pennell Avenue

802-310-0361

~ Chris

From: Matthew Grooms <mgrooms@portlandmaine.gov>
Sent: Monday, August 13, 2018 8:19 AM
To: Christopher Ellingwood <cellingwood@berrydunn.com>
Subject: Re: 300 Allen Avenue Proposal

Hi Chris,

Please find attached some of the more relevant plans for 300 Allen Avenue. These are also included on the website as an attachment to the Planning Board packet for August 14th.

Thanks,

Matt

On Sat, Aug 11, 2018 at 9:48 AM, Christopher Ellingwood <cellingwood@berrydunn.com> wrote:

> Thank you,
>
> As of this morning updated documents were still not uploaded to the portal. Once again, with the meeting Tuesday, I am not sure this is fair for the residents to provide additional thoughts on the updated plans when those have not been made available to us a couple of days before the workshop,
>
> thank you,
>
> Chris
>
> _____
> From: jmy <jmy@portlandmaine.gov>
> Sent: Friday, August 10, 2018 11:45:02 AM
> To: Planning Board
> Cc: mgrooms@portlandmaine.gov; kcook@portlandmaine.gov; jduson@portlandmaine.gov; meaghan.lefebvre@gmail.com; Christopher Ellingwood
> Subject: Re: 300 Allen Avenue Proposal
>
> Hello,
>
> Thanks for your email. We appreciate the time you have taken to offer your thoughts, and will include your comments in the materials for the Planning Board and as part of the public record.
>
> If you have any questions, please contact our office.
>
> City of Portland, Department of Planning and Urban Development
> 389 Congress St., 4th Floor, Portland, ME 04101<https://maps.google.com/?q=389+Congress+St.,+4th+Floor,+Portland,+ME+04101&entry=gmail&source=g>
>
> Jennifer Munson, Office Manager
> jmy@portlandmaine.gov<mailto:jmy@portlandmaine.gov> | (207) 874-8719| Fax (207) 756-8258
>
> James Dealaman, Administrative Officer
> jdealaman@portlandmaine.gov<mailto:jdealaman@portlandmaine.gov> | (207) 874-8721| Fax (207) 756-8258
>
> On Thursday, August 9, 2018 at 1:39:24 PM UTC-4, Christopher Ellingwood wrote:

Good Day,

I am following up to email I sent to Matt Grooms on August 6 - We received a notice for an additional workshop related to the 300 Allen Avenue proposed development for August 14, 2018. I will be unable to attend due to commitments with a business trip in Maryland.

The link provided on the notice of the meeting does not include any updated documents or site plans that address previous comments from the planning board. I am wondering why there is an additional workshop on the 14th, and if updated documents are going to be made available for the property abutters to review and, like last time, provide comments on. The minutes and notes from the neighborhood workshop have also not been upload and provided on the portal.

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I appreciate any information you can provide to us and look forward to seeing revised site plans.

- Chris

Christopher S. Ellingwood, CISA | Senior Manager
Information Technology Assurance Services
d/f: 207.541.2290 | c: 802.310.0361
berrydunn.com<http://www.berrydunn.com/>

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.

--

Matthew Grooms

Planner

Planning Division

City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101
(207) 874-8725 (T)
(207) 756-8258 (F)

mgrooms@portlandmaine.gov

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Planning Board
City of Portland
389 Congress Street
Portland, ME 04101

To whom it may concern,

My name is Cidney Mayes and I am writing to submit public comment on the development project for 300 Allen Avenue. My husband and I have three major concerns with the proposed plan.

We bought our first home together at 48 Cypress Street in March of this year. Our home is directly behind the proposed building space, and would share a fence with the new developments. We had no idea when we purchased the property that this development had been proposed, and are significantly concerned that this development will affect the value of our home. We would like the following three concerns addressed by the planning board and the developers.

The first is the proposed walking path to be built on the paper street adjacent to our property. This path does not serve any clear purpose other than to encourage people to park on the side streets of our neighborhood and walk to the proposed condos or business. There are no major walking trails in this neighborhood, and this increase in foot traffic is unnecessary and makes raises concerns for our privacy and safety.

The second concern is the lack of trees in the developments plan, especially around borders and fences. The current plan has proposed to build a fence between our property and the duplexes, but without trees or some additional barrier, we are concerned that neighbors will be able to look down into our backyard and home. We would like additional steps taken towards protecting our privacy, and a barrier of trees provided.

Our third concern is that this plan seems like a grab for money without much thought to building community. We attended a neighborhood meeting in June, and raised these concerns there, too. The facilitator was confused on how we knew to attend, due to the fact that we were not on the mailing list as we have just purchased our home in March. It was the kindness of our neighbors that alerted us to the neighborhood meeting. The is a small community that looks out for one another, and these proposed buildings do not keep with the spirit of adding to this existing community. It had been suggested that families and people seeking their first apartment may choose to live in these new duplexes and triplexes. For the proposed $300,000 asking price, this is laughable. And what elderly citizen would choose to move into a three story building? Portland is already

lacking in single story homes for senior citizens. These condos do not seem to meet the needs of our neighborhood community.

If this plan is to be approved, it is necessary to remove the walking path and provide more trees for privacy along the fence line. If the plan does continue, we hope that the developers will look more closely at the needs of our small neighborhood community and not focus on pure financial gain.

Thank you for your time.

Sincerely,
Cidney Mayes
48 Cypress Street
Portland, ME 04103

MIXED USE DEVELOPMENT
300 ALLEN AVENUE
PORTLAND, MAINE

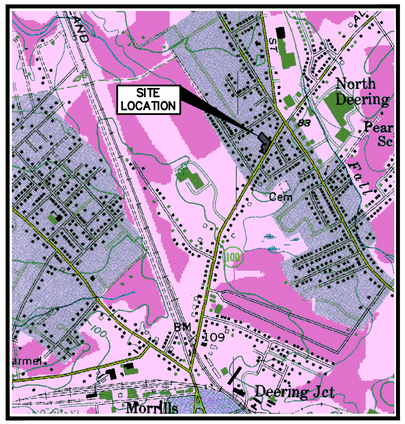
PREPARED BY:

GORRILL PALMER
Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.712.2515

PROJECT PARCEL SITE
PORTLAND ASSESSOR'S MAP & LOT NUMBERS

MAP	LOT
344	E006001
344	E003
344	E004

Applicant:
ESTELLE ESTATES, LLC
39 Darling Ave
South Portland, ME 04106
ATTN: Peter Bouchard



LOCATION MAP
N.T.S.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	BUILDING	
	RIGHT OF WAY	
	PROPERTY LINE	
	BUILDING SETBACK	
	ZONE LINE	
	WETLAND BOUNDARY	
	GUIDE RAIL	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL DRIVE	
100	GRADING CONTOUR LINE	100
X 226.4	SPOT ELEVATION	100.31
	TREELINE	
	TREES & HEDGES	
	POLE WITH LIGHT FIXTURE(S)	
	UTILITY POLE	
	FREESTANDING SIGN	
	PAINTED DIRECTIONAL TRAFFIC ARROW	
OE	OVERHEAD ELECTRIC/TELEPHONE	OHE/T
UE	UNDERGROUND ELECTRIC/TELEPHONE	UGE/T
W	WATER LINE	8"W
D	STORM DRAIN LINE	18"SD
	CULVERT	18"CULVERT
	HYDRANT	
	WATER GATE VALVE	
	WATER SHUT OFF VALVE	
	MANHOLE	
	CATCH BASIN	
	TEST PIT	
	IRON ROD (SET)	
	IRON ROD (FOUND)	
	MONUMENT	
	RIPRAP	
	SILT FENCE – PERIMETER	
	STONE SEDIMENT BARRIER	
x x	FENCE	
N	WELL	

GENERAL NOTES

GENERAL NOTES

1. TOPOGRAPHIC DATA BOUNDARY SURVEY AND EXISTING CONDITIONS WERE PREPARED BY TITCOMB ASSOCIATES OF FALMOUTH, MAINE IN JUNE OF 2016.

2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

3. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTIONS OF THE OWNER, THE CITY OF PORTLAND OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.

4. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.

5. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS AND CITY OF PORTLAND SPECIFICATIONS.

6. WETLANDS ON THIS PLAN WERE DELINEATED BY JONES ASSOCIATES OF AUBURN, MAINE.

7. WETLANDS ON THIS PLAN WERE GPS LOCATED BY JONES ASSOCIATES OF AUBURN, MAINE.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A SITE PLAN APPROVAL AND CONDITIONAL USE APPROVAL FROM THE CITY OF PORTLAND AS WELL AS AN NRPA TIER 1 PERMIT FROM MDEP WHICH WILL BE MADE A PART OF THE CONTRACT BID DOCUMENTS. THE CONSTRUCTION WILL BE GOVERNED BY THE CITY OF PORTLAND ZONING AND SUBDIVISION ORDINANCES WHICH ARE AVAILABLE FOR VIEWING AT THE OFFICE OF THE ENGINEER OR THE MUNICIPAL OFFICE.

2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.

LAYOUT NOTES

1. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB.

2. OFFSETS TO CATCH BASINS AND MANHOLES ARE TO THE CENTER OF THE FRAME.

3. PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE-HALF OF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.

4. PROPERTY LINE AND R.O.W. MONUMENTS SHALL NOT BE DISTURBED BY CONSTRUCTION. IF DISTURBED, THEY SHALL BE RESET TO THEIR ORIGINAL LOCATIONS AT THE CONTRACTOR'S EXPENSE, BY A MAINE LICENSED LAND SURVEYOR.

5. PROPOSED RIGHT OF WAY MONUMENTS AND PROPERTY LINE PINS SHALL BE INSTALLED UNDER THE DIRECTION OF A MAINE LICENSED LAND SURVEYOR.

UTILITY NOTES

1. ALL WATER UTILITY MATERIALS AND INSTALLATION METHODS SHALL CONFORM TO PORTLAND WATER DISTRICT STANDARDS. ALL WATER DISTRIBUTION PIPING SHALL BE CLASS 52 DUCTILE IRON PIPE, DOUBLE CEMENT LINED AND BITUMINOUS COATED CONFORMING TO AWWA/ANSI C104/A21.4. DISINFECTION OF WATER LINES SHALL CONFORM TO AWWA STANDARD C651, LATEST REVISION.

2. THE LOCATION OF THE PROPOSED UNDERGROUND ELECTRICAL SERVICE IS APPROXIMATE AND THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION WITH CENTRAL MAINE POWER COMPANY.

3. THRUST BLOCKS OR LOCKING RETAINER GLANDS SHALL BE PLACED ON THE WATER DISTRIBUTION LINES AT ALL BENDS, TEES, FIRE HYDRANTS, VALVES, CHANGES IN DIRECTION, ETC. THE THRUST BLOCKS OR LOCKING RETAINER GLANDS SHALL MEET THE REQUIREMENTS OF THE PORTLAND WATER DISTRICT STANDARDS.

4. TEST PITS AT ALL UTILITY CROSSINGS SHALL BE COMPLETED TWO WEEKS IN ADVANCE OF THE START OF CONSTRUCTION OR ORDERING OF MATERIALS. TEST PIT INFORMATION SHALL BE PROMPTLY PROVIDED TO ENGINEER FOR REVIEW.

GRADING AND DRAINAGE NOTES

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS SECTION 603— PIPE CULVERTS AND STORM DRAINS, LATEST REVISION WITH THE EXCEPTION THAT THE ONLY ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:

REINFORCED CONCRETE PIPE, CLASS III
POLYVINYL-CHLORIDE (PVC) PIPE
SMOOTH BORE POLYETHYLENE – ADS OR HANCOR

2. TOPSOIL STRIPPED IN AREAS OF CONSTRUCTION THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED ON SITE AT A LOCATION TO BE DESIGNATED BY THE OWNER. UNSUITABLE SOIL SHALL BE SEPARATED, REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION OFF SITE.

3. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

EROSION CONTROL NOTES

1. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.

2. PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE CONSTRUCTION ENTRANCE.

3. ALL GROUND AREAS DISTURBED FOR CONSTRUCTION WILL BE GRADED, LOAMED AND SEEDED AS SOON AS POSSIBLE. PERMANENT SEED MIXTURE SHALL CONFORM TO THE SEEDING PLAN CONTAINED IN THE EROSION CONTROL REPORT PREPARED FOR THIS PROJECT.

4. PRIOR TO PAVING, THE CONTRACTOR SHALL FLUSH SILT FROM ALL STORM DRAIN LINES.

5. ALL STORM DRAIN INLETS & OUTLETS ARE TO RECEIVE RIPRAP PROTECTION APRONS DURING CONSTRUCTION.

6. ALL CATCH BASINS WITH OUTLET PIPES 15" DIAMETER OR LESS SHALL BE PROVIDED WITH OUTLET HOOD (SNOUT) PER DETAIL.

7. SILT FENCES SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL REPORT.

8. THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCE AS IT BECOMES SATURATED WITH MUD TO ENSURE THAT IT WORKS AS PLANNED DURING CONSTRUCTION.

9. SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO IT FOR LATER USE IN LANDSCAPING OPERATIONS.

10. A FULL EROSION CONTROL REPORT ACCOMPANIES THIS PLAN SET AND IS CONTAINED ON THE DRAWINGS OF THIS PLAN SET.

11. THE MAINTENANCE SCHEDULE FOR THE CATCH BASIN SEDIMENT SUMPS IS AS FOLLOWS:
THESE DEVICES SHALL BE INSPECTED IN APRIL AND OCTOBER OF EACH YEAR. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE CATCH BASIN WHEN THE DEPTH OF THE SEDIMENT IS GREATER THAN ONE FOOT. THE SEDIMENT WILL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

12. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION/SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS BASED UPON ANY THIRD PARTY REVIEW (ie MDEP) MAY RESULT IN MONETARY PENALTIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.

13. ALL NON-PAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE LOAMED AND SEEDED, UNLESS OTHERWISE DIRECTED BY THE OWNER.

14. ALL DISTURBED AREAS ARE TO RECEIVE A MINIMUM OF 4" OF TOPSOIL PRIOR TO PERMANENT SEEDING.

CALL BEFORE YOU DIG
1-888-344-7233

UTILITIES

WATER:
PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PORTLAND, MAINE 04102
(207) 761-8300
CONTACT: JAY ARNOLD

SEWER:
PORTLAND PUBLIC WORKS DEPT.
55 PORTLAND STREET
PORTLAND, MAINE 04101
(207) 874-8871
CONTACT: BRAD ROLAND

ELECTRIC:
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
(207) 826-2869
CONTACT: JAMIE COUGH

TELEPHONE:
VERIZON
5 DAVIS FARM ROAD
PORTLAND, MAINE 04103
(207) 797-1842
CONTACT: MARTY PEASE

CABLE:
TIME WARNER CABLE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
(207) 775-3431
CONTACT: RICK PELLITIER

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C410	FOCALPOINT DETAILS
C411	EROSION AND SEDIMENTATION CONTROL DETAILS
C412	EROSION AND SEDIMENTATION CONTROL NOTES
L101	LANDSCAPING PLAN

PERMITS

TYPE OF PERMIT	GOVERNING BODY	STATUS
MDEP NRPA TIER 1 PERMIT APPLICATION	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION 312 CANCO ROAD PORTLAND, ME 04103 (207) 822-6300	ANTICIPATED SUBMITTAL: MARCH 2018
LEVEL III SITE PLAN APPLICATION	CITY OF PORTLAND PLANNING AND URBAN DEVELOPMENT 389 CONGRESS STREET PORTLAND, MAINE 04101-3509 (207) 874-8703	ANTICIPATED SUBMITTAL: MARCH 2018
CONDITIONAL USE APPLICATION	CITY OF PORTLAND PLANNING AND URBAN DEVELOPMENT 389 CONGRESS STREET PORTLAND, MAINE 04101-3509 (207) 874-8703	ANTICIPATED SUBMITTAL: MARCH 2018
INCLUSIONARY USE APPLICATION	CITY OF PORTLAND PLANNING AND URBAN DEVELOPMENT 389 CONGRESS STREET PORTLAND, MAINE 04101-3509 (207) 874-8703	ANTICIPATED SUBMITTAL: MARCH 2018

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
DOUGLAS E REYNOLDS
No. 9888
7-30-18
LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJG	Draft: CG	Date: MARCH 2018
Checked: DER	Scale: NTS	Job No.: 801.06
File Name: 801-06-COVER.dwg		

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Drawing Name: Cover Sheet, General Notes, & Legend
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C001

U:\801.06 Allen Ave - Bouchard\Z - CAD\DWG\801-06-COVER.dwg - Jul 30, 2018 - 3:51pm

LEGEND

- Monument – found
- Iron marker – found
- Utility pole
- Property line
- Lot line
- Chain link fence
- Board fence
- Curb
- Edge of pavement
- Edge of gravel
- Tree line
- Contours (1ft)
- Contours (5ft)
- Sewer manhole
- Gas valve
- Water valve
- W — Water line
- S — Sewer line
- G — Gas line
- T — Underground telephone line
- OH — Overhead electric line
- D — Storm drain line
- FA — Underground fire alarm line
- Telephone manhole
- Stormdrain manhole
- N/F — Now or formerly of
- 1234/567 — Deed reference (Book/Page)
- Deciduous tree
- Rip Rap
- Wetland
- Existing building

NOTES

(1) Book and Page references are to the Cumberland County Registry of Deeds, unless otherwise specified.

(2) Bearings and coordinate values are referenced grid north of the Maine State Plane Coordinate System, West Zone (NAD83) as derived from the Allen Avenue and Short Street CSO survey provided to the City of Portland by Titcomb Associates.

(3) Elevations are referenced to the City of Portland datum. Project benchmark as provided by the City of Portland is labeled near the easterly corner of the surveyed property.

(4) The historical deeds for this parcel call for monumentation which was not recovered, and is missing or destroyed. The boundaries delineated hereon are based on abutting surveys and the lines of possession, acquiesced to by the abutters. In order to fully establish the boundaries as delineated hereon it is recommended that deeds be exchanged with the abutters, based on this survey.

(5) Property lies within Zone C based on FIRM Community #230051 Panel #0007 –B, dated July 17, 1986. It does not lie within a special flood hazard area.

(6) Wetland boundaries were identified and delineated by Jones Associates Inc in July 2016.

REFERENCES

(1) Plan of The Holmsteads dated September 1921 and recorded in Plan Book 14 page 70.

(2) Plan of Sarah J. Cowen Lot by Albert W. Hume dated October 12, 1978.

(3) Property Plan for James Davison by A.R.C.C. dated April 8, 1999.

(4) Standard Boundary Survey for John Matthews by A.R.C.C. dated September 5, 2001.

(5) Partial copy of Portland Sewer System Infiltration–Inflow Analysis for the Portland Water District dated 1988.

(6) Deed of Mary J. Wilson to Portland Home Building Association for a 24 inch sewer line, dated August 21, 1922 and recorded in Book 1111, Page 300.

(7) Existing Conditions & Boundary Survey made for Garrill–Plamer Consulting Engineers by Titcomb Associates, dated June 16, 2003, recorded in Plan Book 203, Page 461.

STATE OF MAINE
REX J. CROTEAU
2273
PROFESSIONAL LAND SURVEYOR

CERTIFICATION

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

Rex J. Croteau, P.L.S. #2273

OWNERS OF RECORD

Harlequin LLC
Book 21661, Page 282

AREA

36,443 square feet / 0.84 acres

SCALE IN FEET
20 0 20 40
1" = 20'

Rev. 1	09/08/16	updated wetlands, notes 2 and 6	RJC

PLAN OF

Existing Conditions Survey

300 Allen Avenue — Portland, Maine

MADE FOR

Robert Adam

159 Lincoln Street — Westbrook, Maine

JOB# 201079.1	DATE: June 16, 2016	SCALE: 1"=20'
BOOK# 711		
LP\201079_2		
FILE# 8305		

Titcomb Associates
133 Gray Road, Falmouth, Maine 04105
(207)797-9199 www.titcombsurvey.com

GRID N

35' Wide Easement and Right of Way Harlequin LLC to City of Portland 29354/250

N/F Harlequin LLC 21661/282

S 45°28'18" E 135.00'

iron pipe 1"

Temporary Benchmark (TBM) Spike in utility pole. Elevation: 85.36' (see note 5 for location)

post & rail fence

bituminous walk

Allen Avenue

Short Street (50' wide)

wetland area (see note 6)

stone retaining wall

wood deck

first floor elevation: 87.1'

bulkhead

landscaping

ditch line

N 26°37'02" E 76.57'

OH

76.61' (deed: 75')

bituminous drive

two car garage

juniper

66'

55

54

51

50

53

52

49

N/F Jane Orbeton James A. McKenna III Susan Orbeton McKenna 19264/297

N 36°16'52" E 15.74'

N 33°49'06" W 62.01'

capped iron rod (illegible)

0.13'

0.12'

DETAIL scale: 1"=0.5'

N 55°38'35" E 43.47'

0.30'

iron pipe 1"

N/F Christopher S. Ellingwood 31357/6

N 33°49'06" W 118.92'

2.9'+/-

apparent encroachment of storage shed

apparent encroachment of bituminous drive

S 26°36'11" W 49.50'

iron pipe 1"

bituminous walk

49.98' (deed: 50')

aluminum washer to be set in pavement

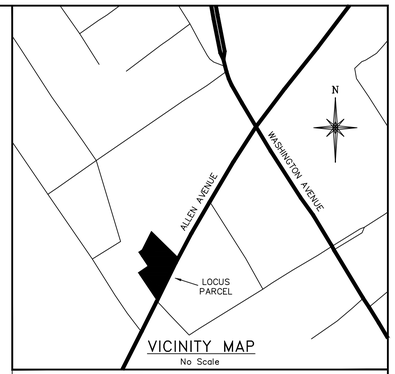
N/F Derek J. Doucette Stephina M. Doucette 26283/148

CERTIFICATION

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

David E. Titcomb, P.L.S. #1273

STATE OF MAINE DAVID E TITCOMB #1273 PROFESSIONAL LAND SURVEYOR



VICINITY MAP
No Scale

LEGEND

- Iron marker – found
- Iron marker – set (#5 rebar)
- Property line (locus)
- Property line (abutter)
- Wood fence
- Edge of pavement/walk
- Curb
- Water shutoff
- Drain manhole
- OH — Overhead utility line
- T — Underground telephone line
- Contours (1ft)
- Contours (5ft)
- N/F — Now or formerly of
- 1234/567 — Deed reference (Book/Page)
- Tree line
- Wetlands
- Deciduous tree
- Existing building
- (55) — Lot number "The Holmsteads"

NOTES

1) Book and Page references are to the Cumberland County Registry of Deeds.

2) Bearings are referenced to grid north, Maine State Plane Coordinate System, NAD83, West Zone.

3) Elevations are based on City of Portland datum.

4) Utility information on this plan is approximate, based on location of visible features. Dig Safe and/or the appropriate utilities should be contacted prior to any construction.

5) Temporary benchmark is located 43' north of site on west side of Allen Avenue.

6) Wetland boundaries were identified and delineated by Boyle Associates in December 2017 and wetland flags located by Titcomb Associates.

PLAN REFERENCES

1) Plan of The Holmsteads made for The City and Suburban Land Trust by E.C. Jordan & Co. dated September, 1921. Recorded in Plan Book 14, Page 70.

2) Plan of Existing Conditions Survey made for Robert Adam by Titcomb Associates dated June 16, 2016 and revised through September 8, 2016.

3) ALTA/ASCM Land Title Survey of Land of Lockard & Davison Realty LLC made for The Richmond Company, Inc. by Titcomb Associates dated November 16, 2016.

AREA

18,901 square feet, 0.43 acres

OWNER OF RECORD

Bernice E. Knox
Book 6312, Page 216
Book 15223, Page 80 (lot 50)

SCALE IN FEET
10 0 10 20
1" = 10'

PLAN OF

Boundary & Existing Conditions Survey

292 Allen Avenue — Portland, Maine

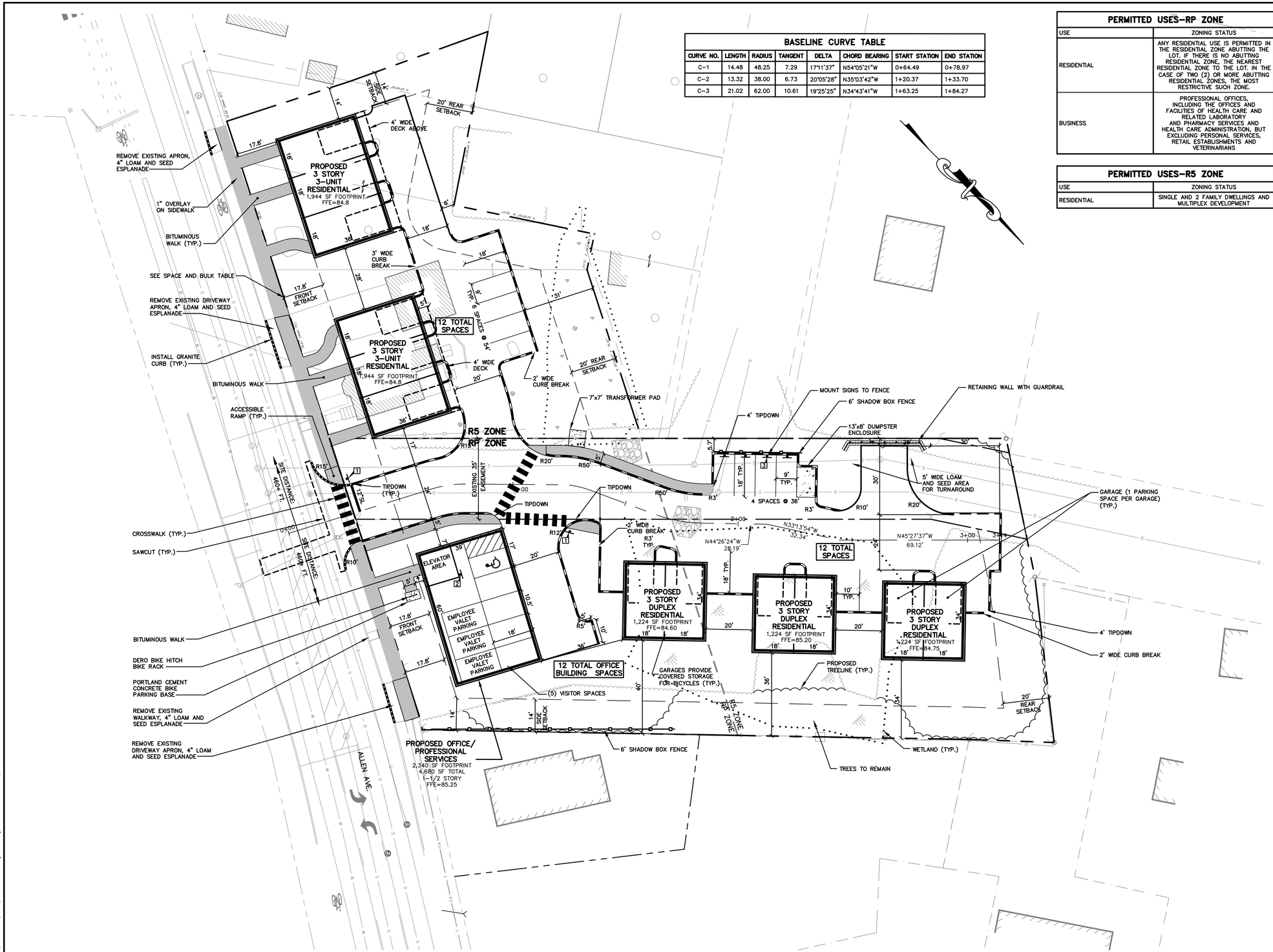
MADE FOR

Gorrill Palmer

707 Sable Oaks Road, Suite 30 — South Portland, Maine

JOB #217111	DATE: December 8, 2017	SCALE: 1" = 10'
BOOK #908		
217111.dwg		

Titcomb Associates
133 Gray Road, Falmouth, Maine 04105
(207)797-9199 www.titcombsurvey.com



BASELINE CURVE TABLE

CURVE NO.	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	START STATION	END STATION
C-1	14.48	48.25	7.29	17°11'37"	N54°05'21"W	0+64.49	0+78.97
C-2	13.32	38.00	6.73	20°05'28"	N35°03'42"W	1+20.37	1+33.70
C-3	21.02	62.00	10.61	19°25'25"	N34°43'41"W	1+63.25	1+84.27

PERMITTED USES–RP ZONE

USE	ZONING STATUS
RESIDENTIAL	ANY RESIDENTIAL USE IS PERMITTED IN THE RESIDENTIAL ZONE ABUTTING THE LOT. IF THERE IS NO ABUTTING RESIDENTIAL ZONE, THE NEAREST RESIDENTIAL ZONE TO THE LOT. IN THE CASE OF TWO (2) OR MORE ABUTTING RESIDENTIAL ZONES, THE MOST RESTRICTIVE SUCH ZONE.
BUSINESS	PROFESSIONAL OFFICES, INCLUDING THE OFFICES AND FACILITIES OF HEALTH CARE AND RELATED LABORATORY AND PHARMACY SERVICES AND HEALTH CARE ADMINISTRATION, BUT EXCLUDING PERSONAL SERVICES, RETAIL ESTABLISHMENTS AND VETERINARIANS

PERMITTED USES–R5 ZONE

USE	ZONING STATUS
RESIDENTIAL	SINGLE AND 2 FAMILY DWELLINGS AND MULTIPLEX DEVELOPMENT

SPACE AND BULK STANDARDS

RP AND R5 ZONE	RP ZONE REQUIRED	R5 ZONE REQUIRED	PROVIDED
MIN. LOT AREA PER DWELLING: MULTIPLEX (x12) 4,500 SF/PER DWELLING UNIT W/ MULTIPLEX DEVELOPMENT HAVING >250 FT. STREET FRONTAGE		54,000 SF	55,342 S.F.
MIN. FRONTAGE	60'	50'	276.5'
MIN. LOT WIDTH	60'	90'	128'
MAX. FLOOR AREA RATIO/LOT COVERAGE	0.65	0.40	0.18
MAX. IMPERVIOUS SURFACE RATIO	0.80	NA	.53
BUILDING SETBACKS			
FRONT	*17.8'	20'/***5'	>20'
**SIDE			
1 STORY	10'	8'	
1 1/2 STORY	NA	8'	NA
2 STORIES	12'	12'	>12'
2 1/2 STORIES	NA	14'	NA
3 STORIES OR MORE	14'	14'	>14'
ACCESSORY	7'	***5'	
REAR PRINCIPAL/ACCESSORY	20'/7'	20'	20'
MAX. STRUCTURE HEIGHT	45'	35'	<35'

* THE FRONT YARD NEED NOT EXCEED THE AVERAGE DEPTH OF IMMEDIATELY ABUTTING FRONT YARDS (YARD DEPTH AT 278 ALLEN AVE=13'; YARD DEPTH AT 308 ALLEN AVE=22.6'; AVERAGE YARD DEPTH=17.8')

** THE WIDTH OF ONE (1) SIDE YARD MAY BE REDUCED ONE (1) FOOT FOR EACH FOOT THAT THE OTHER SIDE YARD IS CORRESPONDINGLY INCREASED, PROVIDED, HOWEVER, NO SIDE YARD SHALL BE REDUCED TO LESS THAN SEVEN (7) FEET IN WIDTH

*** WITH GROUND COVERAGE OF 144 SF OR LESS

NOTES:

1. EXISTING CURBING IN THE RIGHT-OF-WAY IS THE PROPERTY OF THE CITY OF PORTLAND. ANY REMOVED GRANITE CURBING SHALL BE TRANSPORTED TO THE CITY STOCKYARD ON OUTER CONGRESS STREET.

2. PRIOR TO CONSTRUCTION, A CONSTRUCTION MANAGEMENT PLAN PREPARED BY THE GENERAL CONTRACTOR SHALL BE SUBMITTED TO THE CITY OF PORTLAND PLANNING DIVISION FOR REVIEW. THE CONSTRUCTION MANAGEMENT PLAN SHALL ADDRESS THE FOLLOWING:
   - ANTICIPATED PROJECT START DATE
   - ANTICIPATED PROJECT END DATE
   - CONSTRUCTION SEQUENCE
   - PEDESTRIAN CIRCULATION PLAN

3. SNOW SHALL BE REMOVED FROM THE SITE BY THE SNOW REMOVAL CONTRACTOR AND DISPOSED OF ACCORDING TO APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.

4. EACH OFFICE/RESIDENTIAL UNIT IS RESPONSIBLE FOR THEIR SOLID WASTE DISPOSAL.

SITE DATA

ZONE: RP & RS

PARKING	REQUIRED	PROVIDED
NEW STRUCTURE		
TOTAL PARKING		
OFFICES (4,680 SF) (1 SP/400 SF)	12	12
RESIDENTIAL (2 SP/DWELLING UNIT)	24	24
TOTAL	36	36
BARRIER FREE	1	1

PAVEMENT LEGEND

ALL PAVEMENT SHALL BE STANDARD DUTY EXCEPT AS FOLLOWS:

BITUMINOUS WALKWAY

CURBING LEGEND

BITUMINOUS CURB

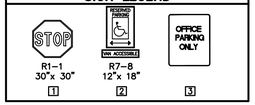
VERTICAL GRANITE CURB

STRIPING LEGEND

SIGNAGE, STRIPING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGARDING SIZE, INSTALLATION, LOCATION & REFLECTIVITY.

12"SL – 12" WIDTH STOP LINE

SIGN LEGEND



R1-1 30"x 30" [1]

R7-8 12"x 18" [2]

[3]

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40

1 inch = 20 ft.

STATE OF MAINE DOUGLAS E. REYNOLDS No. 9988 8-31-18 LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
2	8/31/18	REVISIONS BASED ON CITY COMMENTS
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJG	Draft: CG	Date: NOV 2017
Checked: DER	Scale: 1"=20'	Job No.: 801.06
File Name: 801-06-SP.dwg		

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Drawing Name: Site Plan

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C101

U:\801.06 Allen Ave - Bouchard\Z - CAD\DWG\801-06-SP.dwg - Aug 31, 2018 - 2:58pm

NEAREST FIRE HYDRANT
LOCATED APPROXIMATELY
400 FT TO THE SOUTH FROM
PROPOSED ACCESS DRIVE

WATER SERVICE
ENTRY (TYP.)

2"x1" REDUCER

4"x1" REDUCER

6" SAN
L=18'
S=0.0104 MIN.

6" SAN
L=164'
S=0.0104 MIN.

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,944 SF FOOTPRINT
FFE=84.8

GAS SERVICE
ENTRY (TYP.)

ELECTRIC SERVICE
ENTRY (TYP.)

1"W
2"W
4"W

292 ALLEN AVE
EXIST WATER SERVICE
TO BE RETIRED PER
PWD STANDARDS.

2" CURB STOP IN VALVE
BOX TOP SECTION

TESTPIT TO DETERMINE EXACT
LOCATION AND ELEVATION OF
TELEPHONE AND ALARM LINES.
MAINTAIN 3' SEPARATION FROM
WATER SERVICE VALVES

APPROX. LOCATION OF
292 ALLEN AVE
EXISTING WATER SERVICE

RELOCATE EXISTING POLE
PRIOR TO WATER WORK.

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF GAS MAIN

12"x6" TAPPING
SLEEVE AND VALVE

EXTEND ELECTRICAL
SERVICE TO NEW POLE

RELOCATED POLE WITH
SIDEWALK GUY WIRES

RISER POLE WITH STAND OFF BRACKETS

TESTPIT TO DETERMINE EXACT LOCATION
AND ELEVATION OF SEWER

PROPOSED
3 STORY
3-UNIT
RESIDENTIAL
1,944 SF FOOTPRINT
FFE=84.8

7'x7' CONCRETE PAD FOR
PAD MOUNTED TRANSFORMER.
FINAL SIZING TO BE
CONFIRMED WITH CMP.

HYDRANT ASSEMBLY
WITH GATE VALVE

6" SAN
L=33'
S=0.0104 MIN.

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF STORM
DRAIN

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF STORM
DRAIN

12"X12"X6" INSERTA
TEE (TYP.)

R5 ZONE
RP ZONE

6" GATE VALVE

4" METER
PIT

6"x6"x4"
TEE
GAS SERVICE
ENTRY

SAN. SERVICE
EXIT. INV.=78.5

WATER SERVICE
ENTRY. TESTABLE
DCVA REQUIRED

ELECTRIC SERVICE
ENTRY (TYP.)

2" DOMESTIC
WATER

6" FIRE
SERVICE

6"x4" REDUCER

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.60

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=85.20

PROPOSED
3 STORY
DUPLEX
RESIDENTIAL
1,224 SF FOOTPRINT
FFE=84.75

TEST PIT TO DETERMINE EXACT
LOCATION AND ELEVATION OF
STORM DRAIN

EXIST. SMH
RIM: 82.06
INV. IN: 75.61
INV. OUT: 75.51

TESTPIT TO DETERMINE
EXACT LOCATION AND
ELEVATION OF STORM DRAIN

6" WYE
CONNECTION (TYP.)

2" RIGID INSULATION FULL
WIDTH OF TRENCH FOR
COVER LESS THAN 5' (TYP.)

RUN SANITARY SEWER OVER
STORMDRAIN AND DROP INTO
SANITARY SEWER (TYP.)

2"x1" REDUCER

4"x1" REDUCER

6" SAN
L=32'
S=0.0104 MIN.

WATER SERVICE
ENTRY (TYP.)

FIRE SERVICE
ENTRY (TYP.)

ELECTRIC
SERVICE ENTRY
(TYP.)

GAS SERVICE
ENTRY (TYP.)

PROPOSED OFFICE/
PROFESSIONAL
SERVICES
2,340 SF FOOTPRINT
4,680 SF TOTAL
1-1/2 STORY
FFE=85.25

R5 ZONE
RP ZONE

EXIST. 35' EASEMENT

6" SANITARY SEWER (MIN. SLOPE=0.0104):
MULTIPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
G	18'	79.30
H	18'	79.30
I	18'	79.30
J	18'	79.30
K	18'	79.30
L	18'	79.30

6" SANITARY SEWER (MIN. SLOPE=0.0104):
DUPLEX UNITS

LABEL	LENGTH	EXIT POINT INV.
A	32'	79.98
B	51'	79.98
C	31'	79.10
D	49'	79.10
E	27'	79.56
F	41'	79.56

NOTES:

1. ELECTRICAL SERVICE SHALL BE COORDINATED WITH CMP.
2. COORDINATE LOCATION OF UTILITY SERVICE ENTRANCE POINTS WITH ARCHITECTURAL PLANS.
3. COORDINATE CONNECTION TO EXISTING WATER MAIN WITH PORTLAND WATER DISTRICT.
4. COORDINATE GAS SERVICE WITH UNITIL.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40
1 inch = 20 ft.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9999
LICENSED
PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJV | Draft: CG | Date: FEB 2018
Checked: DER | Scale: 1"=20' | Job No.: 801.06
File Name: 801-06-UTIL.dwg

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Drawing Name: Utility Plan
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C102

U:\801.06 Allen Ave - Bouchard\Z - CAD\DWG\801-06-UTIL.dwg - Aug 01, 2018 - 4:40pm

NOTES:

1. DRIP STRIP IS PART OF THE STORMWATER MANAGEMENT PLAN FOR THIS SITE AND CAN NOT BE COVERED BY AN IMPERVIOUS SURFACE OR ALTERED. ROOF GUTTERS SHALL NOT BE INSTALLED ON ROOFLINE TRIBUTARY TO DRIP STRIP.

2. FOUNDATION DRAINS SHALL BE CONNECTED TO SUMP IN BASEMENT. SUMP PUMPS SHALL DISCHARGE TO STORM DRAIN SYSTEM.

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
CB1	2'x2'	79.90	77.10/4"(DRIP STRIP) 77.10/4"(DRIP STRIP)	77.10/10"(CB2)	TYPE 'F'
CB2	4'ø	79.80	76.98/10"(GSI) 76.94/4"(DRIP STRIP)	76.84/15"(EXIST. DMH)	BEEHIVE GRATE
CB3	4'ø	82.80	77.85/6"(BUILD) 78.0/4" (GUSF3)	77.84/15"(EXIST. SD)	BEEHIVE GRATE
CB4	4'ø	83.50	78.06/15"(CB5) 78.06/6"(BEND)	77.96/15"(EXIST. SD)	BEEHIVE GRATE
CB5	4'ø	82.70	78.75/15"(OCS1) 78.75/6"(BLDG) 78.75/6"(BLDG)	78.65/15"(CB4)	BEEHIVE GRATE
OCS1	6'ø	84.77	79.19/15"(GUSF1)	79.19/15"(CB5)	
OCS2	6'ø	84.97	78.73/15"(GUSF3)	78.93/15"(EXSIT)	
OCS3	6'ø	84.33	78.30/15"(GUSF4)	78.20/15"(EXIST)	

PROPOSED 3 STORY 3-UNIT RESIDENTIAL 1,944 SF FOOTPRINT FFE=84.8

PROPOSED 3 STORY 3-UNIT RESIDENTIAL 1,944 SF FOOTPRINT FFE=84.8

PROPOSED 3 STORY DUPLEX RESIDENTIAL 1,224 SF FOOTPRINT FFE=84.60

PROPOSED 3 STORY DUPLEX RESIDENTIAL 1,224 SF FOOTPRINT FFE=85.20

PROPOSED 3 STORY DUPLEX RESIDENTIAL 1,224 SF FOOTPRINT FFE=84.75

PROPOSED OFFICE/ PROFESSIONAL SERVICES 2,340 SF FOOTPRINT 4,680 SF TOTAL

OUTLET ROOF DRAINS OF TRIPLEXS TO GRASSED UD SOIL FILTER #1 (TYP.)

OUTLET FOUNDATION DRAIN TO CB5

GRASSED UNDERDRAIN SOIL FILTER #1 SEE SHEET C405 FOR ADDITIONAL INFORMATION

15" SD L=5' S=0.246

OUTLET FOUNDATION DRAIN TO CB5

15" SD L=59' S=0.01

MATCH EXIST. SIDEWALK ELEVATION

15" SD L=8' S=0.2880

CONNECT TO EXISTING STORMDRAIN WITH INSERTA TEE CONNECTION, INV.=75.66

STABILIZED CONSTRUCTION ENTRANCE

CONNECT TO EXISTING STORMDRAIN WITH INSERTA TEE CONNECTION, INV.=75.69

MATCH EXIST. SIDEWALK ELEVATION. VERIFY EXIST. GRADES PRIOR TO LOT CONSTRUCTION TO ENSURE AN ACCESSIBLE RAMP IS FEASIBLE. MAX. LONGITUDINAL SLOPE=4.5%, MAX. CROSS SLOPE=2%

15" SD L=90' S=0.0100

BIORETENTION CELL #1, SEE SHEET C404 FOR ADDITIONAL INFORMATION

TEMPORARY SEDIMENT BARRIER (TYP.)

DISTURBED AREA LIMIT LINE (48,482 SF)

TENAX MULTIMAT FABRIC ON SLOPES EQUAL TO OR STEEPER THAN 8% FOR OCTOBER 1st THROUGH APRIL 15th AND EQUAL TO OR STEEPER THAN 15% FOR APRIL 15th THROUGH OCTOBER 1st (TYP)

SIDE SLOPES 3:1 (TYP.) NOT TO BE MOWED MORE THAN TWICE A YEAR.

GRASSED UNDERDRAIN SOIL FILTER #2 SEE SHEET C406 FOR ADDITIONAL INFORMATION

CONNECT TO EXISTING STORMDRAIN WITH INSERTA TEE CONNECTION, INV.=75.91

RIP RAP INLET APRON

INV. IN=79.3

EXTEND 12" CULVERT L=10' S=0.0100

CONNECT TO EXISTING CULVERT

ADJUST RIM TO GRADE, EL.=85.00

REMOVE RIP RAP, CAP EXISTING INLET.

CORE EXISTING MANHOLE TO ACCEPT 15" STORM DRAIN, INV.=76.44. ADJUST RIM TO GRADE, EL.=84.65

1.5:1 RIP RAP SLOPE

ADJUST RIM TO GRADE, EL.=85.00

SILT FENCE (TYP.)

TEST PIT TO DETERMINE EXACT LOCATION AND ELEVATION OF STORMDRAIN (TYP.)

CONNECT TO EXISTING STORMDRAIN WITH INSERTA TEE CONNECTION, INV.=TBD

CONNECT FOUNDATION DRAIN TO STORMDRAIN. INV. IN=78.00±

15" SD L=25' S=TBD

15" SD L=25' S=TBD

FOUNDATION DRAIN (TYP.)

GRASSED UNDERDRAIN SOIL FILTER #4 SEE SHEET C408 FOR ADDITIONAL INFORMATION

SEE GRADING INSET BELOW FOR ADDITIONAL INFORMATION

FOCALPOINT 1, SEE SHEET C409 FOR ADDITIONAL INFORMATION

15" SD L=82' S=0.0060

FOUNDATION DRAIN OUTLET (TYP.)

DRAIN RUNOFF TO BIOCELL

OUTLET ROOF DRAIN TO GRASSED UNDERDRAIN SOIL FILTER #3

ROOF DRIPLINE FILTER (TYP.)

R5 ZONE

RP ZONE

ALLEN AVE.

GRASSED UNDERDRAIN SOIL FILTER #3 SEE SHEET C407 FOR ADDITIONAL INFORMATION

24 CULTECH 330XLHD CHAMBERS, SEE SHEET C409 FOR ADDITIONAL INFORMATION

DISTURBED AREA LIMIT LINE

10" SD L=33.5' S=0.005

1.5:1 RIP RAP SLOPE AT WETLANDS (TYP.)

4.75' WIDE DRIP STRIP

4" NON PERF. SD L=22' S=0.0677

10" SD L=31' S=0.0050

1.5:1 RIP RAP SLOPE

4" NON PERF. SD L=11' S=0.2000

4" NON PERF. SD L=41' S=0.0158

GRADING INSET

1"=10'

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40

1 inch = 20 ft.

DOUGLAS E. REYNOLDS No. 9995 8-31-18 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

Rev.	Date	Revision
2	8/31/18	REVISIONS BASED ON CITY COMMENTS
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: DJG | Draft: CG | Date: OCT 2017
Checked: DER | Scale: AS NOTED | Job No.: 801.06
File Name: 801-06-GRADING.dwg

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Drawing Name: **Grading, Drainage, and Erosion Control Plan**
Project: **Mixed Use Development** 300 Allen Ave. Portland, Maine
Client: **ESTELLE ESTATES, LLC** 39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C103

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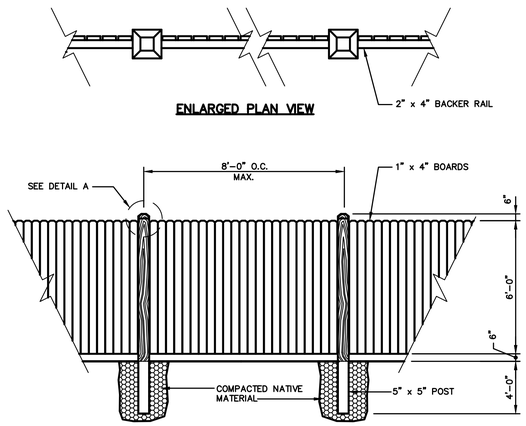
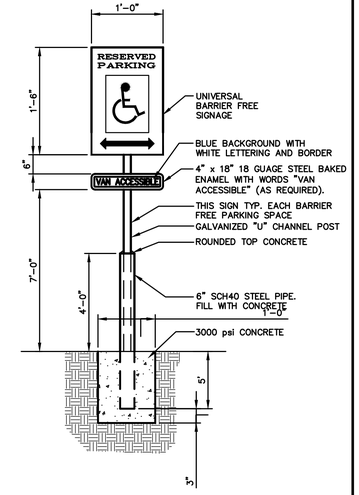


STOCKADE FENCE
NOT TO SCALE



BARRIER FREE PARKING SIGN
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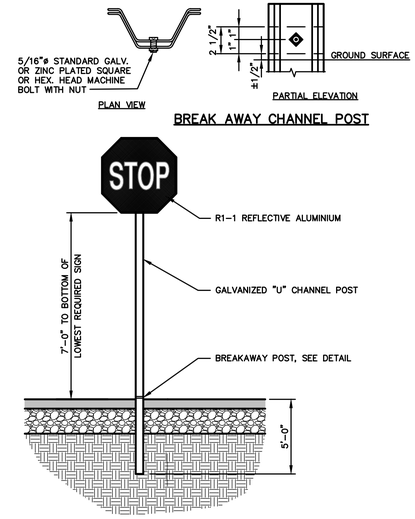
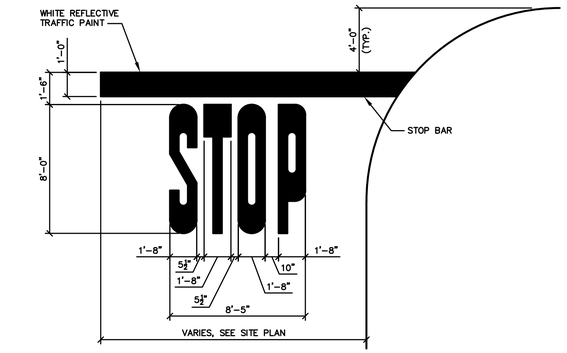


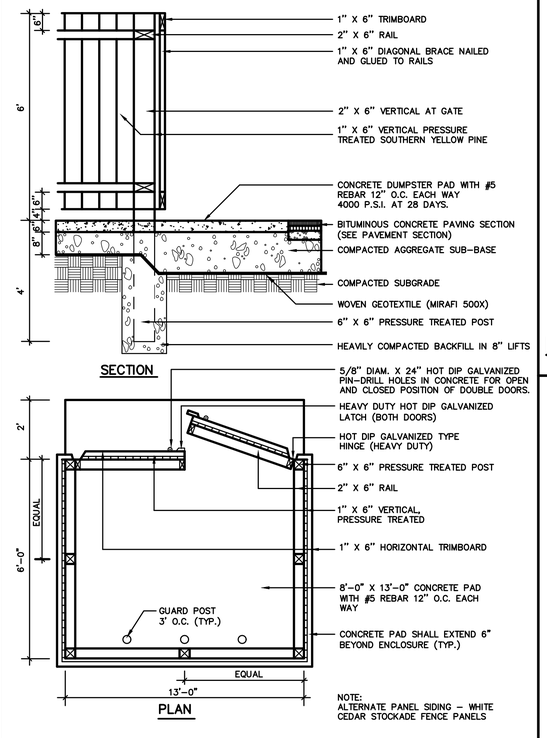
BREAK AWAY CHANNEL POST

STOP SIGN
NOT TO SCALE



NOTE:
ALL TRAFFIC MARKINGS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS BELOW.

PAVEMENT MARKINGS
NOT TO SCALE



DUMPSTER ENCLOSURE
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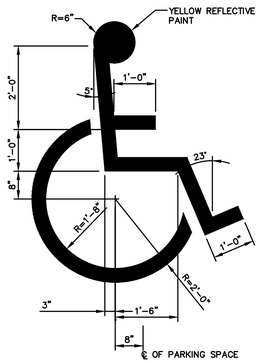
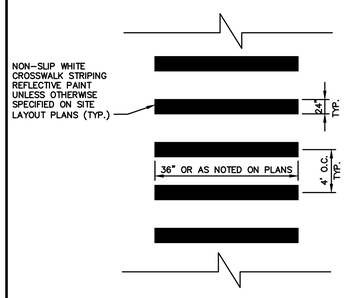
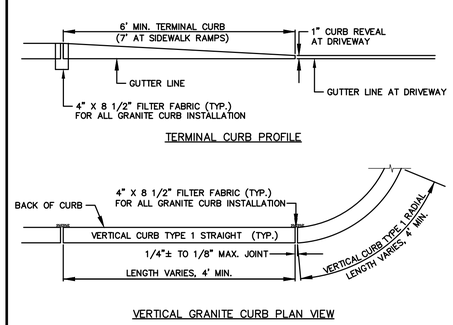


INTERNATIONAL BARRIER FREE SYMBOL
NOT TO SCALE

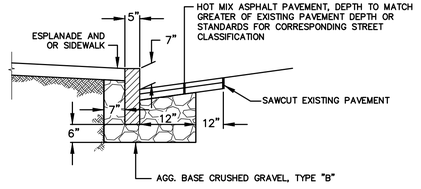


CROSSWALK STRIPING
NOT TO SCALE



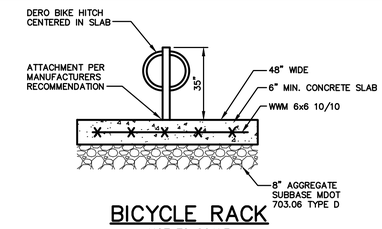
TERMINAL CURB PROFILE

VERTICAL GRANITE CURB PLAN VIEW

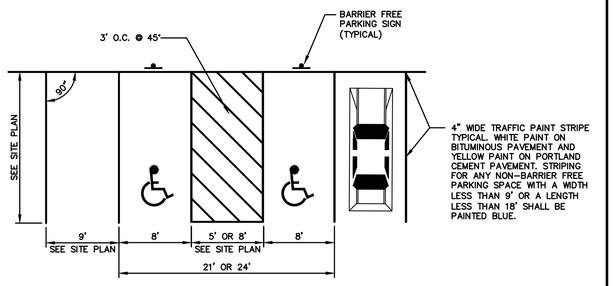


VERTICAL GRANITE CURB CROSS SECTION

VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS
NOT TO SCALE



BICYCLE RACK
NOT TO SCALE



PARKING SPACE DIMENSIONS
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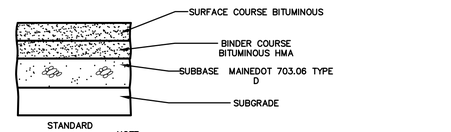
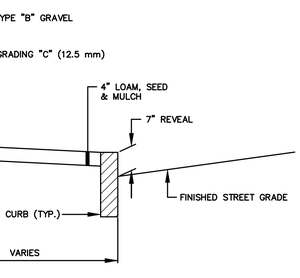


NOTE:
COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557

	THICKNESS OF LAYERS	
STANDARD	LAYERS	DRIVEWAY APRON
1 1/4"	SURFACE COURSE BITUMINOUS 9.5mm HMA	1' 5" *
2 1/4"	BINDER COURSE BITUMINOUS 19.0mm HMA	2 1/4"
18"	AGGREGATE SUBBASE GRAVEL MAINEDOT 703.06 TYPE D	18"

* DRIVEWAY APRON SURFACE COURSE BITUMINOUS TO BE 12.5 MM HMA

BITUMINOUS PAVEMENT SECTION
NOT TO SCALE



BITUMINOUS SIDEWALK
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9696 — 7-30-18 LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06
File Name: 801-06-DETAIL.dwg		

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Drawing Name: Site Details
Project: Mixed Use Development, 300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC, 39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C401

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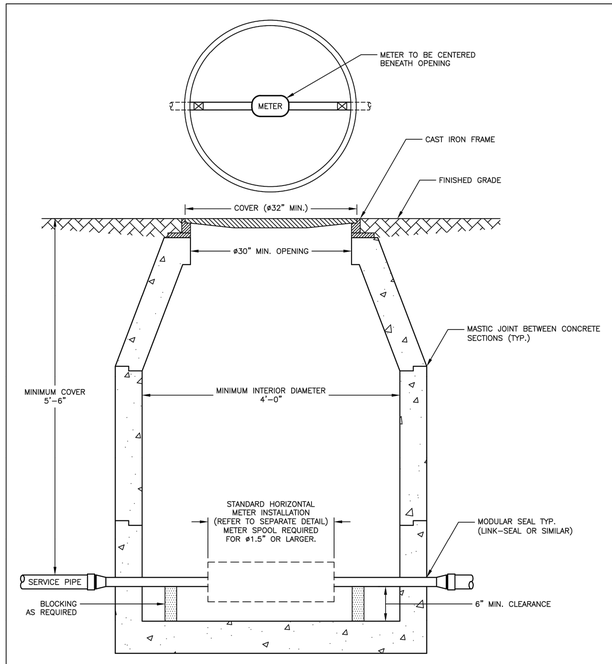


METER PIT AND COVER

1. SPECIAL APPROVAL BY PWD IS REQUIRED, PRIOR TO CONSTRUCTION, FOR ALL PROPOSED METER PIT INSTALLATIONS.
2. BACKFLOW PREVENTION DEVICES MAY NOT BE INSTALLED WITHIN SMALL METER PITS.
3. A METER PIT MAY HOUSE UP TO TWO 5/8", 3/4" OR 1" METERS WITH PRIOR APPROVAL BY PWD.
4. METER PIT SHALL BE LOCATED ON PRIVATE PROPERTY BETWEEN 10' AND 20' FROM THE PROPERTY LINE UNLESS OTHERWISE APPROVED BY PWD.
5. THE METER PIT SHALL BE MADE OF PRECAST CONCRETE OF SUFFICIENT SIZE TO PROVIDE 5.5' MINIMUM GROUND COVER FROM FINISHED GRADE TO THE TOP OF THE SERVICE PIPE.
6. ALL SEAMS BETWEEN CONCRETE SECTIONS SHALL BE SEALED WITH MASTIC JOINT. ALL OPENINGS IN THE CONCRETE FOR SERVICE PIPING SHALL BE SEALED WITH A MODULAR SEAL (LINK-SEAL OR SIMILAR).
7. METER PIT INTERIOR MUST BE AT LEAST 48" IN DIAMETER. THE OPENING MUST BE AT LEAST 30" IN DIAMETER, WITH A CAST IRON FRAME. THE COVER SHALL BE CAST IRON OR STEEL, 32" MINIMUM IN DIAMETER, AND BE EITHER PERMANENTLY LABELED "WATER" OR HAVE NO LABEL. STEEL PLATE MATERIAL SHALL BE COATED WITH A RUST INHIBITOR PAINT.
8. WALL-MOUNTED LADDER RUNGS ARE NOT TO BE INSTALLED WITHIN METER PIT.
9. ALL PIPING INSIDE AND EXTENDING THROUGH THE METER PIT WILL BE MADE OF COPPER, WITH A MINIMUM OF 6" CLEARANCE FROM THE METER PIT FLOOR. USE BLOCKING AS NEEDED TO SUPPORT THE PIPE.
10. CUSTOMER SHALL ENSURE THE METER PIT AND COVER ARE PROPERLY RATED FOR TRAFFIC FLOW, IF APPLICABLE.

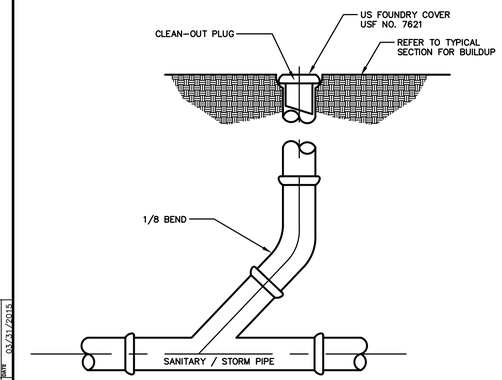
METER INSTALLATION

11. ONLY PWD PERSONNEL ARE AUTHORIZED TO INSTALL WATER METERS. PWD PERSONNEL ARE ADDITIONALLY AUTHORIZED TO OPERATE METER VALVES AS NEEDED FOR INSTALLATION AND MAINTENANCE.
12. PWD WILL SUPPLY THE WATER METER. ALL OTHER FITTINGS, INCLUDING A METER RESETTER FOR 1" OR SMALLER METERS, SHALL BE SUPPLIED AND INSTALLED BY CUSTOMER.
13. FOR 1.5" AND 2" METERS, CUSTOMER WILL INSTALL A FLANGED METER SPOOL PIECE, SUPPLIED BY PWD AT NO ADDITIONAL CHARGE, PRIOR TO METER SET. THE METER SPOOL WILL BE MADE AVAILABLE FOR CUSTOMER PICKUP AT PWD CUSTOMER SERVICE, 225 DOUGLASS STREET, PORTLAND DURING NORMAL BUSINESS HOURS.
14. CUSTOMER WILL INSTALL TWO BALL VALVES AT LEAST 24" APART FOR METER INSTALLATION, ALLOWING FOR THE WATER METER TO BE CENTERED UNDER THE METER PIT OPENING. THE BALL VALVES SHALL BE SOLDERED IN PLACE.

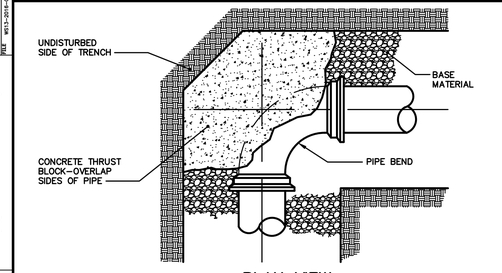
SMALL METER PIT (5/8" TO 2" METER)

SCALE: NTS
DATE: 03/31/2015
PROJECT FILE: W:\1-2015-JOB-\1-DWG

PORTLAND WATER DISTRICT
Asset Management & Planning Dept.
225 Douglass St, Portland ME 04104
(207) 774-5961 x 3359 mtodd@pwd.org

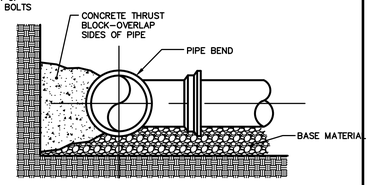


CLEANOUT
NOT TO SCALE



PLAN VIEW

NOTE:
KEEP CONCRETE CLEAR OF PIPE JOINT, NUTS AND BOLTS



SECTION

THRUST/RETAINER GLAND SCHEDULE		
1/4 BEND	90°	USE POURED IN-PLACE THRUST BLOCK WITH RETAINERS
1/8 BEND	45°	THRUST BLOCK WITH RETAINERS
1/16 BEND	22 1/2°	THRUST BLOCK
1/32 BEND	11 1/4°	THRUST BLOCK

THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON-SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.

THRUST BLOCK PLACEMENT ON BENDS
NOT TO SCALE

1. THE BEARING SURFACE OF THE THRUST BLOCK SHALL BE THE SURFACE AREA OF THE THRUST BLOCK WHICH IS CAST AGAINST THE TRENCH WALL. THE BEARING SURFACE SHALL NOT EXCEED THE FOLLOWING LOADINGS:

IN-SITU CONDITION	ALLOWABLE
BEDROCK	3,000 psf
SAND OR OUTWASH DEPOSITS	1,500 psf
OTHER SOILS	1,000 psf

THE THRUST SHALL BE COMPUTED ON THE BASIS OF 150 psi x THE CROSS SECTIONAL AREA OF THE PIPE. FOR EXAMPLE, A THRUST BLOCK FOR A 1/4 BEND ON AN 8" WATER MAIN BEARING AGAINST CLAY WOULD REQUIRE A BEARING SURFACE OF 7.5 s.f.

$$\frac{150 \text{ psi} \times 50 \text{ sq. in.}}{1{,}000 \text{ psf}} = 7.5 \text{ s.f.}$$

2. INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.
3. ANY WORK RELATED TO WATER PIPING OR DETAILS SHALL BE IN ACCORDANCE WITH THE SCARBOROUGH WATER AND SEWER DISTRICT SPECIFICATIONS.

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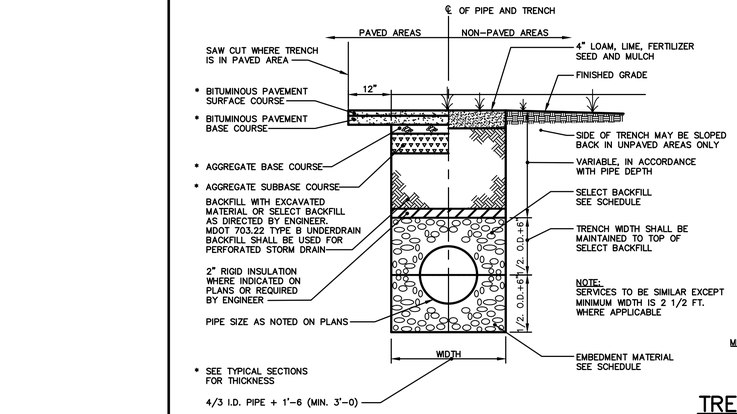
THRUST BLOCK NOTES



SCHEDULE OF TRENCH BACKFILL		
TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC-SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
PERFORATED PVC-SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

NOTE:
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.

MINIMUM COVER	PIPE
2'-0"	DRAIN (1)
5'-5"	WATER
5'-0"	SEWER

(1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.

TRENCH SECTION
N.T.S.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9886
7-30-18
LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

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Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06

File Name: 801-06-DETAIL.dwg

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Drawing Name: **Miscellaneous Details**
Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine
Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C402

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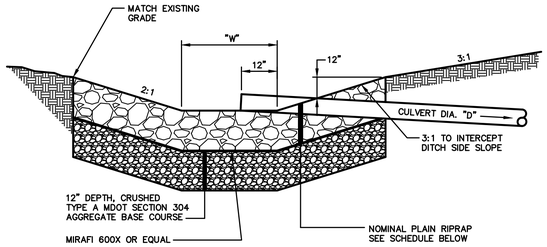
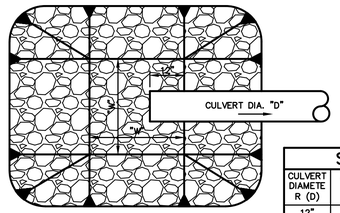


SECTION VIEW

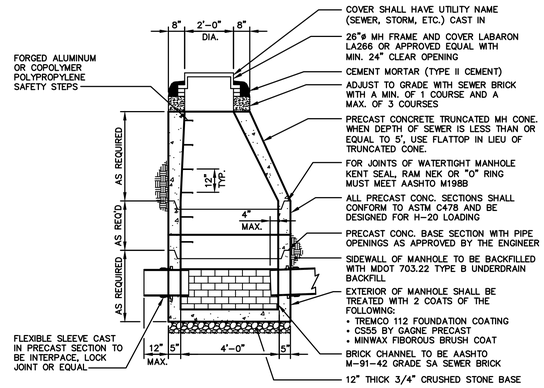


PLAN VIEW

SCHEDULE			
CULVERT DIAMETER (D)	WIDTH (W)	STONE d50	RIPRAP THICKNESS
12"	3'	6"	14"

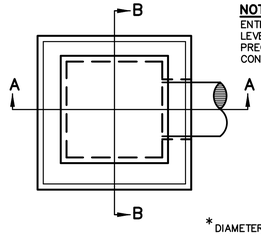
CULVERT INLET APRON

NOT TO SCALE



4'-0" PRECAST SEWER MANHOLE AND DRAIN MANHOLE

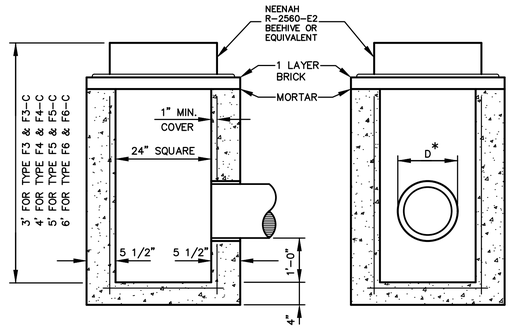
NOT TO SCALE



PLAN VIEW

NOTE:
ENTIRE CATCH BASIN WITH EXCEPTION OF LEVELING BRICK FRAME AND GRATE TO BE PRECAST AS SINGLE PORTLAND CEMENT CONCRETE UNIT.

* DIAMETER OF HOLE (D) TO BE 3" LARGER THAN THE INSIDE DIAMETER OF FLEXIBLE PIPE OR THE OUTSIDE DIAMETER OF RIGID PIPE.

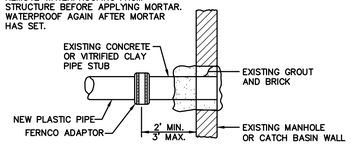


SECTION A-A SECTION B-B

CATCH BASIN TYPE "F"

NOT TO SCALE

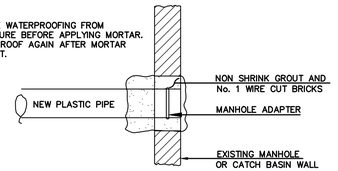
NOTE:
REMOVE WATERPROOFING FROM STRUCTURE BEFORE APPLYING MORTAR. WATERPROOF AGAIN AFTER MORTAR HAS SET.



METHOD 4 – NEW PIPE TO EXISTING STRUCTURE STUB

NOTE: EXISTING MANHOLE OR CATCH BASIN SHALL BE CORE DRILLED FOR PIPE INSTALLATION. IF PIPE DIAMETER IS SO LARGE THAT CORE DRILLING IS PROHIBITED, THE CONTRACTOR MAY SAW CUT THE STRUCTURE TO CREATE PIPE OPENING. THE NEW OPENING MUST THEN BE SEALED AND WATERTIGHT BOTH INSIDE AND OUTSIDE THE STRUCTURE.

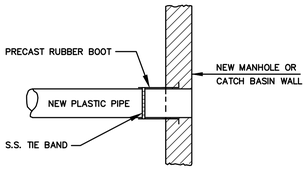
NOTE:
REMOVE WATERPROOFING FROM STRUCTURE BEFORE APPLYING MORTAR. WATERPROOF AGAIN AFTER MORTAR HAS SET.



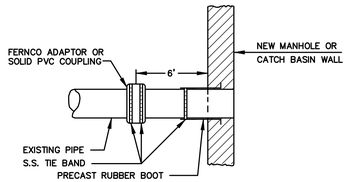
METHOD 3 – NEW PIPE INTO EXISTING STRUCTURE

PLASTIC PIPE CONNECTIONS

NOT TO SCALE



METHOD 2 – NEW CONSTRUCTION



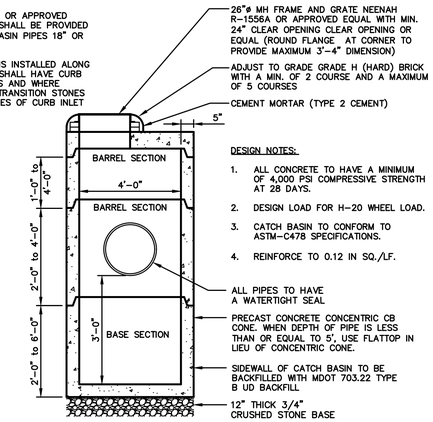
METHOD 1 – EXISTING PIPE INTO NEW STRUCTURE

PLASTIC PIPE CONNECTIONS

NOT TO SCALE

NOTES:

1. "THE SNOUT" OR APPROVED EQUIVALENT SHALL BE PROVIDED ON CATCH BASIN PIPES 18" OR LESS.
2. CATCH BASINS INSTALLED ALONG CURB LINES SHALL HAVE CURB INLET STONES AND WHERE NECESSARY TRANSITION STONES ON BOTH SIDES OF CURB INLET STONE.



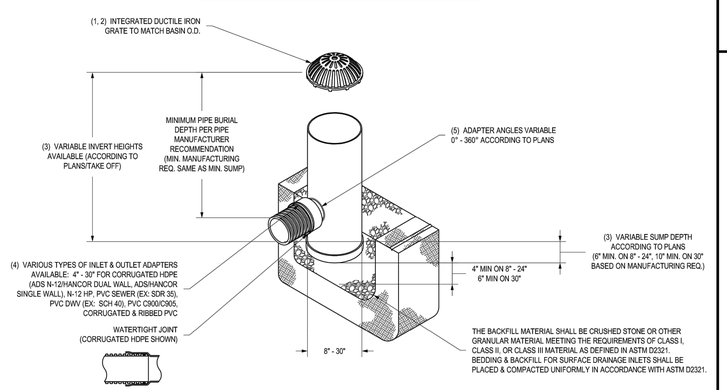
DESIGN NOTES:

1. ALL CONCRETE TO HAVE A MINIMUM OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.

4'-0" PRECAST CATCH BASIN

NOT TO SCALE

NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-055.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

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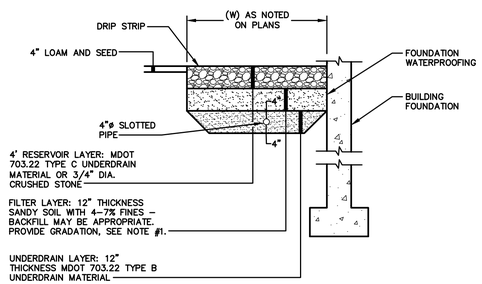
DRAWN BY	EBC	MATERIAL	
DATE	03-25-10		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2499
www.nyloplast-us.com

TITLE: DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-397 REV D



DRIP STRIP SECTION

NOT TO SCALE

DRIP STRIP NOTES:

1. FILTER LAYER SHALL CONSIST OF A SANDY SOIL WITH BETWEEN 4% AND 7% FINES (PASSING #200 SIEVE).
2. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.
3. SUBMIT 75 LB. SAMPLE OF EACH TYPE OF MATERIAL IN AIR TIGHT CONTAINERS TO TESTING FACILITY.
4. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   A. RESERVOIR LAYER MATERIAL
   B. FILTER LAYER MATERIAL
   C. UNDERDRAIN LAYER
5. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136-STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES, ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No 9886 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

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Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06
File Name: 801-06-DETAIL.dwg		

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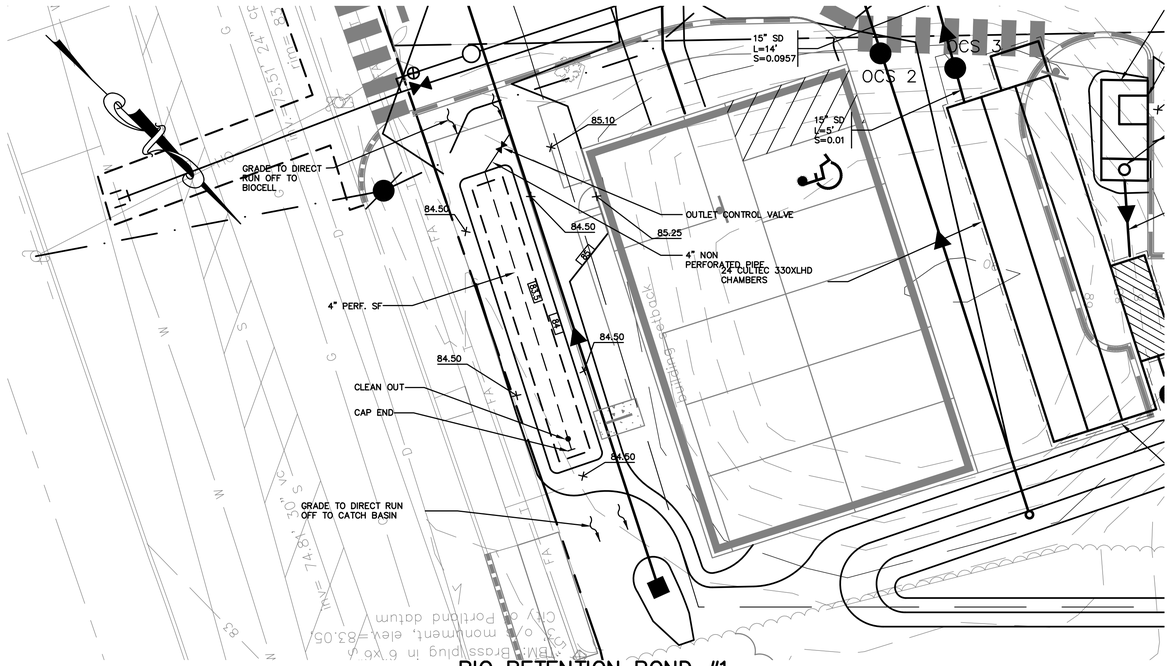
Drawing Name: **Drainage Details**

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C403



BIO RETENTION POND #1 PROJECT DETAILS

1"=10'

Table 1 Loamy Coarse Sand

SIEVE SIZE	% PASSING BY WEIGHT
#10	85–100
#20	70–100
#60	15–40
#200	8–15
#200 CLAY SIZE	<2.0

Table 2 MEDOT Specifications for Underdrain Type B (MEDOT #703.22)

SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

Table 3 Sandy Loam Topsoil

SIEVE SIZE	% PASSING BY WEIGHT
#4	75–95
#10	60–90
#40	35–85
#200	20–70
#200 CLAY SIZE	<2.0

SCHEDULE A

⬡	ITEM DESCRIPTION	GRASSED UNDERDRAIN DIMENSION/ ELEVATION
A	CHANNEL PROTECTION VOLUME STAGE	83.40
B	TOP SOIL FILTER	83.50
C	TOP UNDERDRAIN BEDDING STONE	82.00
D	PIPE INVERT: 4" PERF. UD	81.33
E	BOTTOM UNDERDRAIN BEDDING	81.00

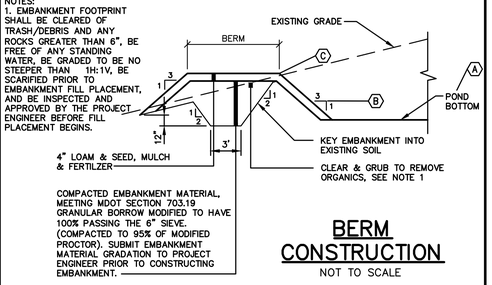
CONSTRUCTION OVERSIGHT

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

1. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
2. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
3. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
4. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
5. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

NOTE: CONTRACTOR SHALL NOTIFY PROJECT ENGINEER 48 HOURS PRIOR TO THE MILESTONES LISTED ABOVE TO ALLOW FOR INSPECTION.

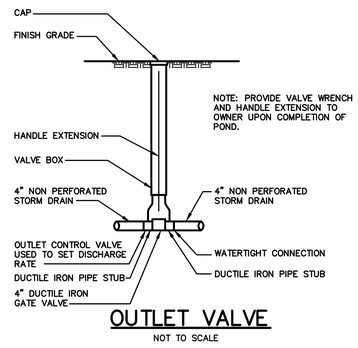
NOTES:
1. EMBANKMENT FOOTPRINT SHALL BE CLEARED OF TRASH/DEBRIS AND ANY ROCKS GREATER THAN 6", BE FREE OF ANY STANDING WATER, BE GRADED TO BE NO STEEPER THAN 1H:1V, BE SCARIFIED PRIOR TO EMBANKMENT FILL PLACEMENT, AND BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER BEFORE FILL PLACEMENT BEGINS.



BERM CONSTRUCTION
NOT TO SCALE

SCHEDULE B – EMBANKMENT SCHEDULE	
ITEM DESCRIPTION	DIMENSION/ELEVATION
Ⓐ POND BASE ELEVATION	83.50
Ⓑ PEAK ELEVATION – CHANNEL PROTECTION VOLUME	83.40
Ⓒ TOP OF BERM	84.50

TYPICAL POND CROSS SECTION
NOT TO SCALE



OUTLET VALVE
NOT TO SCALE

BIO RETENTION CELL NOTES:

SOIL SPECIFICATIONS:

1. THE SOIL FILTER MEDIA SHALL BE A LAYERED SYSTEM CONSISTING OF THE FOLLOWING FROM THE BOTTOM:
   A. 12" OF LOAMY COARSE SAND, SEE TABLE 1.
   B. 2" LAYER OF TOPSOIL (SEE "C" BELOW) ROTOTILLED INTO THE LOAMY COARSE SAND LAYER.
   C. 6" OF NON-CLAYEY, LOAMY TOPSOIL SUCH AS USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER. SUPERHUMUS OR EQUIVALENT MAY BE ADDED TO THE TOPSOIL TO INCREASE ORGANIC CONTENT, SEE TABLE 3.

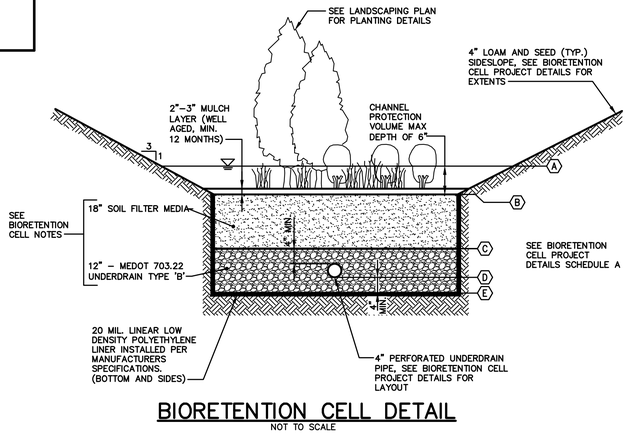
2. SOIL FILTER MEDIA MIXTURE SHALL HAVE A PERMEABILITY OF 2.4 IN./HR. TO 4 IN./HR UPON COMPACTION BETWEEN 90% AND 92% STANDARD PROCTOR (ASTM D698).

SUBMITTALS:

1. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.
2. SUBMIT 75 lb. SAMPLE OF EACH TYPE OF MATERIAL: SUBMIT IN AIR TIGHT CONTAINERS TO PROJECT ENGINEER.
3. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   A. SAND.
   B. UNDERDRAIN BEDDING MATERIAL.
4. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.
5. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. SUBMIT RESULTS TO THE PROJECT ENGINEER.
6. PERFORM ONE COMPACTION DENSITY TEST ON THE IN PLACE SOIL FILTER FOR EVERY 2,000 SQUARE FEET OF FILTER SURFACE AREA. TEST SHALL CONFORM TO ASTM D 2922 – STANDARD TEST METHODS FOR DENSITY OF SOIL AND SOIL-AGGREGATE IN PLACE BY NUCLEAR METHODS (SHALLOW DEPTH); 1996. SUBMIT RESULTS TO THE PROJECT ENGINEER.

CONSTRUCTION:

1. SOIL FILTER MEDIA AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.
2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" SLOTTED PIPE. SPACED 15 FEET ON CENTER MAXIMUM.
3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY, AND 90% GRASS CATCH IF IN A VEGETATED AREA.
4. OUTFLOW OF THE VEGETATED UNDERDRAIN SHALL BE CONTROLLED BY A 4" DUCTILE IRON GATE VALVE WITH VALVE WRENCH AND EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE PIECE VALVE BOX (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.
5. ALL EQUIPMENT USED WITHIN THE LIMITS OF THE VEGETATED UNDERDRAIN SHALL BE LOW GROUND PRESSURE VEHICLES (LESS THAN 2.0 PSI) WHEN FULLY LOADED.
6. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER MEDIA AND THE ESTABLISHMENT OF A 90% CATCH OF GRASS OVER THE FILTER MEDIA, THE CONTRACTOR SHALL FLOOD THE VEGETATED UNDERDRAIN TO THE DESIGN ELEVATION WITH CLEAN WATER AND ADJUST THE VALVE TO OBTAIN A 24 HOUR TO 32 HOUR RELEASE TIME.



BIORETENTION CELL DETAIL
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9886 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

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Design: JWA	Draft: CG	Date: AUG 2016
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Drawing Name:	Bio Retention Pond #1 Plan and Details
Project:	Mixed Use Development 300 Allen Ave. Portland, Maine
Client:	ESTELLE ESTATES, LLC 39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C404

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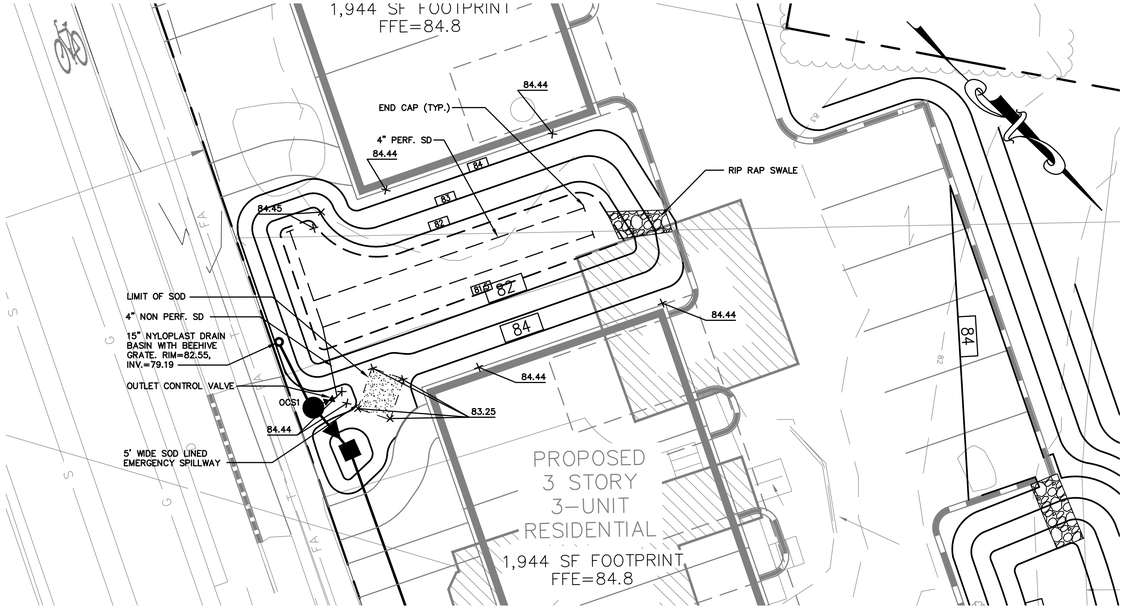

Table 1
Loamy Coarse Sand

SIEVE SIZE	% PASSING BY WEIGHT
#10	85–100
#20	70–100
#60	15–40
#200	8–15
#200 CLAY SIZE	<2.0

Table 2 MEDOT Specifications for Underdrain Type B (MEDOT #703.22)

SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

Table 3
Sandy Loam Topsoil

SIEVE SIZE	% PASSING BY WEIGHT
#4	75–95
#10	60–90
#40	35–85
#200	20–70
#200 CLAY SIZE	<2.0

SCHEDULE A

	ITEM DESCRIPTION	GRASSED UNDERDRAIN DIMENSION/ ELEVATION
A	CHANNEL PROTECTION VOLUME STAGE	82.55
B	TOP SOIL FILTER	81.50
C	TOP UNDERDRAIN BEDDING STONE	80.00
D	PIPE INVERT: 4" PERF. UD	79.33
E	BOTTOM UNDERDRAIN BEDDING	79.00
F	BOTTOM OF CRUSHED STONE	78.50

GRASSED UNDERDRAIN SOIL FILTER #1 PROJECT DETAILS

1"=10'

CONSTRUCTION OVERSIGHT

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

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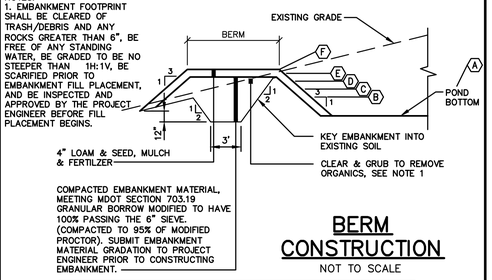
2. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
3. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
4. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
5. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

NOTE: CONTRACTOR SHALL NOTIFY PROJECT ENGINEER 48 HOURS PRIOR TO THE MILESTONES LISTED ABOVE TO ALLOW FOR INSPECTION.

NOTES:
1. EMBANKMENT FOOTPRINT SHALL BE CLEARED OF TRASH/DEBRIS AND ANY ROCKS GREATER THAN 6", BE FREE OF ANY STANDING WATER, BE GRADED TO BE NO STEEPER THAN 1H:1V, BE SCARIFIED PRIOR TO EMBANKMENT FILL PLACEMENT, AND BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER BEFORE FILL PLACEMENT BEGINS.



BERM CONSTRUCTION
NOT TO SCALE

SCHEDULE B – EMBANKMENT SCHEDULE	
ITEM DESCRIPTION	DIMENSION/ELEVATION
(A) POND BASE ELEVATION	81.50
(B) PEAK ELEVATION – CHANNEL PROTECTION VOLUME	82.55
(C) PEAK ELEVATION – 2 YEAR STORM	82.62
(D) PEAK ELEVATION – 10 YEAR STORM	82.98
(E) PEAK ELEVATION – 25 YEAR STORM	83.25
(F) TOP OF BERM	84.44

TYPICAL POND CROSS SECTION
NOT TO SCALE

GRASSED UNDERDRAIN NOTES:

SOIL SPECIFICATIONS:

1. THE SOIL FILTER MEDIA SHALL BE A LAYERED SYSTEM CONSISTING OF THE FOLLOWING FROM THE BOTTOM:
   A. 12" OF LOAMY COARSE SAND, SEE TABLE 1.
   B. 2" LAYER OF TOPSOIL (SEE "C" BELOW) ROTOTILLED INTO THE LOAMY COARSE SAND LAYER.
   C. 6" OF NON-CLAYEY, LOAMY TOPSOIL SUCH AS USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER. SUPERHUMUS OR EQUIVALENT MAY BE ADDED TO THE TOPSOIL TO INCREASE ORGANIC CONTENT, SEE TABLE 3.
2. SOIL FILTER MEDIA MIXTURE SHALL HAVE A PERMEABILITY OF 2.4 IN./HR. TO 4 IN./HR UPON COMPACTION BETWEEN 90% AND 92% STANDARD PROCTOR (ASTM D698).

SUBMITTALS:

1. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.
2. SUBMIT 75 lb. SAMPLE OF EACH TYPE OF MATERIAL: SUBMIT IN AIR TIGHT CONTAINERS TO PROJECT ENGINEER.
3. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   A. SAND.
   B. UNDERDRAIN BEDDING MATERIAL.
4. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.
5. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. SUBMIT RESULTS TO THE PROJECT ENGINEER.
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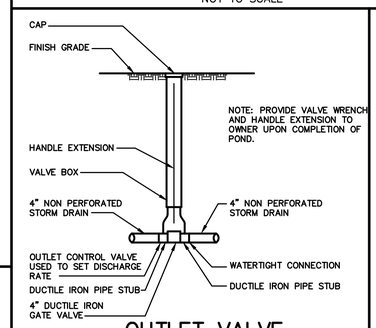
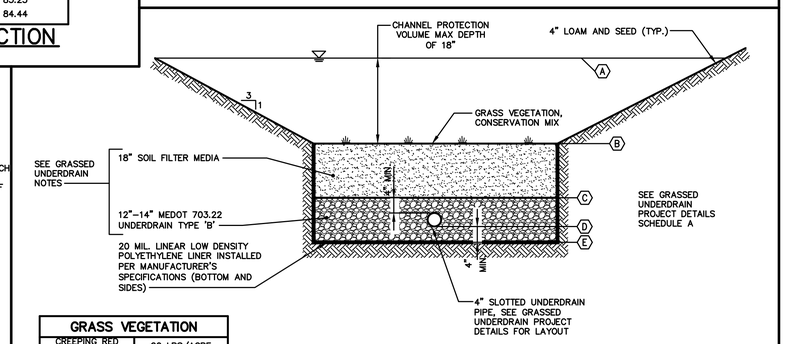
CONSTRUCTION:

1. SOIL FILTER MEDIA AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.
2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" SLOTTED PIPE. SPACED 15 FEET ON CENTER MAXIMUM.
3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY, AND 90% GRASS CATCH IF IN A VEGETATED AREA.
4. OUTFLOW OF THE VEGETATED UNDERDRAIN SHALL BE CONTROLLED BY A 4" DUCTILE IRON GATE VALVE WITH VALVE WRENCH AND EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE PIECE VALVE BOX (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.
5. ALL EQUIPMENT USED WITHIN THE LIMITS OF THE VEGETATED UNDERDRAIN SHALL BE LOW GROUND PRESSURE VEHICLES (LESS THAN 2.0 PSI) WHEN FULLY LOADED.
6. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER MEDIA AND THE ESTABLISHMENT OF A 90% CATCH OF GRASS OVER THE FILTER MEDIA, THE CONTRACTOR SHALL FLOOD THE VEGETATED UNDERDRAIN TO THE DESIGN ELEVATION WITH CLEAN WATER AND ADJUST THE VALVE TO OBTAIN A 24 HOUR TO 32 HOUR RELEASE TIME.



OUTLET VALVE
NOT TO SCALE



GRASS VEGETATION	
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREEFOIL	8 LBS/ACRE

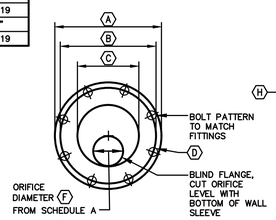
GRASSED UNDERDRAIN DETAIL
NOT TO SCALE

SCHEDULE A

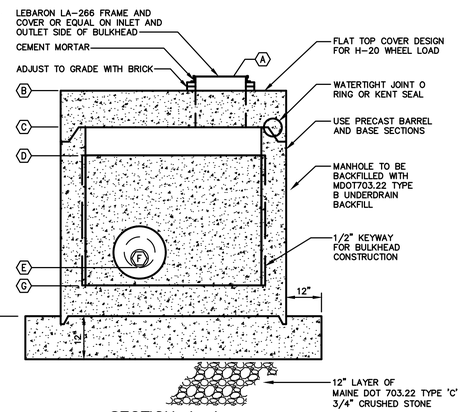
	ITEM DESCRIPTION	DIMENSION/ ELEVATION OCS 1
A	TOP OF MH COVER	84.77
B	TOP OF STRUCTURE	84.27
C	UNDERSIDE TOP SLAB	83.60
D	TOP CONCRETE BULKHEAD	83.25
E	ORIFICE INVERT	79.19
F	ORIFICE DIAMETER	2.6"
G	MANHOLE INVERT	78.19
H	BOTTOM OF STRUCTURE	77.19
I	PIPE DIAMETER	15"
	INVERT OUT	79.19
J	PIPE DIAMETER	15"
	INVERT IN	79.19
K	PIPE DIAMETER	4"
	INVERT IN	79.19

SCHEDULE B ORIFICE

	ITEM DESCRIPTION	DIMENSION /ELEVATION OCS 1
A	FLANGE O.D.	16"
B	BOLT CIRCLE	14.25"
C	NOMINAL PIPE DIAMETER	10"
D	BOLT HOLE DIAMETER	1.0"
F	ECCENTRIC ORIFICE DIAMETER	2.6"

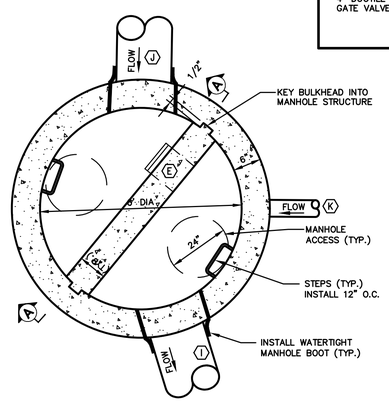


ORIFICE DETAIL 1
SEE SCHEDULE B
NOT TO SCALE



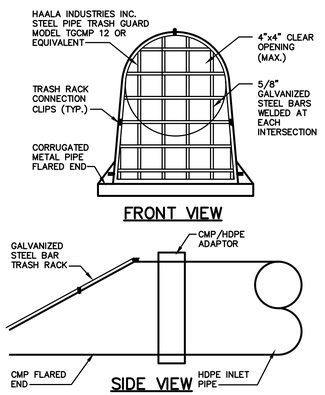
SECTION A–A

OUTLET CONTROL STRUCTURE 1 (OCS1)
SEE SCHEDULE A



PLAN VIEW

6' OUTLET CONTROL STRUCTURE 1 (OCS1)
SEE SCHEDULE A
NOT TO SCALE



FRONT VIEW

SIDE VIEW

TRASH RACK
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9899 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06

File Name: 801-06-DETAIL.dwg

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Drawing Name: Grassed Underdrain Soil Filters #1 Plan & Details

Project: Mixed Use Development
300 Allen Ave. Portland, Maine

Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C405

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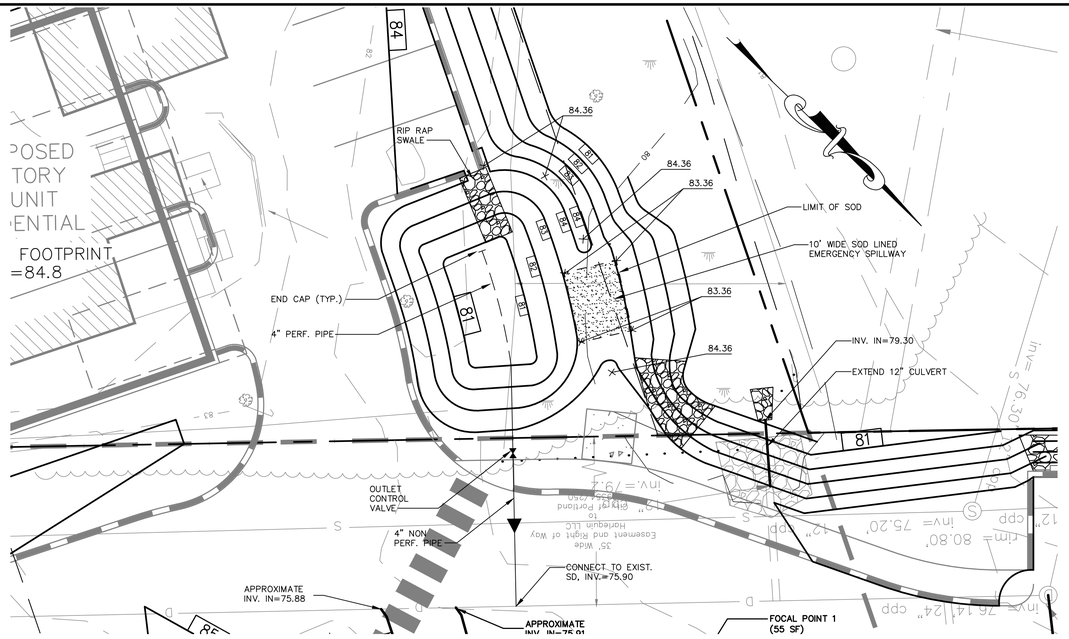


Table 1
Loamy Coarse Sand

SIEVE SIZE	% PASSING BY WEIGHT
#10	85–100
#20	70–100
#60	15–40
#200	8–15
#200 CLAY SIZE	<2.0

Table 2 MEDOT Specifications for Underdrain Type B (MEDOT #703.22)

SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

Table 3
Sandy Loam Topsoil

SIEVE SIZE	% PASSING BY WEIGHT
#4	75–95
#10	60–90
#40	35–85
#200	20–70
#200 CLAY SIZE	<2.0

SCHEDULE A

	ITEM DESCRIPTION	GRASSED UNDERDRAIN DIMENSION/ ELEVATION
A	CHANNEL PROTECTION VOLUME STAGE	81.97
B	TOP SOIL FILTER	81.00
C	TOP UNDERDRAIN BEDDING STONE	79.50
D	PIPE INVERT: 4" PERF. UD	78.83
E	BOTTOM UNDERDRAIN BEDDING	78.50
F	BOTTOM OF CRUSHED STONE	77.50

GRASSED UNDERDRAIN SOIL FILTER #2 PROJECT DETAILS

1"=10'

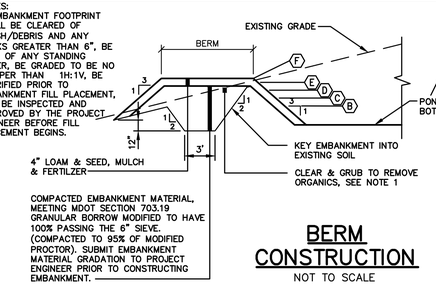
CONSTRUCTION OVERSIGHT

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

1. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
2. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
3. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
4. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
5. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

NOTE: CONTRACTOR SHALL NOTIFY PROJECT ENGINEER 48 HOURS PRIOR TO THE MILESTONES LISTED ABOVE TO ALLOW FOR INSPECTION.

NOTES:
1. EMBANKMENT FOOTPRINT SHALL BE CLEARED OF TRASH/DEBRIS AND ANY ROCKS GREATER THAN 6", BE FREE OF ANY STANDING WATER, BE GRADED TO BE NO STEEPER THAN 1H:1V, BE SCARIFIED PRIOR TO EMBANKMENT FILL PLACEMENT, AND BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER BEFORE FILL PLACEMENT BEGINS.



BERM CONSTRUCTION
NOT TO SCALE

SCHEDULE B – EMBANKMENT SCHEDULE	
ITEM DESCRIPTION	DIMENSION/ELEVATION
(A) POND BASE ELEVATION	81.00
(B) PEAK ELEVATION – CHANNEL PROTECTION VOLUME	81.97
(C) PEAK ELEVATION – 2 YEAR STORM	82.23
(D) PEAK ELEVATION – 10 YEAR STORM	82.91
(E) PEAK ELEVATION – 25 YEAR STORM	83.36
(F) TOP OF BERM	84.36

TYPICAL POND CROSS SECTION
NOT TO SCALE

GRASSED UNDERDRAIN NOTES:

SOIL SPECIFICATIONS:

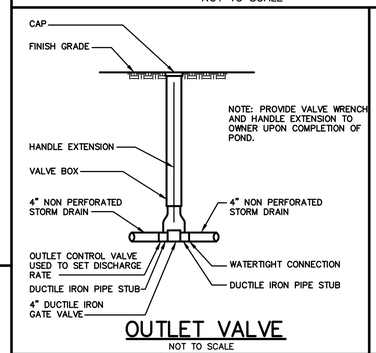
1. THE SOIL FILTER MEDIA SHALL BE A LAYERED SYSTEM CONSISTING OF THE FOLLOWING FROM THE BOTTOM:
   A. 12" OF LOAMY COARSE SAND, SEE TABLE 1.
   B. 2" LAYER OF TOPSOIL (SEE "C" BELOW) ROTOTILLED INTO THE LOAMY COARSE SAND LAYER.
   C. 6" OF NON-CLAYEY, LOAMY TOPSOIL SUCH AS USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER. SUPERHUMUS OR EQUIVALENT MAY BE ADDED TO THE TOPSOIL TO INCREASE ORGANIC CONTENT, SEE TABLE 3.
2. SOIL FILTER MEDIA MIXTURE SHALL HAVE A PERMEABILITY OF 2.4 IN./HR. TO 4 IN./HR UPON COMPACTION BETWEEN 90% AND 92% STANDARD PROCTOR (ASTM D698).

SUBMITTALS:

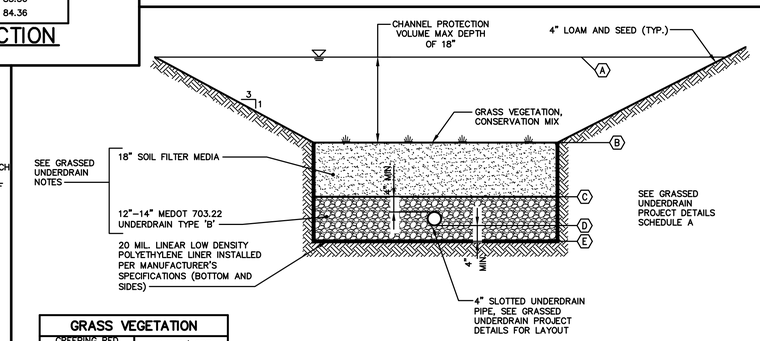
1. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.
2. SUBMIT 75 lb. SAMPLE OF EACH TYPE OF MATERIAL: SUBMIT IN AIR TIGHT CONTAINERS TO PROJECT ENGINEER.
3. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   A. SAND.
   B. UNDERDRAIN BEDDING MATERIAL.
4. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.
5. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. SUBMIT RESULTS TO THE PROJECT ENGINEER.
6. PERFORM ONE COMPACTION DENSITY TEST ON THE IN PLACE SOIL FILTER FOR EVERY 2,000 SQUARE FEET OF FILTER SURFACE AREA. TEST SHALL CONFORM TO ASTM D 2922 – STANDARD TEST METHODS FOR DENSITY OF SOIL AND SOIL-AGGREGATE IN PLACE BY NUCLEAR METHODS (SHALLOW DEPTH); 1996. SUBMIT RESULTS TO THE PROJECT ENGINEER.

CONSTRUCTION:

1. SOIL FILTER MEDIA AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.
2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" SLOTTED PIPE. SPACED 15 FEET ON CENTER MAXIMUM.
3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY, AND 90% GRASS CATCH IF IN A VEGETATED AREA.
4. OUTFLOW OF THE VEGETATED UNDERDRAIN SHALL BE CONTROLLED BY A 4" DUCTILE IRON GATE VALVE WITH VALVE WRENCH AND EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE PIECE VALVE BOX (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.
5. ALL EQUIPMENT USED WITHIN THE LIMITS OF THE VEGETATED UNDERDRAIN SHALL BE LOW GROUND PRESSURE VEHICLES (LESS THAN 2.0 PSI) WHEN FULLY LOADED.
6. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER MEDIA AND THE ESTABLISHMENT OF A 90% CATCH OF GRASS OVER THE FILTER MEDIA, THE CONTRACTOR SHALL FLOOD THE VEGETATED UNDERDRAIN TO THE DESIGN ELEVATION WITH CLEAN WATER AND ADJUST THE VALVE TO OBTAIN A 24 HOUR TO 32 HOUR RELEASE TIME.

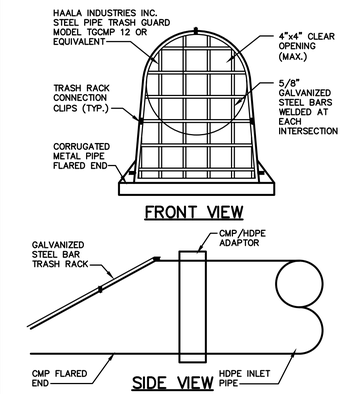


OUTLET VALVE
NOT TO SCALE



GRASS VEGETATION	
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREEFOIL	8 LBS/ACRE

GRASSED UNDERDRAIN DETAIL
NOT TO SCALE



TRASH RACK
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9886 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06

File Name: 801-06-DETAIL.dwg

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Drawing Name: Grassed Underdrain Soil Filters #2 Plan & Details

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C406

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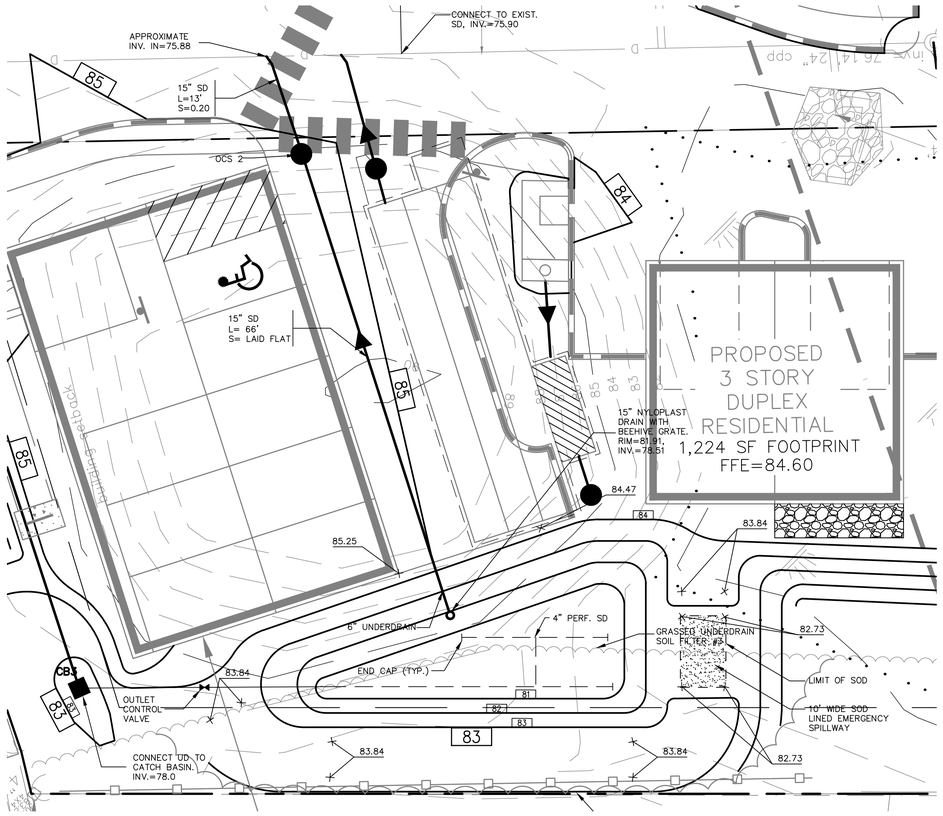

GRASSED UNDERDRAIN SOIL FILTER #3 PROJECT DETAILS

1"=10'

Table 1 Loamy Coarse Sand

SIEVE SIZE	% PASSING BY WEIGHT
#10	85–100
#20	70–100
#60	15–40
#200	8–15
#200 CLAY SIZE	<2.0

Table 2 MEDOT Specifications for Underdrain Type B (MEDOT #703.22)

SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

Table 3 Sandy Loam Topsoil

SIEVE SIZE	% PASSING BY WEIGHT
#4	75–95
#10	60–90
#40	35–85
#200	20–70
#200 CLAY SIZE	<2.0

SCHEDULE A

	ITEM DESCRIPTION	GRASSED UNDERDRAIN DIMENSION/ ELEVATION
A	CHANNEL PROTECTION VOLUME STAGE	81.91
B	TOP SOIL FILTER	81.00
C	TOP UNDERDRAIN BEDDING STONE	79.50
D	PIPE INVERT: 4" PERF. UD	78.83
E	BOTTOM UNDERDRAIN BEDDING	78.50
F	BOTTOM OF CRUSHED STONE	78.00

CONSTRUCTION OVERSIGHT

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

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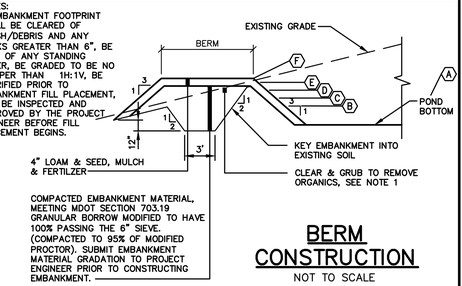
3. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
4. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
5. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

NOTE: CONTRACTOR SHALL NOTIFY PROJECT ENGINEER 48 HOURS PRIOR TO THE MILESTONES LISTED ABOVE TO ALLOW FOR INSPECTION.

NOTES:
1. EMBANKMENT FOOTPRINT SHALL BE CLEARED OF TRASH/DEBRIS AND ANY ROCKS GREATER THAN 6", BE FREE OF ANY STANDING WATER, BE GRADED TO BE NO STEEPER THAN 1H:1V, BE SCARIFIED PRIOR TO EMBANKMENT FILL PLACEMENT, AND BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER BEFORE FILL PLACEMENT BEGINS.



BERM CONSTRUCTION

NOT TO SCALE

SCHEDULE B – EMBANKMENT SCHEDULE	
ITEM DESCRIPTION	DIMENSION/ELEVATION
(A) POND BASE ELEVATION	81.00
(B) PEAK ELEVATION – CHANNEL PROTECTION VOLUME	81.91
(C) PEAK ELEVATION – 2 YEAR STORM	81.98
(D) PEAK ELEVATION – 10 YEAR STORM	82.41
(E) PEAK ELEVATION – 25 YEAR STORM	82.73
(F) TOP OF BERM	83.84

TYPICAL POND CROSS SECTION

NOT TO SCALE

GRASSED UNDERDRAIN NOTES:

SOIL SPECIFICATIONS:

1. THE SOIL FILTER MEDIA SHALL BE A LAYERED SYSTEM CONSISTING OF THE FOLLOWING FROM THE BOTTOM:
   A. 12" OF LOAMY COARSE SAND, SEE TABLE 1.
   B. 2" LAYER OF TOPSOIL (SEE "C" BELOW) ROTOTILLED INTO THE LOAMY COARSE SAND LAYER.
   C. 6" OF NON-CLAYEY, LOAMY TOPSOIL SUCH AS USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER. SUPERHUMUS OR EQUIVALENT MAY BE ADDED TO THE TOPSOIL TO INCREASE ORGANIC CONTENT, SEE TABLE 3.
2. SOIL FILTER MEDIA MIXTURE SHALL HAVE A PERMEABILITY OF 2.4 IN./HR. TO 4 IN./HR UPON COMPACTION BETWEEN 90% AND 92% STANDARD PROCTOR (ASTM D698).

SUBMITTALS:

1. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.
2. SUBMIT 75 lb. SAMPLE OF EACH TYPE OF MATERIAL: SUBMIT IN AIR TIGHT CONTAINERS TO PROJECT ENGINEER.
3. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
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   B. UNDERDRAIN BEDDING MATERIAL.
4. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.
5. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. SUBMIT RESULTS TO THE PROJECT ENGINEER.
6. PERFORM ONE COMPACTION DENSITY TEST ON THE IN PLACE SOIL FILTER FOR EVERY 2,000 SQUARE FEET OF FILTER SURFACE AREA. TEST SHALL CONFORM TO ASTM D 2922 – STANDARD TEST METHODS FOR DENSITY OF SOIL AND SOIL-AGGREGATE IN PLACE BY NUCLEAR METHODS (SHALLOW DEPTH); 1996. SUBMIT RESULTS TO THE PROJECT ENGINEER.

CONSTRUCTION:

1. SOIL FILTER MEDIA AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.
2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" SLOTTED PIPE. SPACED 15 FEET ON CENTER MAXIMUM.
3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY, AND 90% GRASS CATCH IF IN A VEGETATED AREA.
4. OUTFLOW OF THE VEGETATED UNDERDRAIN SHALL BE CONTROLLED BY A 4" DUCTILE IRON GATE VALVE WITH VALVE WRENCH AND EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE PIECE VALVE BOX (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.
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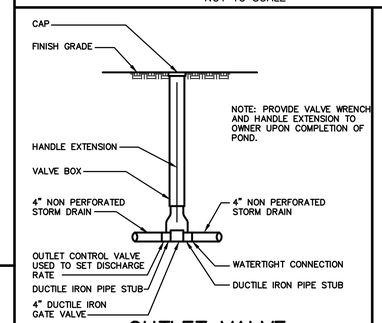
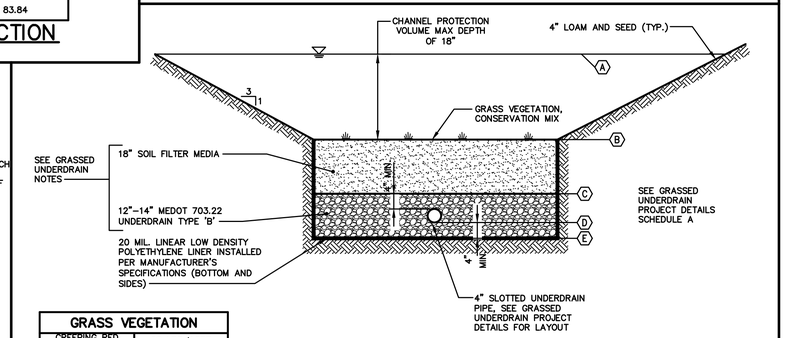
6. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER MEDIA AND THE ESTABLISHMENT OF A 90% CATCH OF GRASS OVER THE FILTER MEDIA, THE CONTRACTOR SHALL FLOOD THE VEGETATED UNDERDRAIN TO THE DESIGN ELEVATION WITH CLEAN WATER AND ADJUST THE VALVE TO OBTAIN A 24 HOUR TO 32 HOUR RELEASE TIME.



OUTLET VALVE

NOT TO SCALE



GRASS VEGETATION	
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREEFOIL	8 LBS/ACRE

GRASSED UNDERDRAIN DETAIL

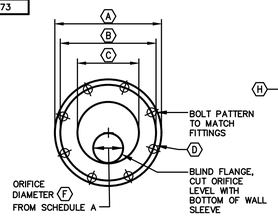
NOT TO SCALE

SCHEDULE A

	ITEM DESCRIPTION	DIMENSION/ ELEVATION OCS 2
A	TOP OF MH COVER	84.97
B	TOP OF STRUCTURE	84.47
C	UNDERSIDE TOP SLAB	83.80
D	TOP CONCRETE BULKHEAD	82.73
E	ORIFICE INVERT	78.51
F	ORIFICE DIAMETER	2.0"
G	MANHOLE INVERT	77.73
H	BOTTOM OF STRUCTURE	76.73
I	PIPE DIAMETER	15"
	INVERT OUT	78.51
J	PIPE DIAMETER	15"
	INVERT IN	78.73

SCHEDULE B ORIFICE

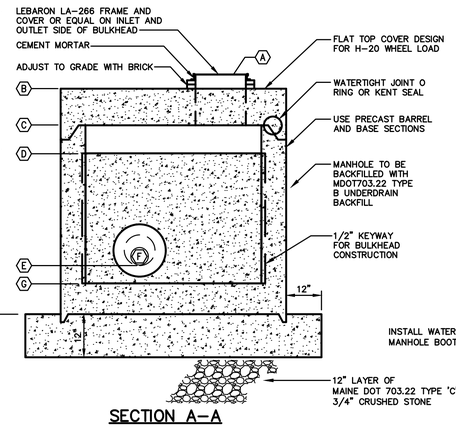
	ITEM DESCRIPTION	DIMENSION /ELEVATION OCS 2
A	FLANGE O.D.	16"
B	BOLT CIRCLE	14.25"
C	NOMINAL PIPE DIAMETER	10"
D	BOLT HOLE DIAMETER	1.0"
F	ECCENTRIC ORIFICE DIAMETER	2.0"



ORIFICE DETAIL 1

SEE SCHEDULE B

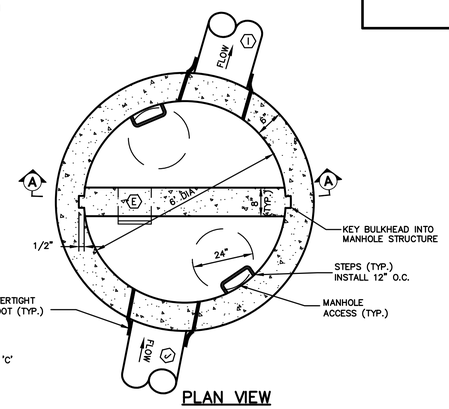
NOT TO SCALE



SECTION A–A

OUTLET CONTROL STRUCTURE 1 (OCS2)

SEE SCHEDULE A

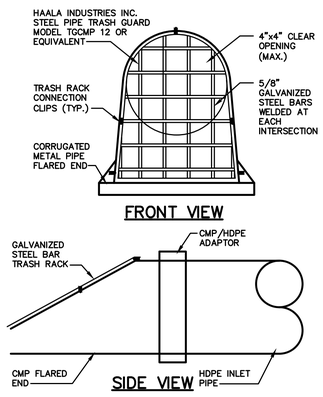


PLAN VIEW

6' OUTLET CONTROL STRUCTURE 1 (OCS2)

SEE SCHEDULE A

NOT TO SCALE



FRONT VIEW

SIDE VIEW

TRASH RACK

NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9886 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

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Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06

File Name: 801-06-DETAIL.dwg

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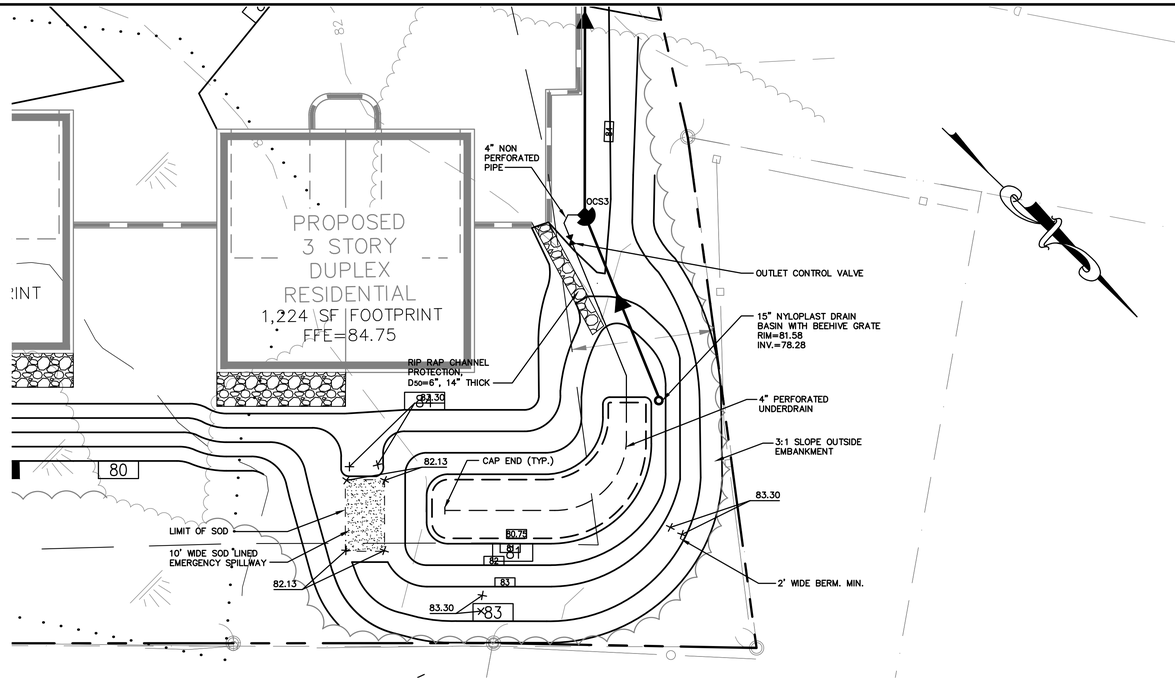
Drawing Name: Grassed Underdrain Soil Filter #3 Plan & Details

Project: Mixed Use Development, 300 Allen Ave. Portland, Maine

Client: ESTELLE ESTATES, LLC, 39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C407

U:\801.06 Allen Ave - Bouchard\Z - CAD\DWG\801-06-DETAIL.dwg - Jul 30, 2018 - 3:52pm



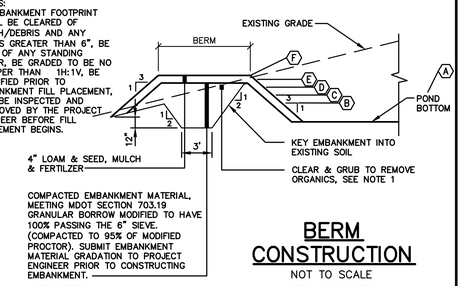
CONSTRUCTION OVERSIGHT

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

1. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
2. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
3. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
4. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
5. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

NOTE: CONTRACTOR SHALL NOTIFY PROJECT ENGINEER 48 HOURS PRIOR TO THE MILESTONES LISTED ABOVE TO ALLOW FOR INSPECTION.

NOTES:
1. EMBANKMENT FOOTPRINT SHALL BE CLEARED OF TRASH/DEBRIS AND ANY ROCKS GREATER THAN 6", BE FREE OF ANY STANDING WATER, BE GRADED TO BE NO STEEPER THAN 1H:1V, BE SCARIFIED PRIOR TO EMBANKMENT FILL PLACEMENT, AND BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER BEFORE FILL PLACEMENT BEGINS.



BERM CONSTRUCTION
NOT TO SCALE

SCHEDULE B – EMBANKMENT SCHEDULE

ITEM DESCRIPTION	DIMENSION/ELEVATION
(A) POND BASE ELEVATION	80.75
(B) PEAK ELEVATION – CHANNEL PROTECTION VOLUME	81.58
(C) PEAK ELEVATION – 2 YEAR STORM	81.62
(D) PEAK ELEVATION – 10 YEAR STORM	81.87
(E) PEAK ELEVATION – 25 YEAR STORM	82.13
(F) TOP OF BERM	83.30

TYPICAL POND CROSS SECTION
NOT TO SCALE

GRASSED UNDERDRAIN NOTES:

SOIL SPECIFICATIONS:

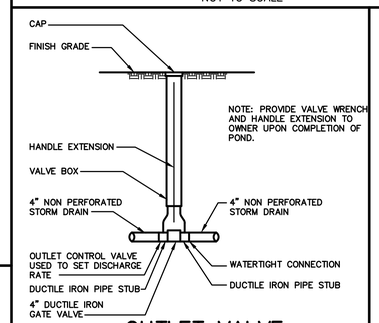
1. THE SOIL FILTER MEDIA SHALL BE A LAYERED SYSTEM CONSISTING OF THE FOLLOWING FROM THE BOTTOM:
   A. 12" OF LOAMY COARSE SAND, SEE TABLE 1.
   B. 2" LAYER OF TOPSOIL (SEE "C" BELOW) ROTOTILLED INTO THE LOAMY COARSE SAND LAYER.
   C. 6" OF NON-CLAYEY, LOAMY TOPSOIL SUCH AS USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER. SUPERHUMUS OR EQUIVALENT MAY BE ADDED TO THE TOPSOIL TO INCREASE ORGANIC CONTENT, SEE TABLE 3.
2. SOIL FILTER MEDIA MIXTURE SHALL HAVE A PERMEABILITY OF 2.4 IN./HR. TO 4 IN./HR UPON COMPACTION BETWEEN 90% AND 92% STANDARD PROCTOR (ASTM D698).

SUBMITTALS:

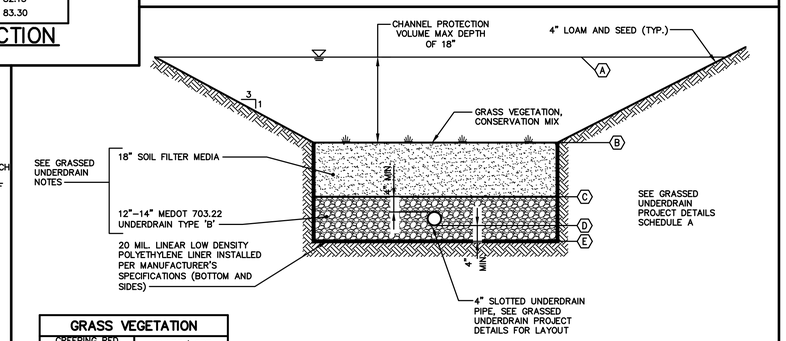
1. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.
2. SUBMIT 75 lb. SAMPLE OF EACH TYPE OF MATERIAL: SUBMIT IN AIR TIGHT CONTAINERS TO PROJECT ENGINEER.
3. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   A. SAND.
   B. UNDERDRAIN BEDDING MATERIAL.
4. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.
5. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. SUBMIT RESULTS TO THE PROJECT ENGINEER.
6. PERFORM ONE COMPACTION DENSITY TEST ON THE IN PLACE SOIL FILTER FOR EVERY 2,000 SQUARE FEET OF FILTER SURFACE AREA. TEST SHALL CONFORM TO ASTM D 2922 – STANDARD TEST METHODS FOR DENSITY OF SOIL AND SOIL-AGGREGATE IN PLACE BY NUCLEAR METHODS (SHALLOW DEPTH); 1996. SUBMIT RESULTS TO THE PROJECT ENGINEER.

CONSTRUCTION:

1. SOIL FILTER MEDIA AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.
2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" SLOTTED PIPE. SPACED 15 FEET ON CENTER MAXIMUM.
3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY, AND 90% GRASS CATCH IF IN A VEGETATED AREA.
4. OUTFLOW OF THE VEGETATED UNDERDRAIN SHALL BE CONTROLLED BY A 4" DUCTILE IRON GATE VALVE WITH VALVE WRENCH AND EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE PIECE VALVE BOX (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.
5. ALL EQUIPMENT USED WITHIN THE LIMITS OF THE VEGETATED UNDERDRAIN SHALL BE LOW GROUND PRESSURE VEHICLES (LESS THAN 2.0 PSI) WHEN FULLY LOADED.
6. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER MEDIA AND THE ESTABLISHMENT OF A 90% CATCH OF GRASS OVER THE FILTER MEDIA, THE CONTRACTOR SHALL FLOOD THE VEGETATED UNDERDRAIN TO THE DESIGN ELEVATION WITH CLEAN WATER AND ADJUST THE VALVE TO OBTAIN A 24 HOUR TO 32 HOUR RELEASE TIME.



OUTLET VALVE
NOT TO SCALE



GRASS VEGETATION

CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
BIRDSFOOT TREEFOIL	8 LBS/ACRE

GRASSED UNDERDRAIN DETAIL
NOT TO SCALE

Table 1 Loamy Coarse Sand

SIEVE SIZE	% PASSING BY WEIGHT
#10	85–100
#20	70–100
#60	15–40
#200	8–15
#200 CLAY SIZE	<2.0

Table 2 MEDOT Specifications for Underdrain Type B (MEDOT #703.22)

SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

Table 3 Sandy Loam Topsoil

SIEVE SIZE	% PASSING BY WEIGHT
#4	75–95
#10	60–90
#40	35–85
#200	20–70
#200 CLAY SIZE	<2.0

SCHEDULE A

	ITEM DESCRIPTION	GRASSED UNDERDRAIN DIMENSION/ ELEVATION
A	CHANNEL PROTECTION VOLUME STAGE	81.58
B	TOP SOIL FILTER	80.75
C	TOP UNDERDRAIN BEDDING STONE	79.25
D	PIPE INVERT: 4" PERF. UD	78.58
E	BOTTOM UNDERDRAIN BEDDING	78.25
F	BOTTOM OF CRUSHED STONE	77.75

GRASSED UNDERDRAIN SOIL FILTER #4 PROJECT DETAILS

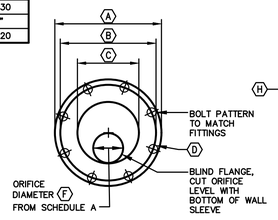
1"=10'

SCHEDULE A

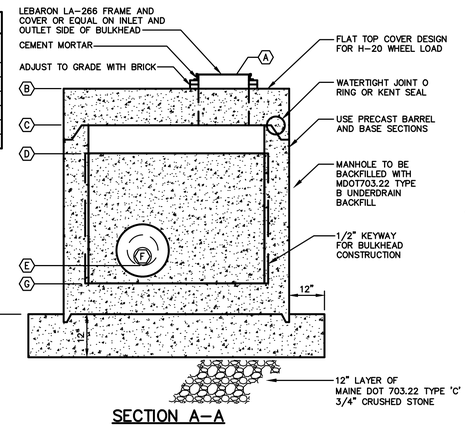
	ITEM DESCRIPTION	DIMENSION/ ELEVATION OCS 3
A	TOP OF MH COVER	84.33
B	TOP OF STRUCTURE	83.83
C	UNDERSIDE TOP SLAB	83.16
D	TOP CONCRETE BULKHEAD	82.13
E	ORIFICE INVERT	78.28
F	ORIFICE DIAMETER	2.0"
G	MANHOLE INVERT	77.20
H	BOTTOM OF STRUCTURE	76.20
I	PIPE DIAMETER	15"
	INVERT OUT	78.20
J	PIPE DIAMETER	15"
	INVERT IN	78.30
K	PIPE DIAMETER	4"
	INVERT IN	78.20

SCHEDULE B ORIFICE

	ITEM DESCRIPTION	DIMENSION /ELEVATION OCS 3
A	FLANGE O.D.	16"
B	BOLT CIRCLE	14.25"
C	NOMINAL PIPE DIAMETER	10"
D	BOLT HOLE DIAMETER	1.0"
F	ECCENTRIC ORIFICE DIAMETER	2.0"

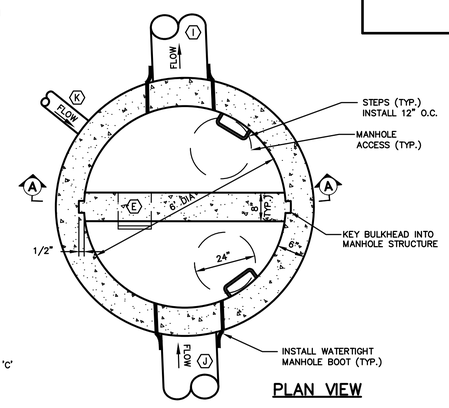


ORIFICE DETAIL 1
SEE SCHEDULE B
NOT TO SCALE



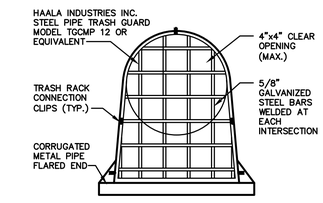
SECTION A-A

OUTLET CONTROL STRUCTURE 1 (OCS3)
SEE SCHEDULE A

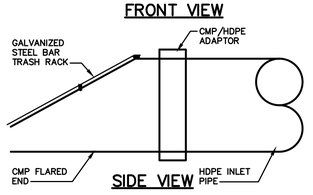


PLAN VIEW

6' OUTLET CONTROL STRUCTURE 1 (OCS3)
SEE SCHEDULE A
NOT TO SCALE



FRONT VIEW



SIDE VIEW

TRASH RACK
NOT TO SCALE

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STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9886 — 7-30-18 — LICENSED PROFESSIONAL ENGINEER

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Design: JWA	Draft: CG	Date: AUG 2016
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Drawing Name: Grassed Underdrain Soil Filter #4 Plan & Details
Project: Mixed Use Development, 300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC, 39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C408

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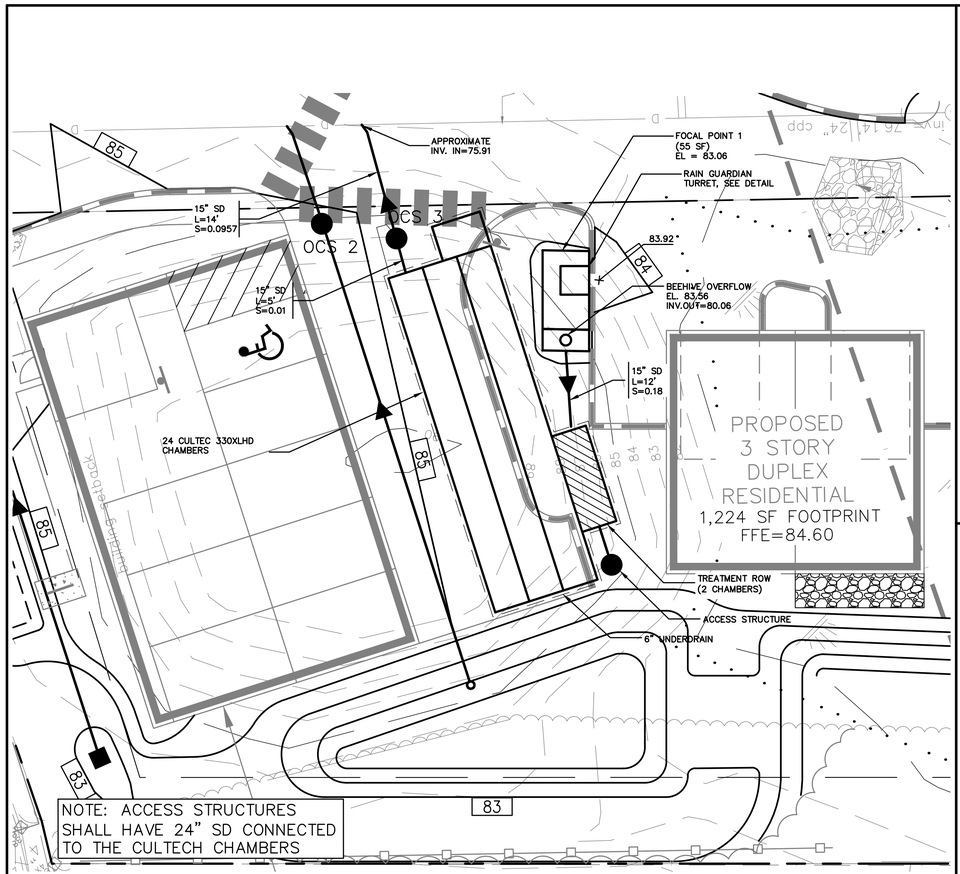


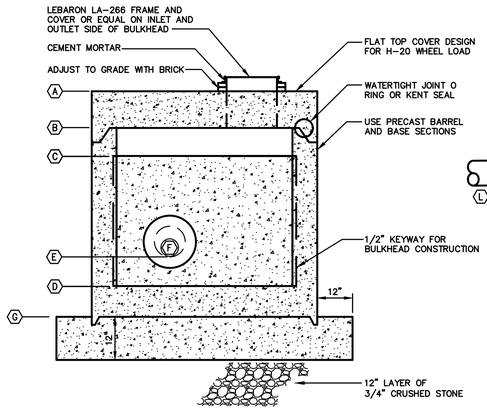
FOCAL POINT 1 PLAN
1"=10'

CONSTRUCTION OVERSIGHT

1. THE FOCAL POINT SYSTEM SHALL BE INSTALLED UNDER THE SUPERVISION OF A MANUFACTURER'S REPRESENTATIVE.

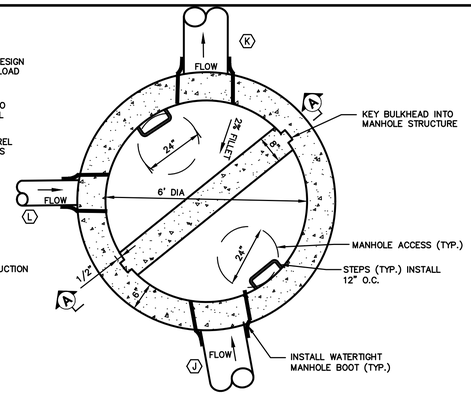
2. ALL PLANT MATERIAL SHALL BE APPROVED BY THE FOCAL POINT RERESENTATIVE.

3. CONTRACTOR SHALL FLOOD POND TO WATER QUALITY ELEVATION WITH OUTLET VALVE CLOSED, AND THEN ADJUST OUTLET VALVE TO ACHIEVE A 24-48 HOUR RELEASE RATE.



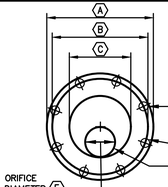
SECTION A-A
OUTLET CONTROL STRUCTURE 3 (OCS3)
SEE SCHEDULE C

NOT TO SCALE



PLAN VIEW
6' OUTLET CONTROL STRUCTURE 3 (OCS3)
SEE SCHEDULE C

NOT TO SCALE

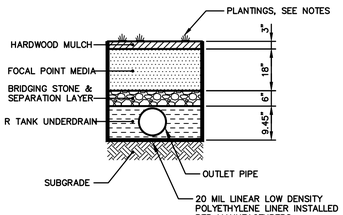


ORIFICE DETAIL
SEE SCHEDULE D

NOT TO SCALE

SCHEDULE D ORIFICE		
	ITEM DESCRIPTION	DIMENSION/ELEVATION
		OCS 3
A	FLANGE O.D.	16"
B	BOLT CIRCLE	14.25"
C	NOMINAL PIPE DIAMETER	10"
D	BOLT HOLE DIAMETER	1.0"
F	ECCENTRIC ORIFICE DIAMETER	1.2"

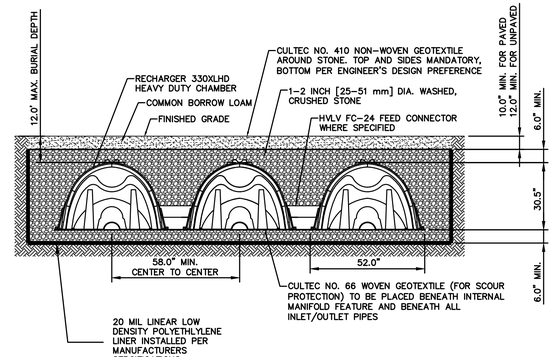
SCHEDULE C		
	ITEM DESCRIPTION	ELEVATION
		OCS3
A	TOP OF STRUCTURE	84.70
B	UNDERSIDE TOP SLAB	84.03
C	TOP CONCRETE BULKHEAD	80.72
D	MANHOLE INVERT	76.25
E	ORIFICE INVERT	78.41
F	ORIFICE DIAMETER	1.2"
G	BOTTOM OF STRUCTURE	75.25
J	PIPE DIAMETER	15"
	INVERT IN	77.85
K	PIPE DIAMETER	15"
	INVERT OUT	77.25
L	PIPE DIAMETER	6"
	INVERT IN	77.35



NOTES:

1. FOCAL POINT SHALL BE PLANTED WITH APPROVED PLANTINGS SPACED 24" ON CENTER.
2. LANDSCAPING SUBSTITUTIONS SHALL BE APPROVED BY THE ENGINEER.
3. ALL FOCAL POINT MATERIAL SHALL BE PROVIDED BY THE MANUFACTURER. PLANT MATERIAL IS SUPPLIED BY GENERAL CONTRACTOR.
4. INSTALL SYSTEM PER MANUFACTURERS SPECIFICATIONS.
5. MANUFACTURERS REPRESENTATIVE SHALL SUPERVISE INSTALLATION.
6. FOCAL POINT REPRESENTATIVE:
   ROBERT J WOODMAN, PE, CPESC
   ACF ENVIRONMENTAL
   23 FAITH DRIVE
   GORHAM, ME 04038 (207) 772-4431

FOCAL POINT
NOT TO SCALE



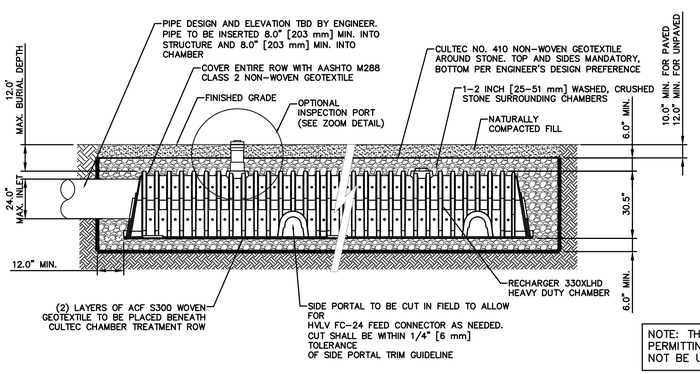
CHAMBER CROSS SECTION
NOT TO SCALE

ELEVATION				
POND	A	B	C	D
CHAMBER	77.4	77.9	80.44	80.94

1 1/2" CRUSHED ANGULAR STONE GRADATION	
SIEVE DESIGNATION (US CUSTOMARY)	PERCENT BY WEIGHT PASSING
2"	100
1 1/2"	90-100
1"	20-55
3/4"	0-15
3/8"	0-5

GENERAL NOTES
RECHARGER 330XL HD BY CULTEC, INC. OF BROOKFIELD, CT.
STORAGE PROVIDED = 11.32 CF/FT [1.05 m^3/m] PER DESIGN UNIT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
THE CHAMBER WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN INSTALLED ACCORDING TO CULTEC'S RECOMMENDED INSTALLATION INSTRUCTIONS.

ALL RECHARGER 330XL HD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER. ALL RECHARGER 330XL HD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS



CHAMBER TREATMENT ROW
NOT TO SCALE

SUBSURFACE DETENTION SYSTEMS MAY BE SUBSTITUTED WITH AN ENGINEER APPROVED EQUAL WHICH PROVIDES EQUAL DETENTION STORAGE AND WATER QUALITY TREATMENT

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STATE OF MAINE
DOUGLAS E. REYNOLDS
No. 9856
7-30-18
LICENSED PROFESSIONAL ENGINEER

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Drawing Name: Focal Point #1 Plan & Details
Project: Mixed Use Development
300 Allen Ave. Portland, Maine
Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C409

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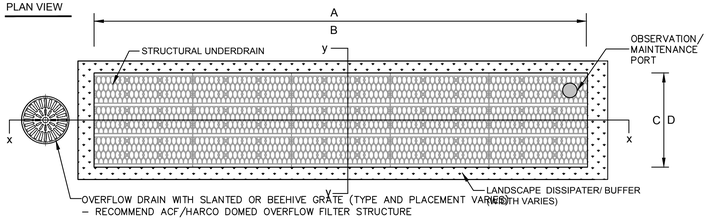
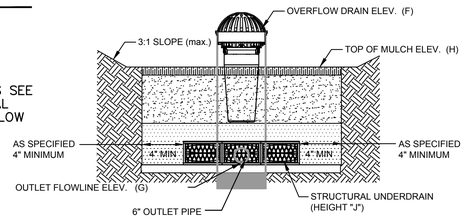
PLAN VIEW



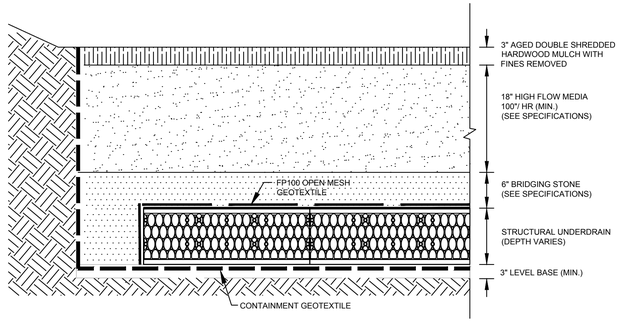
SECTION Y-Y



NOTE:
FOR ELEVATIONS SEE KEY DIMENSIONAL DATA TABLE BELOW

1

FOCALPOINT CONSTRUCTION GUIDE



FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA

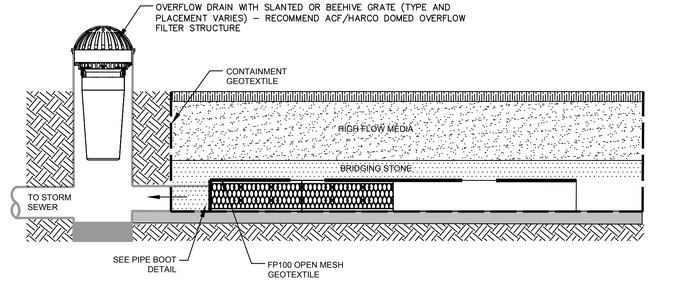
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100"PER HOUR INFILTRATION RATE.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

2

FOCALPOINT DETAILED CROSS SECTION



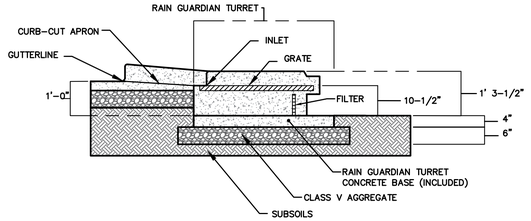
3

FOCAL POINT KEY DIMENSIONAL DATA		
	FOCAL POINT I.D.	FP-1
A	FOCAL POINT LENGTH	11'
B	# UNDERDRAIN LONG	–
C	FOCALPOINT WIDTH	5'
D	# UNDERDRAIN WIDE	–
E	WATER QUALITY VOLUME	606 CF
F	OVERFLOW ELEVATION	ELEV. 83.56
G	OUTLET FLOWLINE	ELEV. 80.06
H	TOP OF MULCH	ELEV. 83.06
J	UNDERDRAIN HEIGHT	9.45"

SPECIFICATIONS:

1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (1,030 LBS).
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4 PERCENT TO 8 PERCENT BY VOLUME).
3. MANUFACTURED AND DESIGNED TO ASTM C858.
4. THREE-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
5. SOIL UNDER BASE TO BE COMPACTED TO 95 PERCENT STANDARD PROCTOR.
6. TWO-PIECE LIGHT-DUTY GALVANIZED GRATE (34.5 LBS/PIECE) FOR 541 LB CONCENTRATED LOAD OR 309 LB/SQFT UNIFORM LOAD.
7. TWO-PIECE HEAVY-DUTY GALVANIZED GRATE (77.5 LBS/PIECE) FOR 2,456 LB CONCENTRATED LOAD OR 1,404 LB/SQFT UNIFORM LOAD.
8. USE EXPANSION JOINT MATERIAL BETWEEN TURRET AND BIORETENTION INLET.

RAIN GUARDIAN TURRET PLAN VIEW
1"=20'



SPECIFICATIONS:

1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (1,030 LBS).
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4 PERCENT TO 8 PERCENT BY VOLUME).
3. MANUFACTURED AND DESIGNED TO ASTM C858.
4. THREE-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
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8. USE EXPANSION JOINT MATERIAL BETWEEN TURRET AND BIORETENTION INLET.

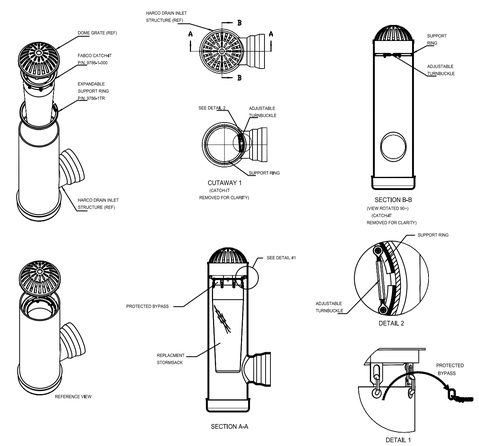
RAIN GUARDIAN TURRET SECTION VIEW
1"=20'

CONSTRUCTION OVERSIGHT

1. THE FOCAL POINT SYSTEM SHALL BE INSTALLED UNDER THE SUPERVISION OF A MANUFACTURERS REPRESENTATIVE.
2. ALL PLANT MATERIAL SHALL BE APPROVED BY THE FOCAL POINT REPRESENTATIVE.
3. CONTRACTOR SHALL FLOOD CHAMBER TO ELEVATION TO WATER QUALITY VOLUME WITH OUTLET VALVE CLOSED, AND THEN OPEN OUTLET VALVE TO ACHIEVE A 24-48 HOUR RELEASE RATE.

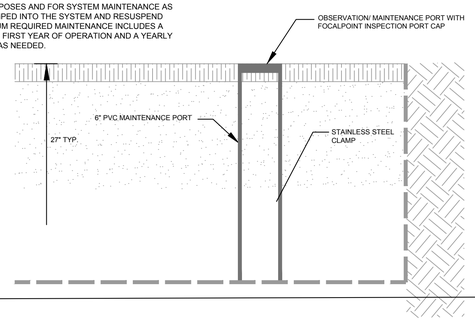
NOTES:
1. STORMSACK WEIGHT (EMPTY): 12 LB MAX
2. MATERIAL:
   A) SHROUD: HIGH DENSITY POLYETHYLENE-(TYPICAL WALL THICKNESS .125")
   B) SUPPORT HUB: CRS, POWDER COATED
   C) STORMSACK: WOVEN POLYPROPYLENE GEOTEXTILE (GEOTEX 117F)
   D) HARDWARE: ALUMINUM POP-RIVETS
3. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW CARTRIDGE
4. TYPICAL INSTALLATION: RAISE STORM GRATE, PUSH CATCH-IT SHROUD DOWN ON FRAME SUPPORT LEDGE UNTIL LOCKING CLIPS CLICK IN PLACE, LOWER STORM GRATE.
5. USE ONLY WITH FABCO REPLACEABLE STORMSACK.

STRUCTURE DIAMETER (INCHES)	DEBRIS CAPACITY (CF)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)	TOTAL SYSTEM FLOWRATE (CFS)
16	1.65	2.5	1.0	3.5

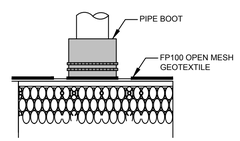


OBSERVATION/ MAINTENANCE PORT

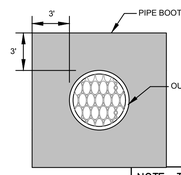
PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



OBSERVATION/ MAINTENANCE PORT CONNECTION



PIPE BOOT DETAIL



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STATE OF MAINE
DOUGLAS E REYNOLDS
No. 9866
LICENSED
PROFESSIONAL ENGINEER

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Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06

File Name: 801-06-DETAIL.dwg

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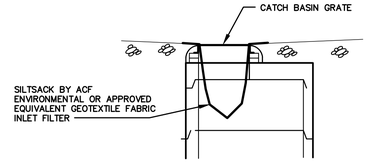
Drawing Name: **Focal Point Details**

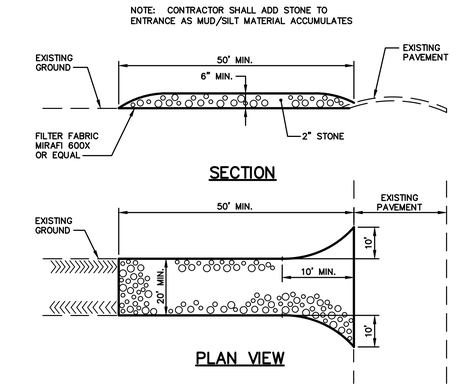
Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

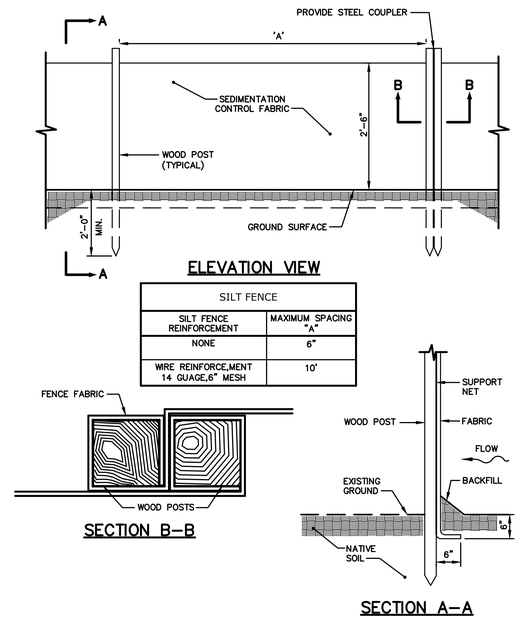
Drawing No. C410



CATCH BASIN INLET FILTER
NOT TO SCALE

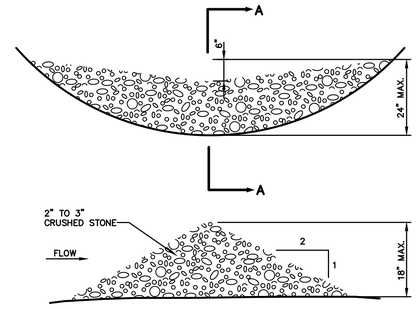


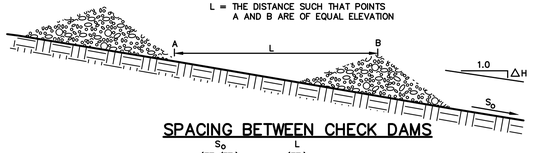
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



SILT FENCE	
SILT FENCE REINFORCEMENT	MAXIMUM SPACING "A"
NONE	6'
WIRE REINFORCE,MENT 14 GUAGE,6" MESH	10'

SILTATION FENCE
NOT TO SCALE





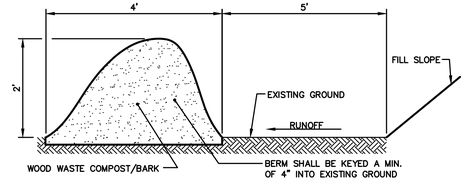
SPACING BETWEEN CHECK DAMS

S_o (FT./FT.)	L (FT.)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10

STONE CHECK DAM
NOT TO SCALE

NOTES:

1. THE WOOD WASTE COMPOST/BARK MIX SHALL CONFORM TO THE FOLLOWING STANDARDS:
   - A. MOISTURE CONTENT – 30–60%.
   - B. pH – 5.0 – 8.0.
   - C. SCREEN SIZE – 100% LESS THAN 3", MAX. 70% LESS THAN 1".
   - D. NO LESS THAN 40% ORGANIC MATERIAL (DRY WEIGHT) BY LOSS OF IGNITION.
   - E. NO STONES LARGER THAN 2" IN DIAMETER.
   - F. SILTS, CLAYS OR SUGAR SANDS ARE NOT ACCEPTABLE IN THE MIX.
2. THE COMPOST BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.
3. THE WOOD WASTE COMPOST/BARK FILTER BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.
4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS COMPLETED OR 70% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.
5. WOODWASTE COMPOST BARK FILTER SHALL NOT BE USED IN WETLAND AREAS.



WOOD WASTE COMPOST/BARK FILTER BERM DETAIL
NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE — DOUGLAS E. REYNOLDS — No. 9696 — LICENSED PROFESSIONAL ENGINEER — 7-30-18

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

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REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
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Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06

File Name: 801–06–DETAIL.dwg

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Drawing Name: **Erosion & Sedimentation Control Details**

Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine

Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C411

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1.3.5 EROSION CONTROL MEASURES AND SITE STABILIZATION

THE PRIMARY EMPHASIS OF THE EROSION/SEDIMENTATION CONTROL PLAN, WHICH WILL BE IMPLEMENTED FOR THIS PROJECT, IS AS FOLLOWS:

- DEVELOPMENT OF A CAREFUL CONSTRUCTION SEQUENCE.
- RAPID REVEGETATION OF DENUDED AREAS TO MINIMIZE THE PERIOD OF SOIL EXPOSURE.
- RAPID STABILIZATION OF DRAINAGE PATHS TO AVOID RILL AND GULLY EROSION.
- THE USE OF ON-SITE MEASURES TO CAPTURE SEDIMENT (HAY BALES/ STONE CHECK DAMS/SILT FENCE, ETC.)

THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL DEVICES WILL BE IMPLEMENTED AS PART OF THE SITE DEVELOPMENT. THESE DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS OR AS DESCRIBED WITHIN THIS REPORT. FOR FURTHER REFERENCE, SEE THE LATEST EDITION OF THE MAINE EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS.

A. DEWATERING

WATER FROM CONSTRUCTION TRENCH DEWATERING SHALL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, ICING, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 50 FEET OF A PROTECTED NATURAL RESOURCE.

B. INSPECTION AND MONITORING

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR UNESTABLISHED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

C. TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING MEASURES ARE PLANNED AS TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION:

1. CRUSHED STONE-STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT THE ENTRANCE FROM ALLEN AVENUE.

2. SILTATION FENCE OR WOOD WASTE COMPOST BERMS SHALL BE INSTALLED DOWNSTREAM OF ANY DISTURBED AREAS TO TRAP RUNOFF- BORNE SEDIMENTS UNTIL GRASS AREAS ARE REVEGETATED. THE SILT FENCE AND/OR WOOD WASTE COMPOST BERMS SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THIS PACKAGE AND INSPECTED AT LEAST ONCE A WEEK AND BEFORE AND IMMEDIATELY AFTER A STORM EVENT OF 0.5 INCHES OR GREATER, AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE OR BERM LINE. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM. WOOD WASTE COMPOST BERMS ARE NOT TO BE USED ADJACENT TO WETLAND AREAS THAT ARE NOT TO BE DISTURBED.

3. STRAW OR HAY MULCH INCLUDING HYDROSEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND OCTOBER 15TH ON SLOPES OF LESS THEN 15 PERCENT SHALL BE ANCHORED BY APPLYING WATER; MULCH PLACED ON SLOPES OF EQUAL TO OR STEEPER THAN 15 PERCENT SHALL BE COVERED BY A FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. FABRIC NETTING AND STAPLES SHALL BE USED ON DISTURBED AREAS WITHIN 50' OF LAKES, STREAMS, AND WETLANDS REGARDLESS OF THE UPSTREAM SLOPE. MULCH PLACED BETWEEN OCTOBER 15TH AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT SHALL BE COVERED WITH A FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SLOPES STEEPER THAN 3:1 AND EQUAL TO OR FLATTER THAN 2:1, WHICH ARE TO BE REVEGETATED, SHALL RECEIVE CURLEX BLANKETS BY AMERICAN EXCELSIOR OR EQUAL. SLOPES STEEPER THAN 2:1 SHALL RECEIVE RIPRAP AS NOTED ON THE PLANS. THE MULCH APPLICATION RATE FOR BOTH TEMPORARY AND PERMANENT SEEDING IS 75 LBS PER 1000 SF AS IDENTIFIED IN ATTACHMENT A OF THIS SECTION. MULCH SHALL NOT BE PLACED OVER SNOW.

4. TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION WILL BE PROTECTED AS FOLLOWS:

a) TEMPORARY STOCKPILES SHALL NOT BE LOCATED WITHIN 100 FEET OF ANY WETLANDS WHICH WILL NOT BE DISTURBED AND SHALL BE LOCATED AWAY FROM DRAINAGE SWALES.

b) STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS BY EITHER TEMPORARILY SEEDING THE STOCKPILE BY A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH, SUCH AS HAY, STRAW, OR EROSION CONTROL MIX.

c) STOCKPILES SHALL BE SURROUNDED BY SEDIMENTATION BARRIER AT THE TIME OF FORMATION.

5. ALL DENUDED AREAS THAT ARE WITHIN 50 FEET OF AN UNDISTURBED WETLAND, WHICH HAVE BEEN ROUGH GRADED AND ARE NOT LOCATED WITHIN A BUILDING PAD, PARKING AREA, OR ACCESS DRIVE SUBBASE AREA, SHALL RECEIVE MULCH OR EROSION CONTROL MESH FABRIC WITHIN 48 HOURS OF INITIAL DISTURBANCE OF SOIL. ALL AREAS WITHIN 50 FEET OF AN UNDISTURBED WETLAND SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW. IN OTHER AREAS, THE TIME PERIOD MAY BE EXTENDED TO 7 DAYS.

6. FOR WORK, WHICH IS CONDUCTED BETWEEN OCTOBER 15TH AND APRIL 15TH OF ANY CALENDAR YEAR, ALL DENUDED AREAS, SHALL BE COVERED WITH HAY MULCH OR EROSION CONTROL MIX, APPLIED AT TWICE THE NORMAL APPLICATION RATE AND ANCHORED WITH A FABRIC NETTING. THE TIME PERIOD FOR APPLYING MULCH SHALL BE LIMITED TO 2 DAYS FOR ALL AREAS.

7. ALLEN AVENUE SHALL BE SWEPT TO CONTROL MUD AND DUST AS NECESSARY. ADDITIONAL STONE SHALL BE ADDED TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

8. DURING GRUBBING OPERATIONS STONE CHECK DAMS SHALL BE INSTALLED AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS AND AS DIRECTED ON THE EROSION CONTROL PLANS.

9. SILT FENCING WITH A MINIMUM STAKE SPACING OF 6 FEET SHALL BE USED, UNLESS THE FENCE IS SUPPORTED BY WIRE FENCE REINFORCEMENT OF MINIMUM 14 GAUGE AND WITH A MAXIMUM MESH SPACING OF 6 INCHES, IN WHICH CASE STAKES MAY BE SPACED A MAXIMUM OF 10 FEET APART. THE BOTTOM OF THE FENCE SHALL BE ANCHORED.

10. WOOD WASTE COMPOST/BARK BERMS MAY BE USED IN LIEU OF SILTATION FENCING. BERMS SHALL BE REMOVED AND SPREAD IN A LAYER NOT TO EXCEED 3" THICK ONCE UPSTREAM AREAS ARE COMPLETED AND A 90% CATCH OF VEGETATION IS ATTAINED.

11. STORM DRAIN CATCH BASIN INLET PROTECTION SHALL BE PROVIDED THROUGH THE USE OF STONE SEDIMENT BARRIERS OR APPROVED SEDIMENT BAGS (SUCH AS SILT SACK). INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET. THE BARRIERS SHALL BE INSPECTED AFTER EACH RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHALL BE REMOVED AND THE BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ½ THE DESIGN DEPTH OF THE BARRIER. THE BARRIER SHALL BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA HAS BEEN STABILIZED.

12. WATER AND/OR CALCIUM CHLORIDE SHALL BE FURNISHED AND APPLIED IN ACCORDANCE WITH MDOT SPECIFICATIONS – SECTION 637 – DUST CONTROL.

13. LOAM AND SEED IS INTENDED TO SERVE, AS THE PRIMARY PERMANENT REVEGETATIVE MEASURE FOR ALL DENUDED AREAS NOT PROVIDED WITH OTHER EROSION CONTROL MEASURES, SUCH AS RIPRAP. APPLICATION RATES ARE PROVIDED IN ATTACHMENT A OF THIS SECTION. SEEDING SHALL NOT OCCUR OVER SNOW.

D. PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES HAVE BEEN DESIGNED AS PART OF THE EROSION/SEDIMENTATION CONTROL PLAN:

1. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.) WILL BE LOAMED, LIMED, FERTILIZED, MULCHED, AND SEEDED. FABRIC NETTING, ANCHORED WITH STAPLES, SHALL BE PLACED OVER THE MULCH IN AREAS AS NOTED IN TEMPORARY EROSION CONTROL MEASURES PARAGRAPH 3 OF THIS REPORT. ALL AREAS WITHIN 50 FEET OF AN UNDISTURBED WETLAND SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

2. ALL STORM DRAIN PIPE OUTLETS SHALL HAVE RIPRAP APRONS AT THEIR OUTLET TO PROTECT THE OUTLET AND RECEIVING CHANNEL FROM SCOUR AND DETERIORATION. INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET. THE APRONS SHALL BE INSTALLED AND STABILIZED TO THE EXTENT PRACTICABLE PRIOR TO DIRECTING RUNOFF TO THE TRIBUTARY PIPE OR CULVERT.

3. CATCH BASINS SHALL BE PROVIDED WITH SEDIMENT SUMPS AND INLET HOODS (THE SNOUT) FOR ALL OUTLET PIPES THAT ARE 18" IN DIAMETER OR LESS.

1.4 IMPLEMENTATION SCHEDULE

THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO INSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPTIMIZED:

IT IS ANTICIPATED THAT CONSTRUCTION OF THE MIXED USE DEVELOPMENT AND RELATED INFRASTRUCTURE WILL COMMENCE IN SUMMER 2018 AND BE COMPLETED BY WINTER OF 2018.

NOTE: FOR ALL GRADING ACTIVITIES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO OVEREXPOSE THE SITE, THIS SHALL BE ACCOMPLISHED BY LIMITING THE DISTURBED AREA.

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE AT THE INTERSECTION OF THE ACCESS DRIVE AND ALLEN AVENUE.
2. INSTALL PERIMETER SILT FENCE AND/OR WOOD WASTE BERMS PRIOR TO GRUBBING RESPECTIVE AREAS.
3. CLEAR AND GRUB SITE. INSTALL STONE CHECK DAMS AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS.
4. FOUNDATION PREPARATION AREA SHALL BE EXCAVATED FOR INSTALLATION OF THE BUILDING FOOTINGS. BUILDING WORK WILL BE ON GOING THROUGH THE REMAINDER OF THE PROJECT.
5. COMMENCE INSTALLATION OF DRAINAGE APPURTENANCES.
6. COMMENCE CONSTRUCTION OF THE BIORETENTION POND AND GRASSED UNDERDRAIN SOIL FILTERS. THE FILTER MEDIA SHALL NOT BE INSTALLED UNTIL THE TRIBUTARY AREA HAS BEEN STABILIZED.
7. COMMENCE EARTHWORK AND GRADING TO SUBGRADE.
8. COMMENCE INSTALLATION OF WATER AND SEWER LINES.
9. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
10. COMPLETE INSTALLATION OF UNDERGROUND UTILITIES TO WITHIN 5' OF THE BUILDINGS.
11. INSTALL LIGHT POLE FOUNDATIONS AND LIGHT POLES.
12. COMPLETE REMAINING EARTHWORK OPERATIONS.
13. COMPLETE INSTALLATION OF CATCH BASINS AND APPURTENANCES.
14. INSTALL SUB-BASE AND BASE GRAVEL WITHIN PARKING FIELDS, WALKWAYS, AND ALL DRIVEWAYS.
15. INSTALL CURBING IN PARKING FIELDS, DRIVEWAYS, AND ALONG THE STREETS AS NEEDED.
16. INSTALL BASE COURSE PAVING FOR ACCESS DRIVE AND PARKING AREA AS WELL AS CONCRETE SURFACES.
17. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
18. INSTALL SURFACE COURSE PAVING FOR ACCESS DRIVE AND PARKING AREAS. STRIPE PER PLAN.
19. ONCE THE SITE IS STABILIZED AND A 90% CATCH OF VEGETATION HAS BEEN OBTAINED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
20. TOUCH UP LOAM AND SEED.

NOTE: ALL DENUDED AREAS NOT SUBJECT TO FINAL PAVING, RIPRAP, OR GRAVEL SHALL BE REVEGETATED.

PRIOR TO CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE FOR THE COMPLETION OF THE WORK, WHICH WILL SATISFY THE FOLLOWING CRITERIA:

1. THE ABOVE CONSTRUCTION SEQUENCE SHOULD GENERALLY BE COMPLETED IN THE SPECIFIED ORDER; HOWEVER, SEVERAL SEPARATE ITEMS MAY BE CONSTRUCTED SIMULTANEOUSLY. WORK MUST ALSO BE SCHEDULED OR PHASED TO REDUCE THE EXTENT OF THE EXPOSED AREAS AS SPECIFIED BELOW. THE INTENT OF THIS SEQUENCE IS TO PROVIDE FOR EROSION CONTROL AND TO HAVE STRUCTURAL MEASURES SUCH AS SILT FENCE AND CONSTRUCTION ENTRANCES IN PLACE BEFORE LARGE AREAS OF LAND ARE DENUDED.

2. THE WORK SHALL BE CONDUCTED IN SECTIONS WHICH SHALL:

a) LIMIT THE AMOUNT OF EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE PROCEEDING 30 DAYS.

b) REVEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT; OR TEMPORARILY STABILIZED WITHIN 48 HOURS OF INITIAL DISTURBANCE OF SOIL FOR AREAS WITHIN 50 FEET OF AN UNDISTURBED WETLAND AND 7 DAYS FOR ALL OTHER AREAS. AREAS WITHIN 50 FEET OF AN UNDISTURBED WETLAND SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW.

c) INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEM AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE. THE DITCHES SHALL BE IMMEDIATELY LINED OR REVEGETATED AS SOON AS THEIR INSTALLATION IS COMPLETE.

1.5 EROSION, SEDIMENTATION AND STABILIZATION CONTROL PLAN

THE EROSION CONTROL PLAN IS INCLUDED IN THE PLAN SET.

1.6 DETAILS AND SPECIFICATIONS

THE EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

1.7 WINTER STABILIZATION PLAN

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT; VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT ANY AREA LEFT EXPOSED CAN BE CONTROLLED BY THE CONTRACTOR. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY/PARKING AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 LBS./1,000 S.F. (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED.

THE CONTRACTOR SHALL INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

1. SOIL STOCKPILES
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS/1,000 S.F. (3 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOODWASTE EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE SHALL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

2. NATURAL RESOURCE PROTECTION
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH EROSION CONTROL MATS. DURING WINTER CONSTRUCTION, A DOUBLE LINE OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

3. SEDIMENT BARRIERS
DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOODWASTE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

4. MULCHING
AN AREA SHALL BE CONSIDERED DENUDED UNTIL AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75-LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1,000 SQUARE FEET (3 TONS/ACRE) AND ADEQUATELY ANCHORED THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH.

BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, OR WOOD CELLULOSE FIBER. WHEN GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH THEN COVER IS SUFFICIENT. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL BARE SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

5. MULCHING ON SLOPES AND DITCHES
SLOPES SHALL NOT BE LEFT EXPOSED FOR ANY EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH PEG AND NETTING OR WITH EROSION CONTROL BLANKETS. MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS/1,000 S.F. ON ALL SLOPES GREATER THAN 8%.

MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAT 8%. EROSION CONTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.

6. SEEDING
BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING ANCHORED WITH STAPLES. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WINTER

1. STANDARD FOR THE TIMELY STABILIZATION OF DITCHES AND CHANNELS -- THE APPLICANT SHALL CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS ON THE SITE BY NOVEMBER 15. THE APPLICANT SHALL CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS ON THE SITE BY SEPTEMBER 1. IF THE APPLICANT FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED BY SEPTEMBER 1, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER.

INSTALL A SOD LINING IN THE DITCH -- THE APPLICANT SHALL LINE THE DITCH WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD STRIPS FROM SLOUGHING DURING FLOW CONDITIONS.

INSTALL A STONE LINING IN THE DITCH --THE APPLICANT SHALL LINE THE DITCH WITH STONE RIPRAP BY NOVEMBER 15. THE APPLICANT SHALL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE APPLICANT SHALL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE APPLICANT SHALL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE APPLICANT SHALL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 1. THE DEPARTMENT SHALL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF THE APPLICANT FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 1, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY SEPTEMBER 1 THE APPLICANT SHALL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT SHALL COVER THE SLOPE WITH A LAYER OF WOODWASTE COMPOST AS DESCRIBED IN ITEM III OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM IV OF THIS STANDARD.

STABILIZE THE SLOPE WITH SOD -- THE APPLICANT SHALL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY SEPTEMBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT SHALL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

STABILIZE THE SLOPE WITH WOODWASTE COMPOST -- THE APPLICANT SHALL PLACE A SIX-INCH LAYER OF WOODWASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOODWASTE COMPOST, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT SHALL NOT USE WOODWASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STABILIZE THE SLOPE WITH STONE RIPRAP -- THE APPLICANT SHALL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT SHALL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

3. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE APPLICANT SHALL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE APPLICANT FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY SEPTEMBER 1 THE APPLICANT SHALL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN THE APPLICANT SHALL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED BELOW.

STABILIZE THE SOIL WITH SOD -- THE APPLICANT SHALL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY SEPTEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT SHALL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

1.8 MAINTENANCE OF FACILITIES

THE STORMWATER FACILITIES WILL BE MAINTAINED BY THE APPLICANT, ESTELLE ESTATES, LLC OR THEIR ASSIGNED HEIRS. THE CONTRACT DOCUMENTS WILL REQUIRE THE CONTRACTOR TO DESIGNATE A PERSON RESPONSIBLE FOR MAINTENANCE OF THE SEDIMENTATION CONTROL FEATURES DURING CONSTRUCTION AS REQUIRED BY THE EROSION CONTROL REPORT. LONG-TERM OPERATION/MAINTENANCE RECOMMENDED FOR THE STORMWATER FACILITIES IS PRESENTED BELOW.

THE RESPONSIBLE PARTY MAY CONTRACT WITH SUCH PROFESSIONALS, AS MAY BE NECESSARY IN ORDER TO COMPLY WITH THIS PROVISION AND MAY RELY ON THE ADVICE OF SUCH PROFESSIONALS IN CARRYING OUT ITS DUTY HEREUNDER, PROVIDED, THAT THE FOLLOWING OPERATION AND MAINTENANCE PROCEDURES ARE HEREBY ESTABLISHED AS A MINIMUM FOR COMPLIANCE WITH THIS SECTION. A MAINTENANCE LOG OF THE INSPECTIONS SHALL BE KEPT BY THE RESPONSIBLE PARTY.

INSPECTION AND MAINTENANCE FREQUENCY AND CORRECTIVE MEASURES:
THE FOLLOWING AREAS, FACILITIES, AND MEASURES WILL BE INSPECTED AND THE IDENTIFIED DEFICIENCIES WILL BE CORRECTED. CLEAN-OUT MUST INCLUDE THE REMOVAL AND LEGAL DISPOSAL OF ANY ACCUMULATED SEDIMENTS AND DEBRIS.

CATCH BASINS:
INSPECT CATCH BASINS 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THAT THE CATCH BASINS ARE WORKING IN THEIR INTENDED FASHION AND THAT THEY ARE FREE OF DEBRIS. CLEAN STRUCTURES WHEN SEDIMENT DEPTHS REACH 12" FROM INVERT OF OUTLET. IF THE BASIN OUTLET IS DESIGNED WITH A HOOD TO TRAP FLOATABLE MATERIALS (I.E. SNOUT), CHECK TO ENSURE WATERTIGHT SEAL IS WORKING. AT A MINIMUM, REMOVE FLOATING DEBRIS AND HYDROCARBONS AT THE TIME OF THE INSPECTION.

CULVERTS:
INSPECT CULVERTS 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THAT THE CULVERTS ARE WORKING IN THEIR INTENDED FASHION AND THAT THEY ARE FREE OF DEBRIS. REMOVE ANY OBSTRUCTIONS TO FLOW; REMOVE ACCUMULATED SEDIMENTS AND DEBRIS AT THE INLET, AT THE OUTLET, AND WITHIN THE CONDUIT AND REPAIR ANY EROSION DAMAGE AT THE CULVERT'S INLET AND OUTLET.

INLET/OUTLET CONTROL STRUCTURES:
INSPECT STRUCTURES AND PIPING 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THAT THE STRUCTURES ARE WORKING IN THEIR INTENDED FASHION AND THAT THEY ARE FREE OF DEBRIS. REMOVE ANY OBSTRUCTIONS TO FLOW; REMOVE ACCUMULATED SEDIMENTS AND DEBRIS WITHIN THE STRUCTURE.

SOIL FILTER – BIO-FILTRATION:
INSPECT ALL UPSTREAM PRE-TREATMENT MEASURES 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) FOR SEDIMENT AND FLOATABLES ACCUMULATION. REMOVE AND DISPOSE OF ANY SEDIMENTS OR DEBRIS.

SOIL FILTER – VEGETATED UNDERDRAINED SOIL FILTER:
INSPECT ALL UPSTREAM PRE-TREATMENT MEASURES 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) FOR SEDIMENT AND FLOATABLES ACCUMULATION. REMOVE AND DISPOSE OF ANY SEDIMENTS OR DEBRIS.

SURFACE (UNDERDRAIN POND, SWALE OR BIO-FILTER):
THE SOIL FILTER WILL BE INSPECTED WITHIN THE FIRST THREE MONTHS AFTER CONSTRUCTION; THEREAFTER THE FILTER WILL BE INSPECTED 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THAT THE FILTER IS DRAINING WITHIN 24 TO 48 HOURS OF A RAIN EVENT EQUIVALENT TO 1" OR MORE. ADJUSTMENTS WILL BE MADE TO THE OUTLET VALVE TO ENSURE THAT THE BIORETENTION CELL DRAINS WITHIN 24 TO 48 HOURS. FAILURE TO DRAIN IN 72 HOURS WILL REQUIRE PART OR ALL OF THE SOIL FILTER MEDIA TO BE REMOVED AND REPLACED WITH NEW MATERIAL MEETING THE SOIL FILTER GRADATION. THE FACILITIES WILL BE INSPECTED AFTER MAJOR STORMS AND ANY IDENTIFIED DEFICIENCIES WILL BE CORRECTED. HARVESTING AND WEEDING OF EXCESSIVE GROWTH SHALL BE PERFORMED AS NEEDED. INSPECT FOR UNWANTED OR INVASIVE PLANTS AND REMOVE AS NECESSARY.

ROOFLINE DRIP STRIP:
THE DRIP STRIP WILL BE INSPECTED WITHIN THE FIRST THREE MONTHS AFTER CONSTRUCTION; THEREAFTER THE FILTER WILL BE INSPECTED 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THAT THE FILTER IS DRAINING WITHIN 24 TO 48 HOURS OF A RAIN EVENT EQUIVALENT TO 1" OR MORE. FAILURE TO DRAIN IN 72 HOURS WILL REQUIRE PART OR ALL OF THE SOIL FILTER MEDIA TO BE REMOVED AND REPLACED WITH NEW MATERIAL MEETING THE SOIL FILTER GRADATION. THE FACILITIES WILL BE INSPECTED AFTER MAJOR STORMS AND ANY IDENTIFIED DEFICIENCIES WILL BE CORRECTED. INSPECT FOR UNWANTED OR INVASIVE PLANTS AND REMOVE AS NECESSARY. REMOVE DEBRIS FROM THE SURFACE. SINCE THE ROOFLINE DRIP EDGE IS A PART OF THE APPROVED STORMWATER MANAGEMENT PLAN, IT CANNOT BE PAVED OVER OR ALTERED IN ANY WAY. GUTTERS SHALL NOT BE INSTALLED ALONG THE ROOFLINE.

VEGETATED AREAS:
INSPECT SLOPES AND EMBANKMENTS EARLY IN THE GROWING SEASON TO IDENTIFY ACTIVE OR POTENTIAL EROSION PROBLEMS. REPLANT BARE AREAS OR AREAS WITH SPARSE GROWTH. WHERE RILL EROSION IS EVIDENT, ARMOR THE AREA WITH AN APPROPRIATE LINING OR DIVERT THE EROSIVE FLOWS TO ON-SITE AREAS ABLE TO WITHSTAND THE CONCENTRATED FLOWS. THE FACILITIES WILL BE INSPECTED AFTER MAJOR STORMS AND ANY IDENTIFIED DEFICIENCIES WILL BE CORRECTED.

DITCHES, SWALES AND OTHER OPEN STORMWATER CHANNELS:
INSPECT 2 TIMES PER YEAR (PREFERABLY IN SPRING AND FALL) TO ENSURE THEY ARE WORKING IN THEIR INTENDED FASHION AND THAT THEY ARE FREE OF SEDIMENT AND DEBRIS. REMOVE ANY OBSTRUCTIONS TO FLOW, INCLUDING ACCUMULATED SEDIMENTS AND DEBRIS AND VEGETATED GROWTH. REPAIR ANY EROSION OF THE DITCH LINING. VEGETATED DITCHES WILL BE MOWED AT LEAST ANNUALLY OR OTHERWISE MAINTAINED TO CONTROL THE GROWTH OF WOODY VEGETATION AND MAINTAIN FLOW CAPACITY. ANY WOODY VEGETATION GROWING THROUGH RIPRAP LININGS MUST ALSO BE REMOVED. REPAIR ANY SLUMPING SIDE SLOPES AS SOON AS PRACTICABLE. IF THE DITCH HAS A RIPRAP LINING, REPLACE RIPRAP ON AREAS WHERE ANY UNDERLYING FILTER FABRIC OR UNDERDRAIN GRAVEL IS SHOWING THROUGH THE STONE OR WHERE STONES HAVE DISLODGED. CORRECT ANY EROSION OF THE CHANNEL'S BOTTOM OR SIDESLOPES. THE FACILITIES SHALL BE INSPECTED AFTER MAJOR STORMS AND ANY IDENTIFIED DEFICIENCIES SHALL BE CORRECTED.

ROADWAYS AND PARKING SURFACES: CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. REPAIR POTHOLES AND OTHER ROADWAY OBSTRUCTIONS AND HAZARDS. PLOWING AND SANDING OF PAVED AREAS SHALL BE PERFORMED AS NECESSARY TO MAINTAIN VEHICULAR TRAFFIC SAFETY.

HOUSEKEEPING

THE FOLLOWING PROCEDURES ARE HEREBY ESTABLISHED AS A MINIMUM FOR COMPLIANCE WITH THIS SECTION. FOR FURTHER INFORMATION ON THE PROCEDURES LISTED BELOW, REFER TO MDEP CHAPTER 500 RULES – APPENDIX C.

SPILL PREVENTION:
APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING/IMPLEMENTATION SHALL BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE.

GROUNDWATER PROTECTION:
DURING CONSTRUCTION, HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER SHALL NOT BE STORED OR HANDLED IN AREAS OF THE SITE WHICH DRAIN TO AN INFILTRATION AREA.

FUGITIVE SEDIMENT AND DUST:
APPROPRIATE MEASURES SHALL BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF THE SOILS AND WATER AND/OR CALCIUM CHLORIDE SHALL BE USED TO ENSURE THAT ACTIVITIES DO NOT RESULT IN FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION.

DEBRIS AND OTHER MATERIALS:
LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

TRENCH OR FOUNDATION DE-WATERING:
WATER COLLECTED THROUGH THE PROCESS OF TRENCHING AND/OR DE-WATERING MUST BE REMOVED FROM THE PONDED AREA, AND MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR OTHER AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE.

NON-STORMWATER DISCHARGES:
IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES.

SEEDING PLAN:

PROJECT: MIXED USE DEVELOPMENT

SITE LOCATION: 300 ALLEN AVENUE, PORTLAND, ME

PERMANENT SEEDING   X TEMPORARY SEEDING

1. INSTRUCTION ON PREPARATION OF SOIL: PREPARE A GOOD SEED BED FOR PLANTING METHOD USED.
2. APPLY LIME AS FOLLOWS: _# / ACRES, OR 138 # /M SQ. FT.
3. FERTILIZE WITH ____ POUNDS OF ____ N-P-K/AC. OR 13.8 POUNDS OF 10-10-10 N-P-K/M SQ. FT.
4. METHOD OF APPLYING LIME AND FERTILIZER: SPREAD AND WORK INTO THE SOIL BEFORE SEEDING.
5. SEED WITH THE FOLLOWING MIXTURE:
   50% WINTER RYE
   50% ANNUAL RYE
6. MULCHING INSTRUCTIONS: APPLY AT THE RATE OF ____PER ACRE, OR 75 POUNDS PER M. SQ. FT.

		AMOUNT	UNIT # TONS, ETC.
7.	TOTAL LIME	138	#/1000 SQ. FT.
8.	TOTAL FERTILIZER	13.8	#/1000 SQ. FT.
9.	TOTAL SEED	1.03	#/1000 SQ. FT.
10.	TOTAL MULCH	75	#/1000 SQ. FT.
11.	TOTAL OTHER MATERIALS, SEEDS, ETC.		
12.	REMARKS		

SPRING SEEDING IS RECOMMENDED; HOWEVER, LATE SUMMER (PRIOR TO SEPTEMBER 1) SEEDING CAN BE MADE. PERMANENT SEEDING SHOULD BE MADE PRIOR TO AUGUST 5 OR AS A DORMANT SEEDING AFTER THE FIRST KILLING FROST AND BEFORE THE FIRST SNOWFALL. IF SEEDING CANNOT BE DONE WITHIN THESE SEEDING DATES, TEMPORARY SEEDING AND MULCHING SHALL BE USED TO PROTECT THE SITE. PERMANENT SEEDING SHALL BE DELAYED UNTIL THE NEXT RECOMMENDED SEEDING PERIOD

SEEDING PLAN:

PROJECT: MIXED USE DEVELOPMENT

SITE LOCATION: 300 ALLEN AVENUE, PORTLAND, ME

x PERMANENT SEEDING   TEMPORARY SEEDING

1. INSTRUCTION ON PREPARATION OF SOIL: PREPARE A GOOD SEED BED FOR PLANTING METHOD USED.
2. APPLY LIME AS FOLLOWS: _# / ACRES, OR 138 # /M SQ. FT.
3. FERTILIZE WITH ____ POUNDS OF ____ N-P-K/AC. OR 18.4 POUNDS OF 10-20-20 N-P-K/M SQ. FT.
4. METHOD OF APPLYING LIME AND FERTILIZER: SPREAD AND WORK INTO THE SOIL BEFORE SEEDING.
5. SEED WITH THE FOLLOWING MIXTURE:
   40% CREEPING RED FESCUE
   30% CHARGER II PERENNIAL RYEGRASS
   20% KENBLUE KENTUCKY BLUEGRASS
   10% TIFFANY CHEWINGS FESCUE
6. MULCHING INSTRUCTIONS: APPLY AT THE RATE OF ____PER ACRE, OR 75 POUNDS PER M. SQ. FT.

		AMOUNT	UNIT # TONS, ETC.
7.	TOTAL LIME	138	#/1000 SQ. FT.
8.	TOTAL FERTILIZER	18.4	#/1000 SQ. FT.
9.	TOTAL SEED	1.03	#/1000 SQ. FT.
10.	TOTAL MULCH	75	#/1000 SQ. FT.
11.	TOTAL OTHER MATERIALS, SEEDS, ETC.		
12.	REMARKS		

SPRING SEEDING IS RECOMMENDED, HOWEVER, LATE SUMMER (PRIOR TO SEPTEMBER 1) SEEDING CAN BE MADE. PERMANENT SEEDING SHOULD BE MADE PRIOR TO AUGUST 5 OR AS A DORMANT SEEDING AFTER THE FIRST KILLING FROST AND BEFORE THE FIRST SNOWFALL. IF SEEDING CANNOT BE DONE WITHIN THESE SEEDING DATES, TEMPORARY SEEDING AND MULCHING SHALL BE USED TO PROTECT THE SITE. PERMANENT SEEDING SHALL BE DELAYED UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
DOUGLAS E. REYNOLDS
No 9868
7-30-18
LICENSED PROFESSIONAL ENGINEER

U:\801.06 Allen Ave – Bouchard\Z – CAD\DWG\801-06-DETAIL.dwg – Jul 30, 2018 – 3:52pm

Rev.	Date	Revision
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: JWA	Draft: CG	Date: AUG 2016
Checked: AMP	Scale: NTS	Job No.: 801.06
File Name: 801-06-DETAIL.dwg		

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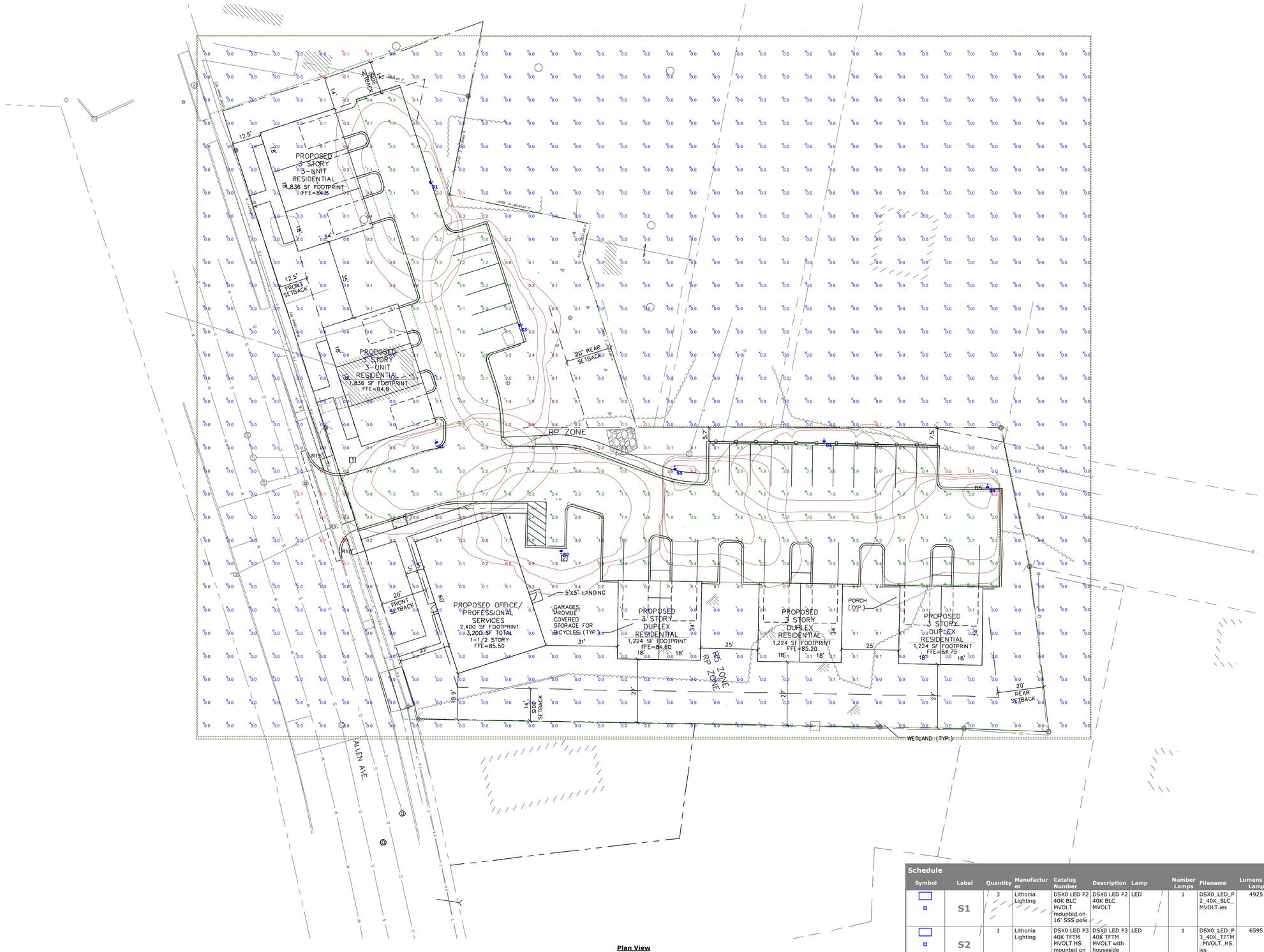
Drawing Name: Erosion & Sedimentation Control Notes

Project: Mixed Use Development
300 Allen Ave. Portland, Maine

Client: ESTELLE ESTATES, LLC
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. C412



Plan View
Scale - 1" = 20ft

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Overall site calcs	+	0.3 fc	6.2 fc	0.0 fc	N/A	N/A
Parking area	X	1.5 fc	6.2 fc	0.1 fc	62.0:1	15.0:1
Site Perimeter	X	0.0 fc	0.1 fc	0.0 fc	N/A	N/A

Schedule

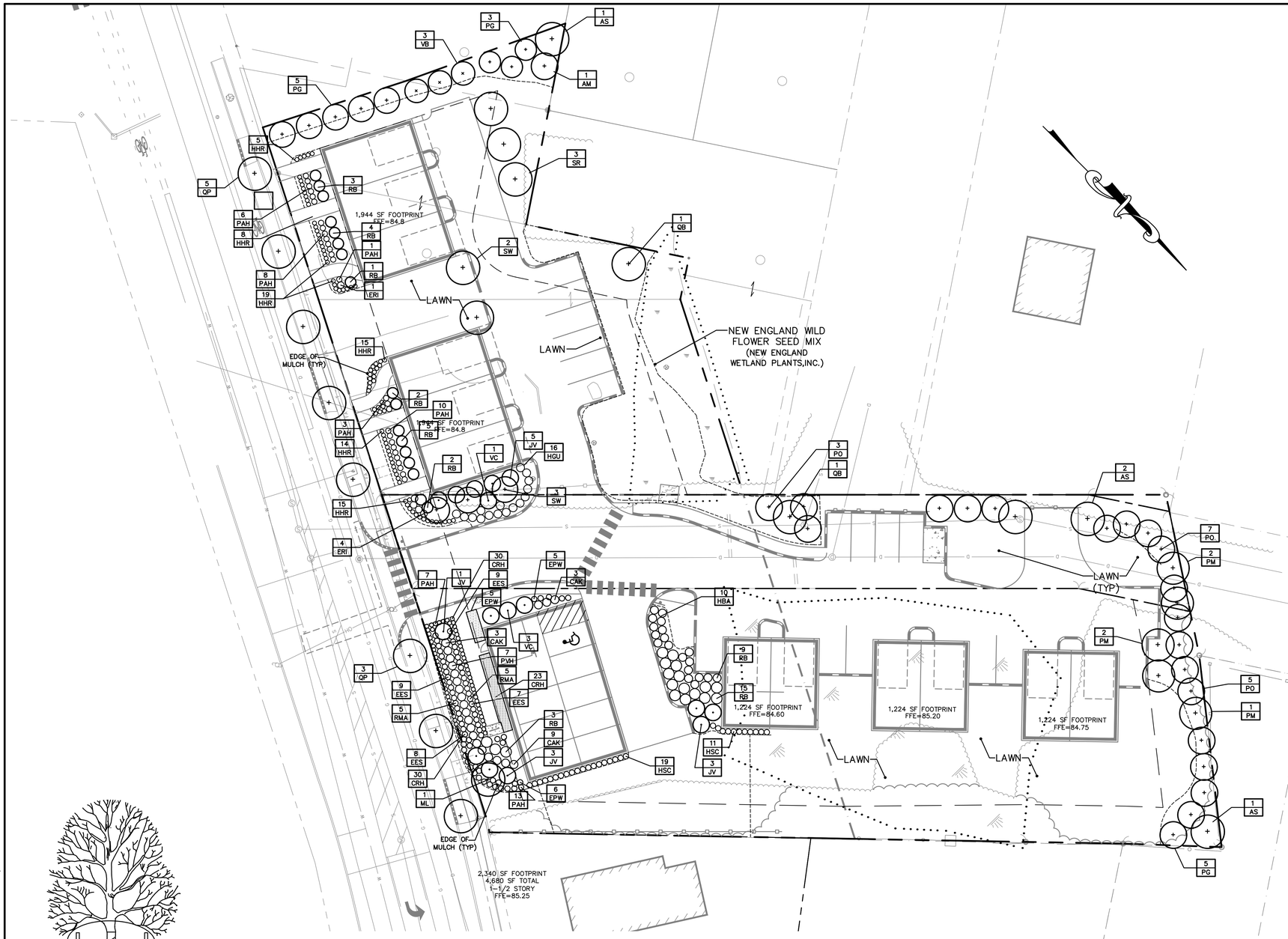
Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	S1	3	Lithonia Lighting	DSX0 LED P2 40K BLC MVOLT mounted on 16' SSS pole	DSX0 LED P2 40K BLC MVOLT	LED	1	DSX0_LED_P2_40K_BLC_MVOLT.ies	4925	0.9	49
	S2	1	Lithonia Lighting	DSX0 LED P3 40K TFTM MVOLT HS mounted on 16' SSS pole	DSX0 LED P3 40K TFTM MVOLT with houseside shield	LED	1	DSX0_LED_P3_40K_TFTM_MVOLT_HS.ies	6595	0.9	71
	S3	1	Lithonia Lighting	DSX0 LED P3 40K T3S MVOLT HS mounted on 16' SSS pole	DSX0 LED P3 40K T3S MVOLT with houseside shield	LED	1	DSX0_LED_P3_40K_T3S_MVOLT_HS.ies	7014	0.9	71
	S4	1	Lithonia Lighting	DSX0 LED P3 40K LCCO MVOLT mounted on 16' SSS pole	DSX0 LED P3 40K LCCO MVOLT	LED	1	DSX0_LED_P3_40K_LCCO_MVOLT.ies	5153	0.9	71
	S5	1	Lithonia Lighting	DSX0 LED P3 40K RCCO MVOLT mounted on 16' SSS pole	DSX0 LED P3 40K RCCO MVOLT	LED	1	DSX0_LED_P3_40K_RCCO_MVOLT.ies	5153	0.9	71

VISIBLELIGHT

300 Allen Ave. - Portland

Designer
Scott E Drouin, LC
Date
3/1/2018
Scale
Not to Scale
Drawing No.

Summary

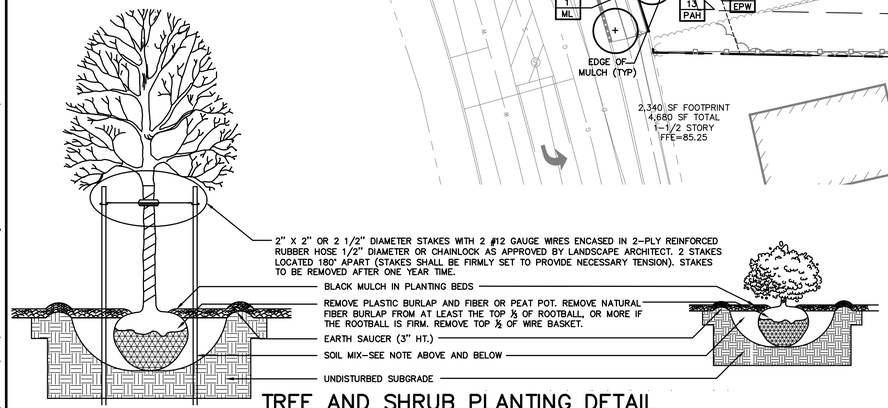


GENERAL PLANTING NOTES

1. CALL DIG-SAFE (1-888-344-7233) PRIOR TO BEGINNING WORK. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. DO NOT SCALE FROM DRAWINGS. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES BETWEEN DRAWINGS, PLANT QUANTITIES, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.
4. PROVIDE SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. CONTRACTOR SHALL FURNISH AND PLACE 12 INCHES OF LOAM IN ALL SHRUB BEDS, 30 INCHES IN ALL TREE PITS, AND 6 INCHES UNDER ALL TURF AREAS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
6. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OFTHE LATEST PUBLICATION OF "AMERICAN STANDARDS FOR NURSERY STOCK BY THE AMERICAN ASSOCIATION OF NURSERYMEN".
7. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
8. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING STAKING OR GUYING WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM THE OWNER.
9. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
10. EXISTING TREES TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY, OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
13. DAMAGE TO EXISTING SITE IMPROVEMENTS DURING INSTALLATION OF LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
14. CONTRACTOR SHALL COORDINATE INSPECTION OF PLANT MATERIAL AND LOCATIONS WITH PROJECT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ALL PLANT MATERIAL SHALL BE ON-SITE AND PLACED BEFORE INSPECTION CAN BE COMPLETED. A MINIMUM OF 48 HOUR NOTIFICATION SHALL BE REQUIRED.
15. MAINTENANCE REQUIREMENTS: PRUNE DEAD OR DAMAGED BRANCHES, MAINTAIN GUY POSTS AND WATER AS REQUIRED UNTIL PROJECT COMPLETION AND ACCEPTANCE BY OWNER.
16. WATERING: ALL PLANTINGS SHALL BE THOROUGHLY WATERED UPON INSTALLATION, AND THEN WEEKLY WHENEVER ANY DRY SPELLS OCCUR, UNTIL ACCEPTANCE BY OWNER.
17. LANDSCAPE CONTRACTOR OR PLANT SUPPLIER SHALL GUARANTEE PLANTS AND PROVIDE REPLACEMENTS FOR TWO YEARS FROM INSTALLATION.
18. CONTRACTOR SHALL PLACE 4" SHREDDED DARK BARK MULCH AROUND SHRUB BEDS AND TREE PITS.

PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE
AS	ACER SACCHARUM 'GREEN MOUNTAIN'	SUGAR MAPLE	2-1/2" CAL.
AM	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SHADBLOW	6'-7' HGT. CLUMP
AS	ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN SUGAR MAPLE	2-1/2" CAL.
CAK	CALAMAGROSTIS X ACUTIFOLLA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 1 CONT.
CRH	COREOPSIS 'RED HOT VANILLA'	RED HOT VANILLATICKSEED	NO. 1 CONT.
EES	ECHINACEA PURPUREA 'Evan Saul'	SUNDOWN CONE FLOWER	NO. 1 CONT.
EPM	ECHINACEA PURPUREA 'MAGNUS'	MAGNUS PURPLE CONE FLOWER	NO. 1 CONT.
EPW	ECHINACEA 'POW WOW WILDBERRY'	POW WOW WILDBERRY CONE FLOWER	NO. 1 CONT.
ERI	ECHINOPS RITRO	GLOBE THISTLE	NO. 1 CONT.
HHR	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	NO. 1 CONT.
HSC	HEMEROCALLIS 'STEEPLE JACKIE'	STEEPLE JACKIE DAYLILY	NO. 1 CONT.
HBA	HOSTA 'BLUE ANGEL'	BLUE ANGEL HOSTA	NO. 1 CONT.
HGU	HOSTA 'GUACAMOLE'	GUACAMOLE HOSTA	NO. 1 CONT.
JV	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	18"-24" HGT.
ML	MAGNOLIA X LOEBERNII 'LEONARD MESSEL'	LEONARD MESSEL MAGNOLIA	8'-10' HGT.
PAH	PENNISETUM ALOPECUROIDES 'HAMELIN'	HAMELIN FOUNTAIN GRASS	NO. 1 CONT.
PM	PLATANUS X ACERIFOLIA 'MORTON CIRCLE'	EXCLAMATION LONDON PLANETREE	2-1/2" CAL.
PVH	PANICUM VERGATUM 'HEAVY METAL'	HEAVY METAL SWITCH GRASS	NO. 1 CONT.
PG	PICEA GLAUCA	WHITE SPRUCE	6'-7' HGT.
PO	PICEA OMORIKA	SERBIAN SPRUCE	6'-7' HGT.
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2-1/2" CAL.
QP	QUERCUS PALUSTRUS	PIN OAK	2-1/2" CAL.
RB	ROSA 'BONICA'	BONICA SHRUBROSE	18"-24" HGT.
RMA	RUDEBECKIA MAXIMA	MAXIMA CONEFLOWER	NO. 1 CONT.
SR	SYRINGA RETICULTA	JAPENESE TREE LILAC	6'-8' HGT.
SW	SYRINGA RETICULTA 'WILLAMETTE'	IVORY PILLAR JAPENESE TREE LILAC	6'-8' HGT.
VB	VIBURNUM X BURKWOODII	BURKWOOD VIBRURNUM	24"-30" HGT.
VC	VIBURNUM X CARLCEPHALUM 'CAYUGA'	CAYUGA VIBURNUM	24"-30" HGT.



TREE AND SHRUB PLANTING DETAIL

NOT TO SCALE

GENERAL PLANTING NOTES:

DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH ROOT FLARE AT GROUND LEVEL. CORRECT HOLE DEPTH AS NEEDED. NOTE: MANY BALLED & BURLAPPED PLANTS HAVE SOIL PILED AROUND THE ROOT FLARE WHICH SHOULD BE REMOVED PRIOR TO PLANTING.

FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL. FOR BROAD-LEAVED EVERGREENS AND RELATED ERICACAE PLANTS, 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH (RECOMMENDATIONS ARE FOR ACCEPTABLE PLANTING AREAS).

CONTAINER GROWN STOCK:
REMOVE ALL CONTAINERS AND GENTLY COMB OUT ROOTS TO ELIMINATE CIRCLING ROOTS. PRUNE DAMAGED ROOTS AS NEEDED.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

20 0 10 20 40
1 inch = 20 ft.

LICENSED LANDSCAPE ARCHITECT
CHRISTOPHER DI MATTEO
No. 2696
STATE OF MAINE
7-30-18

Rev.	Date	Revision
2	7/3/18	REVISED PER NEW LAYOUT
1	6/7/18	REVISED FOR WETLAND IMPACTS

Issued For	Date	By
REVISIONS BASED ON CITY COMMENTS	7/30/18	DER
RESPONSE TO CITY COMMENTS	7/2/18	DER
NRPA TIER 1 APPLICATION	3/30/18	DER
LEVEL III SITE PLAN APPLICATION	3/5/18	DER
PRE-APPLICATION MEETING	11/7/17	DER

Design: CDM | Draft: CG/CDM | Date: NOV 2017
Checked: DER | Scale: 1"=20' | Job No.: 801.06
File Name: 801-06-LANDSCAPE.dwg

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Drawing Name: Landscape Plan
Project: **Mixed Use Development**
300 Allen Ave. Portland, Maine
Client: **ESTELLE ESTATES, LLC**
39 DARLING AVENUE, SOUTH PORTLAND, ME 04106

Drawing No. L101

U:\801.06 Allen Ave - Bouchard\Z - CAD\DWG\801-06-LANDSCAPE.dwg - Jul 30, 2018 - 4:24pm

300 Allen Avenue, Public Comments

Christopher Ellingwood <cellingwood@berrydunn.com> Sep 24, 2018 6:33 PM
Posted in group: **Planning Board**

To Whom it May Concern,

I would like to submit the following comments regarding the proposed Estelle Estates development at 300 Allen Avenue. Due to business commitments, I cannot be in attendance this evening. Some of these comments reflect past questions/concerns I have posed, and I also have additional concerns.

1) One our biggest issues with this development has been the inconsistent communication and information provided to homeowners of the surrounding properties. Prior to the August 14 Planning Board Workshop, I requested copies of updated site plans and other documentation to review and provide additional comments based on the developer's adjustments from the June Workshop. Documentation was emailed to me on August 13 and were only provided to me (from my understanding, because we asked Mr. Grooms from the City of Portland, which took several emails.) In addition, the link to the City Portal provided in the initial mail notices of this hearing, and previous workshops includes outdated information, most recently updated on June 1, 2018 (less a copy of the mailing for this hearing). The Plans presented on the portal do not reflect the documentation shared with me on August 14.

2) I have concern that the City intends to approve this project without appropriate process or consideration. You may be aware, Allen Avenue is currently being resurfaced. The week before the resurface project began, a construction crew cut the granite curb and paved the driveway entrance to 300 Allen Avenue, which coincides exactly with the proposed plans for where the entrance would be located (if approved). In addition, the new crosswalk discussed in documents, was also "cut" into the curb. It is our understanding of City Code that one must have a permit for a new driveway, which no such permit exists. Why was the new driveway permitted to be installed prior to the approval of the development? (photos of the new pavement and driveway and crosswalk are attached).

3) I have continued concern over the privacy of our homes with the addition of the third story decks of the units. These buildings are already taller than our single family homes and will be in very close proximity to our properties. The third story deck, with the proposed landscaping of trees that are 6-10' tall will do nothing to respect or consider that privacy and someone on the deck would literally look down on our backyards and homes.

4) Traffic on Pennell, and Cyprus Streets – with the resurfacing project ongoing on Allen Avenue, it is our understanding that the City has removed parking spaces in favor of a bike lane (excellent idea!), however, we are now concerned that visitors who may require overflow parking will park their vehicles on our streets and add to the congestion that already exists. This may also increase the potential for residents and guests cutting through our properties to access Estelle Estates. This leads to our next concern,

5) We appreciate the proposed landscaping but formally request the property is fenced along the entire property perimeter with box fencing (or other, non-see through fencing) to prevent people from cutting through our yards and to further respect our privacy. The entrances (garages) to the triplexes are in the rear of the residences, which is in our backyard. Trees and newly planted shrubs will not prevent headlights shining into our yards and potential other foot traffic.

6) We have expressed concern over Mr. Bouchard's maintenance and upkeep of the current property. The property has not been mowed or taken care of since Mr. Bouchard acquired it. How will the property be maintained after the buildings are completed? Is there an association created, with a trust or designated attorney to overlook it? How will snow removal (one of the promises of the development) be managed and ensured? How will the construction process be managed and who will oversee that the impacts to the neighborhood is considered?

7) Site work, We understand the site will require extensive site work. How will the Developer ensure that there is no run off or impact to our abutting properties? How are we assured that with the adjustment of property elevation, water and run-off will not be pushed to our properties?

We understand that development of the vacant lots is inevitable, but is the zoning variance and large parking lots truly appropriate for a neighborhood of mostly smaller single family homes? Why can't Mr. Bouchard simply build a (or a couple) of single family home(s) on the lot(s) at 300 Allen Avenue (which it is zoned for) and not seek a zoning variance for a large and unnecessary parking lot in our backyards, that significantly impacts critical wetlands and drainage for our neighborhood and homes?

This is not the peninsula, and we highly encourage the City, and the Planning Board to consider if Estelle Estates is proper for the location. Mr. Bouchard has shown little consideration for our little community and neighborhood.

I appreciate the opportunity to submit these comments, and look forward to how Mr. Bouchard will address these.

Chris

Christopher S. Ellingwood, CISA | Senior Manager

Information Technology Assurance Services

d/f: 207.541.2290 | **c:** 802.310.0361

berrydunn.com

PLANNING BOARD REPORT
PORTLAND, MAINE

Conversion of existing school building into 8 residential units
(Reed School Phase 2)
19 Libby Street

Level III, Conditional Use, Subdivision and Site Plan
Project # PL000206-2018
CBL: 338 K004001
Reed School, LLC, Applicant

Submitted to Portland Planning Board Public Hearing Date: September 25th, 2018	Prepared by: Jean Fraser Date: September 21st, 2018

I. INTRODUCTION

Reed School, LLC, represented by Walsh Engineering (Thomas Greer), is requesting Planning Board approval to a Level III Conditional Use, Subdivision and Site Plan proposal for the Phase 2 reuse of this site. The proposals comprise the conversion of the former Reed School main building (13,908 sf floor area) into 8 one-bedroom dwelling units, and associated improvements, located at 19 Libby Street and fronting onto Homestead Avenue. The site was the subject to public consultations and a City RFP in 2016, and via that process was sold to the Developer's Collaborative in 2017. It is located in the R-3 Zone.

Phase 1 of the project was subject to a Level I Site Plan Alteration application to remove a 1951 small rear addition and add parking and stormwater treatment to the Phase 1 area. This allowed for the 1950 single story building at the rear to be reused by a private school, T*he Children's Odyssey*. Those improvements have been completed and the school opened recently.

The Phase 2 part of the project was anticipated in the earlier site plan review, and the approval includes several conditions that apply to the Phase 2 project (see Level I Site Alteration Approval letter in Attachment A). These focus on the sidewalk and access from Homestead, and on the boundary treatment.

The Phase 2 project is before the Planning Board as the conversion of the institutional use to a residential use in the R3 zone requires conditional use approval, and the creation of the 8 units constitutes a subdivision that requires Planning Board review.

Applicant: Reed School, LLC
Consultants: Engineer: Walsh Engineering Associates Inc (Thomas S Greer, PE)
Architects: Archetype

Phase 2 site as viewed from Homestead Avenue:

Required Reviews and Waivers:

Review	*Applicable Standards*
R3 Conditional Use: Alteration of a structure existing and not in residential use as of January 1, 1984 (Reed School), to three (3) or more dwelling units	*Section 14-88 (a) 3 Residential conditional Uses*
Subdivision: Conversion of existing Reed School main building into 8 residential dwelling units	*Section 14-497* for the creation of 8 units.
Site Plan: Multifamily development	*Section 14-526* for the proposed multifamily residential development comprising 8 units.

II. PROJECT DATA

SUBJECT	*DATA*
Existing Zoning	R3
Existing Use	Vacant school building
Proposed Use	Residential
Total Area of the Site	2.51 acres
Proposed Disturbed Area of the Site	None for this Phase 2 part of the project
Impervious Surface Area - Proposed	None for this Phase 2 part of the project
Building Footprint - Existing	Total Building 21,145 sf School Use 16,509 Residential Use 4,636 sf
Building Footprint - Proposed	Residential Use 4,636 sf
Building Floor Area - Existing	13,908 sf
Building Floor Area - Proposed	13,908 sf, including basement area)
Number of lots proposed	8 (within building) within Lot 1 of the site condominium
Residential Units- Existing	0
Residential Units- Proposed	8 one-bedroom units
Parking Spaces - Existing	74 were created for phase 1 and are noted to be common elements for the condominium lots, but the phase 1 use does not require all of these
Parking Spaces - Proposed	16 for this use
Bicycle Parking Spaces - Existing	8 bike racks serving 16 bicycles are available at rear of the building included in Phase 1 site plan to address needs of all uses
Bicycle Parking Spaces - Proposed	

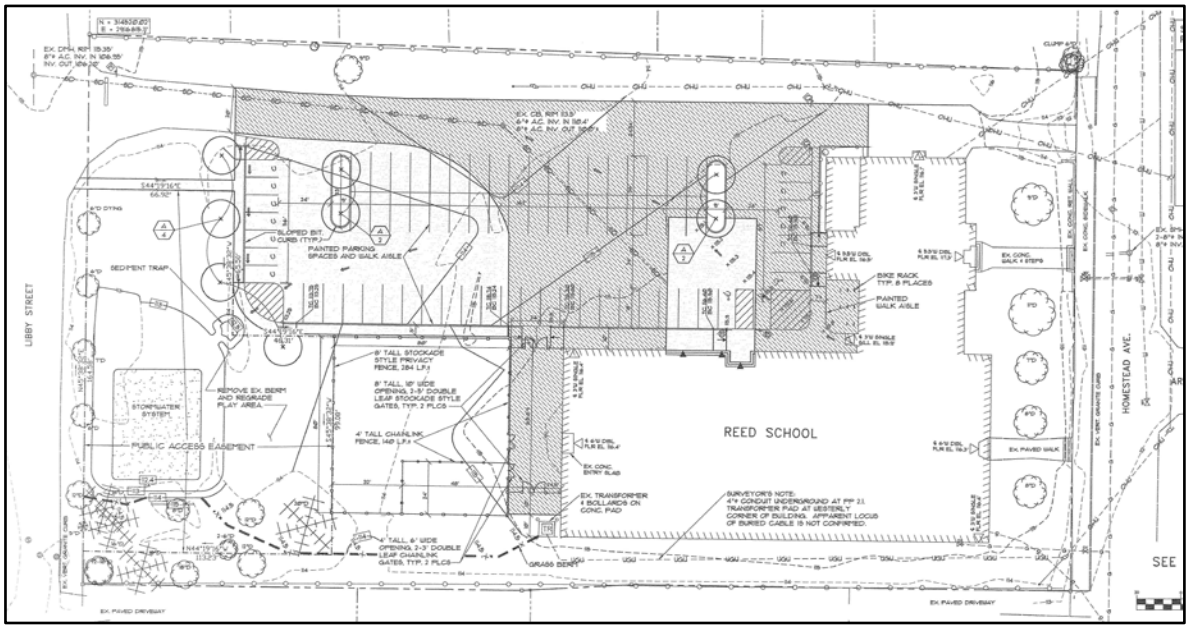
III. EXISTING CONDITIONS

The 1926 main school building is shown right, as it faces Homestead Avenue. It is surrounded by residential on both sides of this frontage, and the area behind and abutting this building is "Phase 1" where improvements to the parking area and stormwater treatment have just been completed.

There are five existing mature trees along the frontage and the current boundary treatment for the Phase 2 area is largely chain link fencing, some rusty but some with vines and other vegetation.

The Phase 1 approved site plan is included below to provide the current context for the review of the current application.

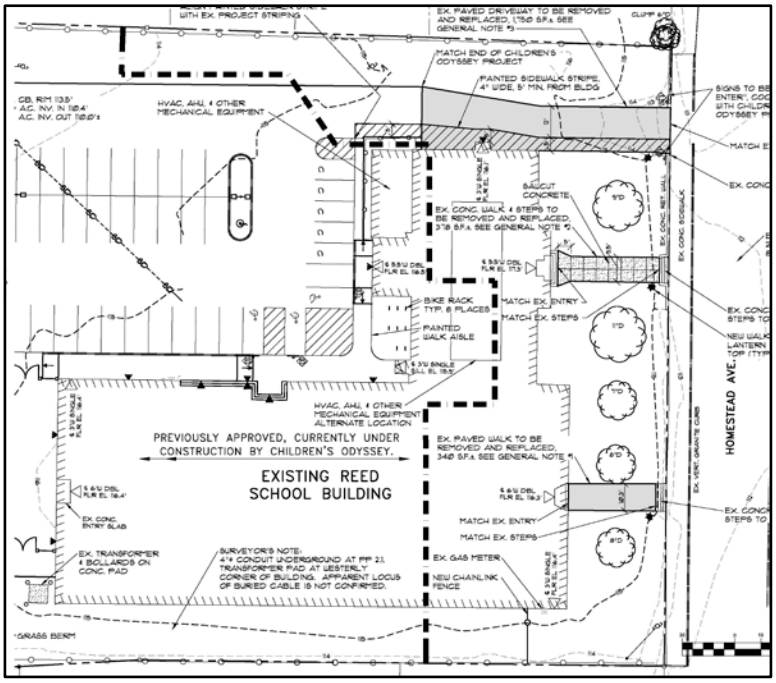
PREVOPUSLY APPROVED PHASE 1 SITE PLAN- ALREADY IMPLEMENTED:



IV. PROPOSED DEVELOPMENT

The final proposals are shown in the Plan Set and include:

- Conversion of the existing building to 8 one-bedroom units with associate building upgrades
- Replacement of the front walkways from Homestead Avenue
- Demarcation of a pedestrian walkway along the one-way exit drive to the side of the building
- Signs to clarify the drive is one way exit from the site onto Homestead Avenue
- Additional short section of chain link fencing to side of the site (for school)
- Two buidling mounted lights and one pole light at front
- Removal of one tree from the approved parking lot area landscaped island.



The submissions confirm that the site work was largely completed as part of the Phase 1 improvements and the current proposals do not include any landscaping or upgrade to the boundary treatment for Phase 2.

V. PUBLIC COMMENT

A total of 168 notices were sent to property owners within 500 feet of the site and interested parties, and a legal ad was published in the *Portland Press Herald* on September 14th and 17th, 2018. The required Neighborhood Meeting was held on August 23, 2018 at the school and attended by 15 neighbors, excluding representatives of the applicant. The Meeting Certificate and notes are included in Attachment 22. At the time of completing this report the Planning office has not received any public comments.

VI. RIGHT, TITLE & INTEREST AND FINANCIAL AND TECHNICAL CAPACITY

The applicant has submitted a copy of the applicant's ownership deed and a letter dated 6.21.18 from Bangor Savings Bank (Att. 7) confirming financial capacity. The submissions were prepared by professional consultants.

VII. STAFF REVIEW

A. ZONING ASSESSMENT – CONDITIONAL USE REVIEW

Conditional Use: The R3 zoning ordinance (14-88 (a) 3) allows for a non-residential structure to be converted to residential subject to a number of conditions relating to:

- Outside stairways and fire escapes
- Restrictions on the floor to ceiling height of lower level floors
- Land area per dwelling requirement of 3000 sf
- On site parking to meet Ordinance standards
- Site Plan approval where the following additional standards would apply:
    - Any addition or exterior alterations…shall be compatible with the architectural style of the structure
    - Scale and surface area of parking, driveways and paved area shall be arranged and landscaped to be compatible in size and scale with neighboring properties in the area and to properly screen vehicles from adjacent properties and streets

A separate motion regarding the conditional use is included for the Board to consider. The proposals meet all of these conditional use standards. Regarding the additional site plan standards, the compatibility of the exterior modifications (windows and lights) have been reviewed by the Historic Preservation Program Manager Deb Andrews. She has recommended a condition of approval as the submissions do not include all of the detail required to complete the review (Attachment C).

The standard regarding the arrangement/landscaping of paved areas is of limited applicability as the Phase 2 area only includes an existing drive that will be slightly widened; the parking is at the rear and previously approved and implemented.

The provision of the required 16 parking spaces is within the parking area at rear and identified in the condominium documents, with 9 dedicated in terms of area near to the school, and the rest as part of the "common elements". The zoning requirement for 16 spaces tied to the residential use within this parking area needs to be confirmed by a clarifying note/graphic on the final Subdivision Plat.

Dimensional Requirements: The submissions document (Attachment 4) that the proposal meets all of the dimensional requirements of the R3 zone in terms of frontage, setbacks and lot coverage (others not relevant because it's an existing building and a conditional use).

B. SUBDIVISION REVIEW (14-497(a). Review Criteria)

14-496. Subdivision Plat Requirements

The applicant has submitted a draft Subdivision Plat (Plan P3) which will need revisions to add notes or a table to clarify the location and floorspace and legal status of all of the units, and to include references to the parking provision and condominium documents.

14-497. General Requirements (a) Review Criteria

The proposals have generally addressed the subdivision standards, with the following items of relevance to this project:

Water Supply, Air Pollution and Soil Erosion

The applicant has not submitted the capacity letter from the Portland Water District and this is the subject of a suggested condition.

Traffic

There are no traffic implications associated with the proposal.

Sanitary Sewer/Soils/Stormwater

The proposal does not have any implications for stormwater management on the site. The Wastewater capacity letter has not been received and this is the subject of a suggested condition of approval.

Solid Waste Disposal
The applicant has confirmed (Attachment 23) that solid waste storage will be inside the building and no dumpsters are required.

Scenic Beauty
The review has focused on the frontage along Homestead Avenue. While this frontage includes an attractive grassed area with 5 existing mature trees, the fencing areas at the frontage corners, where it meets existing residential properties, is unattractive - as shown in recent photographs below:

from Homestead Ave, west end of frontage

from Homestead Ave, east end of frontage

Staff recommend that the fencing and associated planting at these corners should be enhanced in order to meet this standard, and a suggested condition of approval requires the submission of a landscape plan for review and approval. This recommendation is reinforced by the site plan review, which notes that a required tree has been removed from the parking lot at the rear, and that the previous site plan approval required "*The applicant shall repair the fence along the property boundary as needed".*

Comprehensive Plan
Staff find the proposed project compatible with the Comprehensive Plan, which includes the following applicable goals:
- "create economic prosperity by growing Portland's tax and employment base"
- "encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods".

C. SITE PLAN REVIEW (14-526 Site Plan Standards)
The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. *TRANSPORTATION STANDARDS*

Impact on Surrounding Street systems: Please note comments above under *Subdivision Review*.

- ***Access and Circulation:*** The general access and circulation is similar to the existing, and the creation of a one-way access drive next to the school was part of the previously approved site plan (Attachment A). The previous approval required:

> *b. ...Providing a dedicated walkway from Homestead to the parking lot by either limiting vehicle access on the driveway to Homestead to emergency access only, or by providing a parallel walkway.*

The site plan (Plan P4.) shows "no entry" signs where it meets Homestead Avenue to reinforce that circulation, and a 4 foot wide pedestrian walkway striped at the side. In view of the one-way nature of the driveway, staff consider

the proposal meets the condition and is acceptable.

- ***Sidewalks and Pedestrian Connections:*** The Department of Public works has evaluated the sidewalks along Homestead Avenue and determined that they were in good condition and do not require any repairs except that the driveway apron does not meet City Technical Standards (Attachment B). The applicant has not requested a waiver and a potential condition of approval requires that the apron be brought up to the city standards.

  The DPW comments noted there is a "gap" in the sidewalk between the site and Forest Avenue, which was also noted during the Phase 1 review and conditioned with "*The City will look at the potential to complete the missing piece of sidewalk along Homestead Avenue just west of the site and asks for the applicant's support as necessary."* The DPW estimates that a contribution of $1,500 would pay for completing this 45 foot section of sidewalk. The Planning Staff recommend that the applicant either complete this gap or pay the contribution. A condition of approval is provided for the Board's consideration.

- ***Public Transit Access:*** The previous site plan approval requested "*The applicant shall work with staff and METRO to resolve the best locations of bus stops along Forest Avenue to serve the site*." Staff have reviewed the location of the forest Avenue bus stops with METRO and the locations are acceptable as existing, though the most direct access (ie with a crosswalk at Forest) is via the Homestead Avenue sidewalk where the above-mentioned "gap" is located. A contribution to help achieve the completion of this section of sidewalk would help provide a better connection to the bus stops on Forest Avenue.

- ***Parking -*** please see comments under the discussion of the ***Conditional Use*** above.

- ***Snow Storage:*** snow storage areas do not appear to be identified on the plans, although for the Phase 2 area this is not a concern.

- ***Transportation Demand Management:*** this standard does not apply to this project.

- ***Construction Management Plan:*** The applicant has not submitted a CMP as the building is existing and there is a substantial area of open pavement to the rear that is available for construction material and access. A condition of approval is provided for the Board's consideration.

2. *ENVIRONMENTAL QUALITY STANDARDS*

   Landscaping and Landscape Preservation, Site and Parking Lot Landscaping

- **Fencing/buffers:** The approval for Phase 1 included the following requirement: *"The applicant shall repair the fence along the property boundary as needed."* The Phase 2 proposals do not include any new or repaired fencing although some of the existing fencing is rusty chain link. As discussed above under ***Subdivision-Scenic Beauty,*** the frontage corners on Homestead Avenue are unattractive and staff recommend upgraded fencing and/or screen planting. The suggested condition of approval is:

  > *That the applicant shall submit a landscape plan, for review and approval by the Planning Authority prior to the issuance of a buildig permit, for the Homestead Avenue frontage corners that includes replacement fening and/or xcreen planting to enhance the appearance of these areas.*

- ***Street Trees:*** The street tree requirement is 8 trees and there are 5 existing street trees. The applicant has requested to contribute to the Street Tree fund for the 3 additional street trees required to meet the site plan ordinance (Attachment 15), and this is reflected in a suggested condition for the Board to consider.

- ***Water quality, Stormwater Management and Erosion Control -*** see discussion under *Subdivision Review* above.

3. PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY STANDARDS

- ***Consistency with Related Master Plans -*** see discussion above regarding the repair to the sidewalk along Homestead Avenue.

- ***Public Safety and Fire Prevention :*** The Fire Department's review notes that "*There are plenty of fire hydrants in the area for this project, and there are no access issues for the fire department with this project. There are no site plan concerns."*

- ***Availability and Adequate Capacity of Public Utilities***- see comments under Subdivision Review above.

4. Site Design Standards

- ***Massing, Ventilation and wind Impact; Shadows; Snow and Ice Loading; View corridors; Historic Resources -*** these standards do not apply to this project.

- *Exterior Lighting and Street Lighting*
  The proposals include two building mounted lights and a new pole light by the main walkway entrance from Homestead Avenue. The locations are noted on the plans but the specifications and photometric information has not been submitted. The design of the lighting would be part of the conditional use review (requiring review by the Historic Preservation Program Manager); a site plan condition is recommended to address the site plan technical standards regarding cut off fixtures and trespass.

- *Noise and Vibration*
  Staff requested further information regarding the installation of the heatpumps as mentioned at the neighborhood meeting. The Response letter (Attachment 23) clarifies the HVAC locations, but further information is required to determine if these meet the site plan standard requiring that they "*b) Be screened from view from any public street and from adjacent sites by structure walls, evergreen landscaping, fencing, masonry wall or a combination thereof."*

- ***Signage and Wayfinding -*** this standard does not apply to the proposals.

- ***Zoning-Related Design Standards:*** there are no specific design standards for this zone.

- *Multi-family and Other Housing Types Design Standards*
  The design standards that apply to all multifamily development apply to this proposal.

  (i) TWO-FAMILY, SPECIAL NEEDS INDEPENDENT LIVING UNITS, MULTIPLE-FAMILY, LODGING HOUSES, BED AND BREAKFASTS, AND EMERGENCY SHELTERS:

  (1) STANDARDS. Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters shall meet the following standards:

  a. Proposed structures and related site improvements shall meet the following standards:

  1. *The exterior design of the proposed structures, including architectural style, facade materials, roof pitch, building form and height, window pattern and spacing, porches and entryways, cornerboard and trim details, and facade variation in projecting or recessed building elements, shall be designed to complement and enhance the nearest residential neighborhood. The design of exterior facades shall provide positive visual interest by incorporating appropriate architectural elements;*

2. *The proposed development shall respect the existing relationship of buildings to public streets. New development shall be integrated with the existing city fabric and streetscape including building placement, landscaping, lawn areas, porch and entrance areas, fencing, and other streetscape elements;*

Staff comment: The proposals are located within an existing building and any external changes to the former school are being reviewed by the Historic Preservation Program Manager.

3. *Open space on the site for all two-family, special needs independent living unit, bed and breakfast and multiple-family development shall be integrated into the development site. Such open space in a special needs independent living unit or a multiple-family development shall be designed to complement and enhance the building form and development proposed on the site. Open space functions may include but are not limited to buffers and screening from streets and neighboring properties, yard space for residents, play areas, and planting strips along the perimeter of proposed buildings;*

Staff comment: The grassed frontage area will remain as lawn with existing mature trees, and provides a substantial open space amenity area for residents.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas;*

Staff comment: The window sizes are determined by the existing building.

5. *The scale and surface area of parking, driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets;*

Staff comment: These areas are to the rear of the building within the already-approved Phase 1 area.

VIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed conversion of the Reed School main building into 8 residential units along with the small scale site improvements at 19 Libby Street (fronting onto Homestead Avenue).

IX. PROPOSED MOTIONS

A. CONDITIONAL USE APPROVAL

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on September 25, 2018 for application PL000206-2018 (19 Libby Street) relevant to Portland's Zoning ordinance section 14-88(a) and the testimony presented at the Planning Board hearing:

The Planning Board finds that the plan **is/is not** in conformance with the conditional use standards of the Land use Code, subject to the following conditions (s) of approval:

Prior to the issuance of the Building Permit

1. That the applicant shall provide final window specifications and the specifications for the proposed building-mounted light fixtures to the Historic Preservation Program Manager for review and approval.

2. That the subdivision Plat document, to the satisfaction of Corporation Counsel, that the zoning requirement for 16 parking spaces for the 8 residential units subject of this approval, is met through an explicit provision on the site.

B. SUBDIVISION

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on September 25, 2018 for application PL000206-2018 (19 Libby Street) relevant to the subdivision regulations; and the testimony presented at the Planning Board hearing:

The Planning Board finds that the plan **is/is not** in conformance with the subdivision standards of the land use code and **approves/does not approve** the application, subject to the following conditions of approval, which must be met prior to the signing of the plat:

1. The applicant shall submit a final subdivision plat for review and approval by Corporation Counsel, the Department of Public Works, and the Planning Authority, that includes but is not limited to: clarification of the legal status, size and location of all units; parking provision to meet the zoning requirements; and reference to condominium documents and other agreements that clarify the maintenance responsibilities for snow clearing and landscape maintenance.

2. If some or all of the units are to be condominiums, the Condominium Association documents shall be submitted for review and approval by Corporation Counsel and Planning Authority and clarify rights and responsibilities for access, use and maintenance including snow storage and snow clearance from the sidewalks.

C. SITE PLAN

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in Planning Board report for the public hearing on September 25, 2018 for application PL000206-2018 (19 Libby Street) relevant to the Site Plan Ordinance and other regulations and the testimony presented at the Planning Board hearing:

The Planning Board finds that the plan **is / is not** in conformance with the site plan standards of the land use code, subject to the following conditions:

Prior to the submission of the Building Permit application

1. The applicant shall submit a landscape plan, for review and approval by the Planning Authority for the Homestead Avenue frontage corners that includes replacement fencing and/or planting to screen and enhance the appearance of these areas.

Prior to the issuance of a Building Permit

2. That the lighting specifications and associated photometric information shall be submitted for review and approval by the Planning Authority, to meet the standards set out in the City's Technical Manual for Site Lighting.

3. That the final detailed location of any HVAC and mechanical equipment along with any proposed screening be submitted for review and approval by the Planning Authority to confirm the installation is in compliance with the Site Plan standard for Noise and Vibration.

4. That the Wastewater and Water capacity letters shall be submitted.

5. The applicant shall submit a Construction Management Plan for review and approval by the Planning Authority and the Department of Public Works.

6. The applicant shall submit a sidewalk plan for review and approval by the Department of Public Works and install a 45 foot section of sidewalk along Homestead Avenue or submit a $1,500 contribution to the City to complete this sidewalk section.

Prior to the issuance of a Certificate of Occupancy

7. That the applicant shall contribute $1200 for three street trees to Portland's Tree Fund.

8. That the driveway apron and nearby sidewalk shall be reconstructed to meet City's Technical Standards.

ATTACHMENTS:

Attachments to the Report

A. Level I Site Alteration Approval letter date
B. DPW sidewalk comments
C. Historic Preservation Program Manager comments

Public comments (none received to date)

Applicant's Submittal

1. Cover letter
2. Application and checklist
3. Right, Title and Interest
4. Zoning analysis Table
5. Condo Documents
6. Waiver Table
7. Financial and Technical Capacity
8. Technical capacity
9. Transportation analysis
10. Access and circulation
11. Public Transit
12. Off Street parking
13. Bicycle Parking
14. Snow Storage
15. Street Trees
16. Stormwater
17. Public Safety and Fire Prevention
18. Available Pubic Utilities
19. Site Design
20. Historic Resources
21. Zone Related Design Standards
22. Neighborhood Meeting Certificate and Notes
23. Response letter 9.19.18

Plans

P1. Survey
P2. Subdivision Plan (2 sheets)
P3. Cover sheet
P4. Site Plan
P5. North Elevation
P6. East & West Elevations
P7. South Elevation
P8. Floor Plans (3 sheets)
P9. Building Permit Details

Tuck O'Brien
City Planning Director, Planning Division

January 22, 2018

Michael Lyne
Developer's Collaborative
100 Commercial Street, Suite 414
Portland, ME 04101

Tom Greer, P.E.
Pinkham and Greer, Civil Engineers
28 Vannah Avenue
Portland ME, 04103

Project Name:	Reed School Redevelopment	Project ID:	2017-234
Address:	19 Libby Street	CBL:	338-K-004
Applicant:	Michael Lyne		
Planner:	Matthew Grooms		

Dear Mr. Lyne and Mr. Greer:

On January 22, 2018, the Planning Authority approved a Level I Site Alteration application for redevelopment of the Reed School site, including expansion of the existing parking area, installation of a playground, installation of a new stormwater system, and site landscaping. The decision is based upon the application, documents and plans as submitted. The proposal was reviewed for conformance with the standards of Portland's Site Plan Ordinance.

Waivers

The Planning Authority waives the Site Plan Standard, Section 14-526(a)(2)(c)(i), which requires that all proposed developments provide a sidewalk along all frontages, to permit no public sidewalk along the property's Libby Street frontage.

Stormwater Management Permit

Based upon the City of Portland's Delegated Review Authority, the Planning Authority approves the Stormwater Management Permit application, as submitted, subject to the following condition(s):

1. Storm Water Management Condition of Approval
   The developer/contractor/subcontractor must comply with conditions of the construction stormwater management plan and sediment and erosion control plan based on City standards and state guidelines.

The owner/operator of the approved stormwater management system, and all assigns. shall comply with the conditions of Chapter 32 Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements.

A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Please submit final copies to both the Department of Planning and Urban Development and the Department of Public Works.

Site Plan Review

The Planning Authority finds that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following condition(s) of approval:

1. Applicant shall review entire site for ADA compliance and repair broken asphalt as needed to entire compliance. It is understood that the improvements along Homestead Avenue will be completed during the next phase of this project.
2. The ADA compliant entrance to this building will be the entrance by the parking lot, which serves as the main entrance generally. It is understood that subsequently mentioned conditions are to be completed during the next phase of this project. ADA compliant access to that entrance shall be provided by:
    a. Repairing the sidewalk on Homestead in front of the building as needed; and
    b. Providing a dedicated walkway from Homestead to the parking lot by either limiting vehicle access on the driveway to Homestead to emergency access only, or by providing a parallel walkway.
3. The applicant shall work with staff and METRO to resolve the best locations of bus stops along Forest Avenue to serve the site.
4. The applicant shall repair the fence along the property boundary as needed.
5. The City will look at the potential to complete the missing piece of sidewalk along Homestead Avenue just west of the site and asks for the applicant's support as necessary.

The approval is based on the submitted plans and the findings related to site plan review standards as contained in the Planning Report for application 2017-234 which is attached.

Standard Conditions of Approval

Please Note: The following standard conditions of approval and requirements apply to all approved site plans:

1. **Develop Site According to Plan** The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Modification of any approved site plan or alteration of a parcel which was the subject of site plan approval after May 20, 1974, shall require

the prior approval of a revised site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

2. **Separate Building Permits Are Required** This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

3. **Site Plan Expiration** The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

4. **Performance Guarantee and Inspection Fees** A performance guarantee covering the site improvements, inspection fee payment of 2.0% of the guarantee amount and seven (7) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans. If you need to make any modifications to the approved plans, you must submit a revised site plan application for staff review and approval.

5. **Defect Guarantee** A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

6. **Preconstruction Meeting** Prior to the release of a building permit or site construction, a pre-construction meeting shall be held at the project site. This meeting will be held with the contractor, Development Review Coordinator, Public Works representative and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan. The site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

7. **Construction Management Plans** The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

8. **Department of Public Works Permits** If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk , driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permit (s) is required for your site. Please contact the Department of Public Works Permit Clerk at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

9. **As-Built Final Plans** Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (*,dwg), release AutoCAD 2005 or greater.

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at 874-8632. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Matthew Grooms at (207) 874-8725

Sincerely,

Stuart G. O'Brien
City Planning Director

Attachments:
1. Development Review Comments
2. Portland City Code: Chapter 32
3. Sample Stormwater Maintenance Agreement
4. Performance Guarantee Packet

Electronic Distribution:

cc: Jeff Levine, AICP, Director of Planning and Urban Development
Stuart G. O'Brien, City Planning Director, Planning and Urban Development
Barbara Barhydt, Development Review Services Manager, Planning and Urban Development
Matthew Grooms, Planner, Planning and Urban Development
Philip DiPierro, DRC, Planning and Urban Development
Mike Russell, Director of Permitting and Inspections
Ann Machado, Zoning Administrator, Permitting and Inspections
Jonathan Rioux, Deputy Director, Permitting and Inspections
Jeanie Bourke, Plan Reviewer/CEO, Permitting and Inspections
Chris Branch, Director of Public Works
Keith Gray, Senior Engineer, Public Works
Doug Roncarati, Stormwater Coordinator, Public Works
Jane Ward, Engineering, Public Works
Rhonda Zazzara, Construction Engineering Coordinator, Public Works

Jeff Tarling, City Arborist, Public Works
Jeremiah Bartlett, Transportation Systems Engineer, Public Works
William Scott, Chief Surveyor, Public Works
Mike Thompson, Fire
Danielle West-Chuhta, Corporation Counsel
Jennifer Thompson, Corporation Counsel
Victoria Volent, Housing Program Manager, Housing and Community Development
Thomas Errico, P.E., TY Lin Associates
Lauren Swett, P.E., Woodard and Curran
Christopher Huff, Assessor

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Fwd: reed school

1 message

Jean Fraser <jf@portlandmaine.gov> Thu, Sep 20, 2018 at 4:43 PM
To: "Fraser, Jean" <jf@portlandmaine.gov>

DPW COMMENTS:

---------- Forwarded message ----------
From: **Jennifer Ladd** <jwl@portlandmaine.gov>
Date: Thu, Sep 20, 2018 at 1:30 PM
Subject: Re: reed school
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Matthew Grooms <mgrooms@portlandmaine.gov>

Jean,

If the applicant is willing to help the City complete and improve the sidewalk connection between their property and Forest Ave, we'd welcome the contribution. If not, this scope of work would technically be a project we would look to fund thru our Sidewalk Rehab Program, bundle with similar work and put out to bid. Our next bituminous contract will likely be next spring, at the earliest. There may be the option to have our districting crews help with this work, but that would be subject to their schedule and availability.
I hope that is helpful. Please let me know if there are any other questions or if the applicant would like to help with this.
Thanks,
Jen

On Wed, Sep 19, 2018 at 11:39 AM Jean Fraser <jf@portlandmaine.gov> wrote:

> Hi
>
> Thank you all for addressing the sidewalk question.
>
> Please note that the condition of site plan approval for the first phase is this (see attached approval letter):
>
> 1. ***The City will look at the potential to complete the missing piece of sidewalk along Homestead Avenue just west of the site and asks for the applicant's support as necessary.***

> --------- Forwarded message ----------
>
> From: **Jennifer Ladd** <jwl@portlandmaine.gov>
> Date: Tue, Sep 18, 2018 at 2:06 PM
> Subject: Re: reed school
> To: Keith Gray <kgray@portlandmaine.gov>
>
> Based on what I saw this morning, the sidewalk appears to be in good condition and I don't recommend reconstruction or repair. By comparison, I would not jump to reconstruct this if it were part of another City project. My only observations were that the driveway apron does not meet our current standard and I wasn't able to measure the cross slope of the sidewalk. Tom Greer met me on site and indicated that the applicant will be removing weeds and other debris from the sidewalk and repairing the retaining walls at the back of walk.

> The existing concrete sidewalk is continuous and in good condition along the property's Homestead Ave. frontage. However, work is needed if an accessible (or even traversable) route is desired between this property and the crosswalk on Forest Ave at Homestead. Next to the SW corner of the property, there is a 12-ft wide bituminous driveway, then a gap of approximately 45lf with no sidewalk, then ~145lf of existing bituminous sidewalk in poor condition. Homestead looks to fall between two METRO stops on this part of Forest Ave.
>
> --

Jennifer Ladd

Senior Transportation Engineer
Engineering Division
Department of Public Works
55 Portland Street
Portland, Maine 04101

jwl@portlandmaine.gov
(207) 874-8894 phone

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Reed School project, Phase 2

1 message

Deb Andrews <dga@portlandmaine.gov> Thu, Sep 20, 2018 at 12:35 PM
To: Jean Fraser <jf@portlandmaine.gov>

Jean,

I have reviewed the Phase 2 plans developed by Archetype for Developers Collaborative regarding the conversion of the former Reed School into housing. Phase 2 of the project involves the rehabilitation of the original historic school building. I am generally comfortable with the proposed rehabilitation, but note the following outstanding issues:

Although the submitted plans indicate that the original windows--a key character-defining feature of the building--will be repaired/refurbished, based on recent discussion with the project architect it is my understanding that the windows will likely be replaced due to their condition. As the character and quality of the replacement windows will be important to the successful rehabilitation of the historic building, I request that the applicant provide final window specifications to HP staff for review and approval.

Additionally, new wall-mounted light fixtures are proposed, but not specifications have been provided. Specifications for the proposed light fixtures to be submitted to HP staff for final review and approval.

Deb Andrews
Historic Preservation Program Manager
City of Portland
389 Congress Street
Portland, Maine 04101
(207) 874-8726

WALSH
ENGINEERING ASSOCIATES, INC.

File: 478

June 20, 2018

Ms. Barbara Barhydt, Planning
City of Portland
389 Congress Street 4th Floor
Portland, ME 04101

RE: Reed School Apartments, Level III Subdivision Application

Dear Barbara,

On behalf of DC Reed, LLC we are pleased to submit the attached Subdivision Plan for the Reed School Apartments. This project is the second phase of the redevelopment of the Reed School on Homestead Avenue. The first phase, The Children's Odyssey, is currently under construction. Much of the technical aspects of the site were addressed in Phase One.

This phase of the project will develop the original school into 8, one bedroom apartments. The front walks and the access driveway from Homestead Avenue will be redone. This is all of the site work required to make this conversion from classrooms to apartments.

The existing sewer, water and electrical services will be used to service this phase of the project. The expanded parking area off Libby Avenue, done under phase one, anticipated the 8 units. No additional parking is required. As there is limited site work, no construction management plan has been done. All interior construction will be staged in the rear parking lot.

It is planned to begin the construction as soon as we have the city approvals.

Please review our application and let me know if you need additional details. We plan to hold a public informational meeting as soon as the application is accepted as complete.

Thanks for your help.

Respectfully,

Thomas S. Greer, PE
Walsh Engineering Associates, Inc.

cc: Mike Lyne, File

Portland, Maine | Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Submit each Tab as one PDF file and bookmark the items as noted below

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

Checklist	Items to be Provided
Yes: x; NA: ; Plan:	PROJECT DESCRIPTION • Cover Letter with detailed project description
Yes: x; NA: ; Plan:	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes: x; NA: ; Plan:	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements
Yes: ; NA: x; Plan:	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable
Yes: x; NA: ; Plan: x	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes: x; NA: ; Plan:	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements
Yes: ; NA: x; Plan:	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table
Yes: x; NA: ; Plan:	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes: x; NA: ; Plan:	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.

Submit each Tab as one PDF file and bookmark the items as noted below

Tab 2 - TRANSPORTATION

Check list	Assess/Provide/Document:
Yes NA Plan [ ] [x] [ ]	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan [x] [ ] [ ]	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable
Yes NA Plan [ ] [x] [ ]	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable
Yes NA Plan [x] [ ] [ ]	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan [x] [ ] [ ]	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan [x] [ ] [ ]	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan [x] [ ] [ ]	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan [x] [ ] [ ]	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan [ ] [x] [ ]	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies

Tab 3 - ENVIRONMENTAL AND LANDSCAPE FEATURES

Check list			Assess/Provide/Document:
Yes	NA	Plan	**Preservation of Significant Natural Features (14-526 (b) 1), if applicable**
	x		• Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes	NA	Plan	**Landscaping and Landscape Preservation (14-526 (b) 2 a)**
	x		• Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes	NA	Plan	**Site Landscaping (14-526 (b) 2 b)**
	x		• Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes	NA	Plan	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable**
	x		• Landscaped islands within parking areas (Technical Manual, Section 4)
Yes	NA	Plan	**Street Trees (14-526 (b) 2 b iii)**
x			• Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

Tab 4 - ENVIRONMENTAL AND STORMWATER

Check list			Assess/Provide/Document:
Yes	NA	Plan	**Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)**
x			• Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY	
Check list	Assess/Provide/Document:
Yes NA Plan [ ] [x] [ ]	**Consistency with City Master Plans (14-526 (c) 1)** • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA Plan [x] [ ] [ ]	**Public Safety and Fire Prevention (14-526 (c))** • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes NA Plan [x] [ ] [ ]	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)** • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

Tab 6 - SITE DESIGN	
Check list	Assess/Provide/Document:
Yes NA Plan [ ] [x] [ ]	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
Yes NA Plan [ ] [x] [ ]	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA Plan [ ] [x] [ ]	**Snow and Ice Loading (14-526 (d) 3)** • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA Plan [ ] [x] [ ]	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appendix 1)

Yes	NA	Plan	
x			**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
Yes	NA	Plan	
	x		**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes	NA	Plan	
	x		**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes	NA	Plan	
	x		**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
Yes	NA	Plan	
x			**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples

Tab 7 - Construction Management Plan

Check list			
Yes	NA	Plan	**Construction Management Plan**
	x		• Construction Management Document and Plan

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan

☒ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☒ **Existing Conditions**

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☒ **Proposed Site Plan**

- Ground floor area, and grade elevations for all buildings

☒ **Access, Circulation, and Parking**

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

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☒ **Site Considerations**

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☐ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☐	**GRADING and DRAINAGE PLAN** including:
	• Existing grades and drainage • Proposed grades • Proposed stormwater management meeting Technical Manual (Section 5) standards • Location and proposed alteration of a water course • Preservation or alteration of wetlands
☐	**EROSION CONTROL**
	• Must be in compliance with Technical Manual, Section 5
☐	**LANDSCAPE PLAN** including:
	• Existing vegetation to be preserved and preservation measures • Proposed landscaping and buffers • Planting schedule
☒	**RECORDING PLAT**, if applicable
	• IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)
☒	**ARCHITECTURAL PLANS & RENDERINGS** including:
	• Exterior building elevations, color renderings, illustrations of all sides • Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening • Provide context drawings, if applicable (Design Manual, page 1) • Floor plans

MAINE REAL ESTATE TAX PAID

QUITCLAIM DEED WITH COVENANT

CHILDREN'S ODYSSEY, a Maine nonprofit corporation having a mailing address of P.O. Box 6038, Falmouth, Maine 04105 ("Grantor"), FOR CONSIDERATION PAID, grants to **REED SCHOOL LLC**, a Maine limited liability company with a mailing address of P.O. Box 6038, Falmouth, Maine 04105 ("Grantee"), WITH QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located on Libby Street and Homestead Avenue in the City of Portland, County of Cumberland and State of Maine, more particularly described on Exhibit A attached hereto and made part hereof (the "Property").

IN WITNESS WHEREOF, Grantor has signed and sealed this instrument on this 8th day of May, 2018.

CHILDREN'S ODYSSEY

By: _____
Susan Hougaz-McCormick
Its: ~~President~~

STATE OF MAINE
COUNTY OF CUMBERLAND

May 8, 2018

Personally appeared the above-named Susan Hougaz-McCormick, President of Children's Odyssey, and acknowledged the foregoing to be her free act and deed in her said capacity, and the free act and deed of said Children's Odyssey.

Before me,

_____
~~Attorney-at-Law/Notary Public~~
~~Commission Expires:~~ John S. Kaminski
~~Print Name:~~

Exhibit A

(2.51 acre Parcel and Public Access Easement)

A certain lot or parcel of land with the buildings thereon situated between Homestead Avenue and Libby Street in the city of Portland, Cumberland County, Maine. Said parcel being comprised of two parcels acquired by the city of Portland as described in the following deeds recorded in Cumberland County Registry of Deeds book 1202, page 62 and book 1372, page 351. Said combined parcel having been recently surveyed and being more particularly bounded and described as follows:

Beginning at a 6" by 6" granite monument found with brass plug on the northwesterly sideline of said Homestead Avenue at the easterly corner of land now or formerly of Robert Elder, Jr. as described in Cumberland County Registry of Deeds book 23138, page 123;

Thence, North 44 degrees 19 minutes 05 seconds West, a distance of 200.04 feet by land of said Elder and land now or formerly of Andrew Bowman as described in Cumberland County Registry of Deeds book 21413, page 242 to a 6" by 6" granite monument found with brass plug;

Thence, North 48 degrees 07 minutes, 39 seconds West, a distance of 50.09 feet by land of said Bowman and land now or formerly of Albert and Deborah Asali as described in Cumberland County Registry of Deeds book 22727, page 19 to a 6" by 6" granite monument found with brass plug;

Thence, North 44 degrees 19 minutes 16 seconds West, a distance of 200.04 feet by land of said Asali and land now or formerly of Angel Wiggin as described in Cumberland County Registry of Deeds book 19772, page 181 to a 7" by 7" granite monument found with brass plug at the southeasterly sideline of Libby Street;

Thence, North 45 degrees 38 minutes 32 seconds East, a distance of 249.85 feet along the southeasterly sideline of said Libby Street to a 6" by 6" granite monument found with brass plug at land now or formerly of Ryan and Rachael Salamon as described in Cumberland County Registry of Deeds book 32167, page 291;

Thence, South 43 degrees 04 minutes 39 seconds East, a distance of 250.13 feet by land of said Salamon and by land now or formerly of Holly Benoit as described in Cumberland County Registry of Deeds book 32922, page 22, by land now or formerly of Lauren Greenslade as described in Cumberland County Registry of Deeds book 32298, page 272, and by land now or formerly of Jere Dewaters and Elise Scala as described in Cumberland County Registry of Deeds book 9079, page 275 to a 6" by 6" granite monument found with brass plug;

Thence, South 43 degrees 02 minutes 24 seconds East, a distance of 99.97 feet by land of said Dewater and Scala, by land now or formerly of Zoran and Biljana Mandic as described in Cumberland County Registry of Deeds book 21916, page 171, and by land now or formerly of Julia Georgieva as described in Cumberland County Registry of Deeds book 24567, page 256 to a 6" by 6" granite monument found with brass plug;

Thence, South 42 degrees 44 minutes 42 seconds East, a distance of 100.15 feet by land of said Georgieva and by land now or formerly of Stephen and Sylvia Gelinas as described in Cumberland County Registry of Deeds book 29557, page 259 to a point at the northwesterly sideline of said Homestead Avenue; Said point being situated South 45 degrees 39 minutes 32 seconds West, at a distance of 0.6 feet from a 7" by 7" concrete monument found;

Thence, South 45 degrees 39 minutes 32 seconds West, at a distance of 236.12 feet along the northwesterly sideline of said Homestead Avenue to the Point of Beginning.

Said parcel contains 2.51 acres, more or less and the bearings are referenced to Grid North of the Maine Coordinate System 1983 West Zone.

The courses and distances as herein used were derived from a Plan of Land made for Pinkham and Greer Civil Engineers dated August 2017 prepared by Maine Survey Consultants, Inc.

The parcel herein described is conveyed together with and subject to any and all easements or appurtenances of record, insofar as the same are in force and applicable.

Being the same premises conveyed to the Grantor herein by Quitclaim Deed Without Covenant of the City of Portland dated December 21, 2017 and recorded in the Cumberland County Registry of Deeds in Book 34564, Page 145 (the "City Deed"). The premises conveyed by this Quitclaim Deed with Covenant are subject to the covenants, restrictions and option to repurchase described in the City Deed and the public access easement reserved in the City Deed.

Received
Recorded Register of Deeds
May 09,2018 11:16:55A
Cumberland County
Nancy A. Lane

LIMITED LIABILITY COMPANY AGREEMENT

OF

DC REED LLC

This Limited Liability Company Agreement (as from time to time amended, this "Agreement") of DC REED LLC, a Maine limited liability company (the "Company"), is effective as of May 8, 2018 (the "Effective Date") and is entered into by and among the sole Member and the Manager. Capitalized terms used herein shall have the respective meanings specified in Article I.

ARTICLE I
DEFINITIONS

1.1. Defined Terms. As used in this Agreement the following terms have the respective meanings set forth below:

"Affiliate" means with respect to a Person, any other Person that, directly or indirectly through one or more intermediaries, controls, is controlled by, or is under common control with, the specified Person. As used in this definition, the term "control" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Person, whether through ownership of voting securities, by contract or otherwise. Ownership of more than fifty percent (50%) of the beneficial interests of an entity shall be conclusive evidence that "control" exists. For purposes of this definition, "Affiliate" shall include, with respect to any natural Person, the spouse, parents, siblings and children of such Person.

"Agreement" has the meaning set forth in the preamble hereto.

"Bankruptcy" means the happening of any of the following: (a) the making of a general assignment for the benefit of creditors; (b) the filing of a voluntary petition in bankruptcy or the filing of a pleading in any court of record admitting in writing an inability to pay debts as they become due; (c) the entry of an order, judgment or decree by any court of competent jurisdiction adjudicating the Company or a Member to be bankrupt or insolvent; (d) the filing of a voluntary petition or answer seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief under any statute, law or regulation; (e) the filing of an answer or other pleading admitting the material allegations of, or consenting to, or defaulting in answering, an involuntary bankruptcy petition filed against the Company or a Member in any bankruptcy proceeding; (f) the filing of a voluntary application or other pleading or any action otherwise seeking, consenting to or acquiescing in the appointment of a liquidating trustee, receiver or other liquidator of all or any substantial part of the Company's or a Member's properties; (g) the commencement against the Company or a Member of any proceeding seeking reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief under any statute, law or regulation which has not been quashed or dismissed within one hundred eighty (180) days; or (h) the appointment without consent of the Company or such Member or acquiescence in the appointment of a liquidating trustee, receiver or other liquidator of all or any substantial part of the Company's or a Member's properties without such appointment being

vacated or stayed within ninety (90) days and, if stayed, without such appointment being vacated within ninety (90) days after the expiration of any such stay.

"Business Day" means any day on which banks located in Portland, Maine are not required or authorized by law to remain closed.

"Capital Account" has the meaning set forth in Section 5.4.

"Capital Contributions" means, with respect to any Member, the amount of money or other property contributed to the Company by such Member.

"Code" means the U.S. Internal Revenue Code of 1986, as amended.

"Company" has the meaning set forth in the preamble hereto.

"Dissolution Event" has the meaning set forth in Section 8.1.

"Effective Date" has the meaning set forth in the preamble of this Agreement.

"Fair Market Value" means, with respect to any Member's Percentage Interest, the value of such Percentage Interest as determined by mutual agreement of the Member and the party or parties purchasing the Interest. If no such amount is mutually agreed to within thirty (30) days of the applicable determination period, then the Fair Market Value of the relevant Percentage Interest shall be the price at which a willing seller would sell and a willing buyer would buy, the Percentage Interest, free and clear of all liens, security interests, or other encumbrances, in an arm's length transaction for cash, without time constraints, without being under any compulsion to buy or sell, as determined by an independent valuation conducted by a third party independent accounting firm or appraiser chosen by the parties.

"Fiscal Year" means the fiscal year of the Company, as determined by the Members.

"Liquidating Agent" means the Person appointed by a majority of the Members to oversee the winding-up and liquidation of the Company in accordance with Article VIII.

"LLC Act" means the Maine Limited Liability Company Act, 31 MRSA §1501, et seq., as the same may be amended from time to time, and any successor statute thereto.

"Manager(s)" has the meaning set forth in Section 3.1.

"Member" means any Person (a) who is referred to as such on Schedule A to this Agreement, or who has become a Substituted Member pursuant to the terms of this Agreement, and (b) who has not ceased to be a Member. "Members" means all such Persons.

"Percentage Interest" means, with respect to any Member as of any date, the percentage interest of such Member as set forth on Schedule A attached hereto representing the ownership interest of a Member, including any and all benefits to which such Member may be entitled as provided in this Agreement, together with all obligations of such Member to comply with the terms and provisions of this Agreement.

"Person" means any individual, entity, corporation, partnership, association, limited liability company, limited liability partnership, joint-stock company, trust, or unincorporated organization.

"Rules" has the meaning set forth in Section 9.2.

"Sole Member" means Reed School LLC, a Maine limited liability company.

"Term" has the meaning set forth in Section 2.4.

"Transfer" means any transfer, assignment, sale, conveyance, hypothecation, license, lease, partition, pledge, or grant of a security interest in a Member's Percentage Interest in the Company, and includes any "involuntary transfer" such as a sale of any part of the Percentage Interest therein in connection with any Bankruptcy or similar insolvency proceedings, the death of a Member or a divorce or other marital settlement involving any Member, or any other disposition or encumbrance of a Member's Percentage Interest. For purposes of this Agreement, any transfer, exchange or series of transfers (or exchanges), directly or indirectly, of the stock, partnership, member or other ownership interests of any Member that is a business organization or an entity (or any combination of such transfers or exchanges, whether direct or in connection with a merger, acquisition, sale, or similar reorganization or transaction, including issues of new stock or other ownership interests, or the exercise of options, warrants, debentures or other convertible instruments, or a redemption of other interests in the Member, and any similar transactions involving the stock or other ownership interests of such Member), the effect of which is that the Persons who owned at least fifty-one percent (51%) of the outstanding stock or other ownership interests in such Member at the time this Agreement is signed, no longer own at least fifty-one (51%) of such stock or other ownership interests, then a Transfer shall also be deemed to have occurred with regard to the Units owned by such Member.

"Treasury Regulations" means the Regulations of the Treasury Department of the United States issued pursuant to the Code, as such Regulations may be amended from time to time.

1.2. Interpretation. When a reference is made in this Agreement to an Article, Section or Schedule, such reference shall be to an Article or Section of, or a Schedule to, this Agreement unless otherwise indicated. Whenever the words "include," "includes" or "including" are used in this Agreement, they shall be deemed to be followed by the words "without limitation." The words "hereof," "herein" and "hereunder" and words of similar import when used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement. All terms defined in this Agreement shall have the defined meanings when used in any certificate or other document made or delivered pursuant hereto unless otherwise defined therein. The definitions contained in this Agreement are applicable to the singular as well as the plural forms of such terms and to the masculine as well as to the feminine and neuter genders of such term.

1.3. Discretion. Whenever in this Agreement a Person is permitted or required to make a decision (a) in its "sole discretion" or "discretion" or under a grant of similar authority or latitude, such Person shall be entitled to consider only such interests and factors as it desires, including its own interests, or (b) in its "good faith" or under another expressed standard, such

Person, shall act under such express standard and shall not be subject to any other or different standard imposed by any other agreement or by relevant provisions of law or in equity or otherwise.

ARTICLE II
ORGANIZATIONAL MATTERS

2.1. Formation. The Company was formed on March 16, 2018 in accordance with the provisions of the LLC Act.

2.2. Name and Offices. The name of the Company is DC Reed LLC. The name of the registered agent of the Company in the State of Maine and the registered office of the Company in the State of Maine is set forth in the Certificate of Formation. The Company shall initially have its principal place of business at 100 Commercial Street, Suite 414, Portland, Maine 04101. The Company may maintain such other registered agent, registered office, or principal place of business and designate any places of business as the Members may from time to time determine.

2.3. Character of Business; Purposes; Powers. The Company may engage in any and all lawful activities as the Managers deem necessary or advisable. The Company shall possess and may exercise all powers necessary or convenient to the conduct and promotion of its business, subject to any restrictions set forth herein.

2.4. Term. The term of the Company shall commence on the date of formation and shall continue until the Company is dissolved in accordance with Article VII (the "Term").

2.5. Tax Classification. The Sole Member intends that the Company at all times be a disregarded entity for federal income tax purposes; thus, no additional members shall be admitted to the Company.

ARTICLE III
MANAGEMENT AND CONTROL OF THE COMPANY; TRANSACTION APPROVAL

3.1. Management Structure. Except as otherwise expressly provided or restricted in this Agreement, and subject in all instances to the terms and provisions hereof, the Manager (the "Manager") shall have complete and exclusive control of the management and conduct of the business of the Company and the authority to do all things necessary or appropriate to carry out the purpose of the Company without any further act, vote or approval of any Member. There shall be one (1) initial Manager of the Company and it shall be Kevin R. Bunker ("Mr. Bunker"). In the event any Manager dies, suffers a Disability or resigns, a majority of the Members shall promptly elect a successor to such Manager. Except as set forth in the preceding sentence, there shall be no additional Managers. Managers need not be Members of the Company. Any contract, instrument or act of a Manager on behalf of the Company shall be conclusive evidence in favor of any third party dealing with the Company that such Manager has the authority, power, and right to execute and deliver such contract or instrument and to take such action on behalf of the Company.

3.2. Powers of the Managers. The Manager shall have the right and authority to take those actions that it deems necessary, useful, or appropriate for the oversight and management of the Company's business, as set forth in this Agreement or the LLC Act.

3.3. Duties of the Managers. The Manager shall devote to the affairs of the Company such time as may be reasonably necessary to carry out his obligations hereunder. The Manager shall perform his duties as a Manager in good faith, in a manner he reasonably believes to be in the best interests of the Company and its Members, and with such care as an ordinarily prudent person in a like position would use under similar circumstances. A Manager who so performs his duties shall not have any liability solely by reason of being or having been a Manager of the Company. A Manager shall not be liable to the Company or any Member for such Manager's good faith reliance on the provisions of this Agreement or the provisions set forth in the Limited Liability Company of Reed School LLC of even date herewith (the "Owner LLC Agreement"). The provisions of this Agreement, to the extent that they expressly restrict the duties and liabilities of a Manager otherwise existing at law or in equity, are agreed by the Members to replace, to the extent permitted by law, such other duties and liabilities of such Manager.

3.4. Other Activities of the Managers. Nothing in this Agreement shall be deemed to restrict in any way the rights of the Manager or of any Affiliate of a Manager, to conduct any other business or activity whatsoever, and the Manager shall not be accountable to the Company or to any Member with respect to that business or activity even if the business or activity competes with the Company's business. The organization of the Company shall be without prejudice to the Manager's rights (or the rights of its Affiliates) to maintain, expand, or diversify any other interests and activities and to receive and enjoy profits or compensation therefrom free from any interest therein by the Company or any Member in accordance with this Agreement. Each Member waives any right it might otherwise have to share or participate in any other interests or activities of the Manager.

3.5. Meetings of the Managers. Meetings of the Managers may be called by any Manager. Notice of each such meeting shall be given to each Manager by telephone, electronic mail, or similar method (in each case, notice shall be given at least forty-eight (48) hours before the time of the meeting) or sent by first-class mail (in which case notice shall be given at least five (5) days before the meeting). Any action required to be taken at a meeting of the Managers, or any action that may be taken at a meeting of the Managers, may be taken at a meeting held by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other. Notwithstanding anything to the contrary in this Section 3.5, the Managers may take without a meeting any action that may be taken by the Managers under this Agreement if such action is approved by the written consent of the Managers.

3.6. Transaction Approval. The Members hereby approve the following transactions and authorize the Manager to take whatever actions the Manager determines necessary or advisable related to these transactions: The transactions described in Article 14 of the Owner LLC Agreement.

ARTICLE IV
THE MEMBERS

4.1. Members and Interests. Each Member shall have the ownership rights reflected in the Percentage Interests as recorded in Schedule A.

4.2. Members Are Not Agents. Pursuant to Article III, the management of the Company is vested in the Managers. The Members shall have no power to participate in the management of the Company except as expressly authorized by this Agreement and except as expressly required by the LLC Act. No Member, acting solely in the capacity of a Member, is an agent of the Company nor does any Member, unless expressly and duly authorized in writing to do so by the Managers, have any power or authority to (a) bind or act on behalf of the Company in any way, (b) pledge its credit, (c) execute an instrument on its behalf, or (d) render it liable for any purpose. No Member shall owe any duty or obligation to the Company or the other Members solely by being a Member of the Company, except as expressly provided herein.

4.3. Member Liability. No Member shall be liable under a judgment, decree, or order of a court, or in any other manner, for the debts or any other obligations or liabilities of the Company. A Member shall be liable only to make its Capital Contributions and shall not be required to restore a deficit balance in its Capital Account or to lend any funds to the Company or, after its Capital Contributions have been made, to make any additional contributions, assessments, or payments to the Company except as required by the express terms of this Agreement, provided that a Member may be required to repay distributions made to it as provided in Section 1555 of the LLC Act or any successor provision.

4.4. Transactions Between a Member and the Company. Except as otherwise provided by applicable law, upon the consent of the Manager, which may be withheld in the Manager's sole discretion, any Member may, but shall not be obligated to, lend money to the Company, act as surety for the Company and transact other business with the Company and has the same rights and obligations when transacting business with the Company as a person or entity who is not a Member; provided, that the terms of any such transaction shall be comparable to those negotiated by unrelated parties on an arm's length basis (as determined by the Managers). A Member, any Affiliate thereof or an employee, stockholder, agent, director, manager, member, or officer of a Member or any Affiliate thereof, may also be a Manager, Officer, employee, or agent of the Company. The existence of these relationships and acting in such capacities will not result in the Member being deemed to be participating in the control of the business of the Company or otherwise affect the limited liability of the Member.

4.5. No Withdrawal. No Member may withdraw or disassociate from the Company prior to the dissolution and winding-up of the Company unless such Member (i) complies with the provisions regarding Transfer of Percentage Interest set forth in Article VII or (ii) receives the unanimous prior approval of the remaining Members. If a Member attempts to withdraw or disassociate in violation of this Agreement, such Member will forfeit its Percentage Interest.

ARTICLE V
CAPITAL CONTRIBUTIONS AND CAPITAL ACCOUNTS

5.1. Capital Contributions. Each Member has contributed the amount of cash or property set forth opposite such Member's name on the attached Schedule A and has received a corresponding credit to his, her, or its Capital Account.

5.2. Additional Contributions. No Member shall be required to make any additional Capital Contributions.

5.3. Status of Capital Contributions. Except as approved by the Managers: (a) no part of the contributions of any Member to the capital of the Company may be withdrawn by any Member; (b) no Member shall be entitled to receive interest on such Member's contributions to the capital of the Company; and (c) no Member contributing cash to the Company shall have the right to demand or receive property other than cash in return for such Member's contribution to the Company.

5.4. Capital Accounts. There shall be established on the books and records of the Company a Capital Account for each Member. The initial balance of each Member's Capital Account shall be equal to the amount of such Member's initial Capital Contribution. The manner in which Capital Accounts are to be maintained pursuant to this Article V is intended to comply with the requirements of Section 704(b) of the Code and the Treasury Regulations promulgated thereunder. If, in the opinion of the Company's accountants, the manner in which Capital Accounts are to be maintained pursuant to this Article V should be modified in order to comply with Section 704(b) of the Code and the Treasury Regulations thereunder, then notwithstanding anything to the contrary contained in the preceding provisions of this Article V, the method in which Capital Accounts are maintained shall be so modified; provided, however, that any change in the manner of maintaining capital accounts shall not materially alter the economic agreement between or among the Members. Upon liquidation of the Company (or any Member's percentage interest), liquidating distributions will be made in accordance with the positive Capital Account balances of the Members, as determined after taking into account all Capital Account adjustments for the Company's taxable year during which the liquidation occurs. The Company may offset damages for breach of this Agreement by a Member whose interest is liquidated against the amount otherwise distributable to such Member. No Member shall have any liability to restore all or any portion of a deficit balance in such Member's Capital Account.

ARTICLE VI
DISTRIBUTIONS AND ALLOCATIONS

6.1. Allocations; Distributions. Each Member's distributive share of income, gain, loss, deduction or credit, as determined by the Company's accountants, shall be allocated on a pro rata, *pari passu* basis based on such Member's Percentage Interest in the Company. Distributable cash remaining after the payment of all expenses and debt service shall be distributed at such times and in such amounts as the Manager deems appropriate. Distributions of distributable cash shall be made to all Members on a pro rata, *pari passu* basis based on their respective Percentage Interest in the Company.

6.2. Compliance with LLC Act. Notwithstanding any other provision of this Agreement, distributions shall be made only in compliance with the LLC Act.

6.3. Final Distribution. The final distributions following dissolution of the Company shall be made in accordance with the provisions of Article VIII.

6.4. No Withdrawal of Capital. Except as otherwise expressly provided herein, no Member shall have the right to withdraw capital from the Company or to receive any distribution of or return on or of such Member's Capital Contributions.

ARTICLE VII
TRANSFER OF PERCENTAGE INTEREST

7.1. Transfer Restrictions. No Member may Transfer all or any part of its Percentage Interest unless such Transfer is made in accordance with the conditions set forth in this Article VII. There shall be no transfers of Percentage Interests in the Company until the later to occur of the Flip Date or the Residential Flip Date, as such terms are defined in the Owner LLC Agreement.

7.2 Effect of Transfer. If a Member Transfers or attempts to Transfer all or any part of its Percentage Interest in violation of this Agreement, such Transfer shall be null and void and of no force or effect whatsoever, and the parties engaging or attempting to engage in such Transfer shall be liable to indemnify and hold harmless the Company and the other Members from all cost, liability, and damage that any of such indemnified Members may incur (including, without limitation, incremental tax liabilities, attorneys' fees, and expenses) as a result of such Transfer or attempted Transfer and efforts to enforce the indemnity granted hereby.

ARTICLE VIII
DISSOLUTION AND TERMINATION OF THE COMPANY

8.1. Dissolution. There will be a dissolution of the Company, and its affairs shall be wound up, upon the occurrence of an event which causes dissolution under the LLC Act (each, a "Dissolution Event").

8.2. Bankruptcy, Dissolution or Withdrawal of a Member. The Bankruptcy, dissolution, death or withdrawal of a Member shall not in and of itself dissolve or terminate the Company.

8.3. Winding Up; Liquidation of Assets. Upon the dissolution of the Company, the Liquidating Agent shall proceed, subject to the provisions of this Article VIII, to make a final allocation of all items of income, gain, loss, and expense in accordance with Article VI hereof, and the Company's liabilities and obligations to its creditors shall be paid or adequately provided for prior to any distributions to the Members. After payment or provision for the payment of all liabilities and obligations of the Company, the remaining assets, if any, shall be distributed among the Members in accordance with Section 6.1.

8.4. Distributions in Cash or in Kind. Upon the dissolution of the Company, the Liquidating Agent shall use commercially reasonable efforts to liquidate all of the Company's assets in an orderly manner and apply the proceeds of such liquidation as set forth in Section 8.3; provided that if in the good faith judgment of the Liquidating Agent a Company asset should not be liquidated, the Liquidating Agent shall allocate, on the basis of the value of any Company assets not sold or otherwise disposed of, any unrealized gain or loss based on such value to the Members' Capital Accounts as though the assets in question had been sold on the date of distribution and, after giving effect to any such adjustment, distribute said assets in accordance with Section 6.1, subject to the priorities set forth in Section 8.3; and provided, further, that the Liquidating Agent will in good faith attempt to liquidate sufficient Company assets to satisfy in cash (or make reasonable provision for) the debts and liabilities referred to in Section 8.3.

8.5. Time for Liquidation. A reasonable time period shall be allowed for the orderly winding-up and liquidation of the assets of the Company and the discharge of liabilities to creditors so as to enable the Liquidating Agent to seek to minimize potential losses upon such liquidation. The provisions of this Agreement shall remain in full force and effect during the period of winding-up and until the filing of a certificate of cancellation of the Certificate of Formation with the Secretary of State of the State of Maine.

8.6. Termination. Upon completion of the foregoing, the Liquidating Agent shall execute, acknowledge, and cause to be filed a certificate of cancellation of the Certificate of Formation with the Secretary of State of the State of Maine.

ARTICLE IX
MISCELLANEOUS PROVISIONS

9.1. Notices. Each notice relating to this Agreement shall be in writing and shall be delivered (a) in person, (b) by courier, or (c) by facsimile transmission. All notices to the Company shall be addressed to the Members at the addresses listed in Schedule A. A copy of all notices to the Company shall also be delivered to:

Drummond Woodsum & MacMahon, P.A.
84 Marginal Way, Suite 600
Portland, Maine 04101
Attn: John S. Kaminski, Esq.

Fax: (207) 772-3627

Any Member may designate a new address by notice to that effect given to the other Members. Unless otherwise specifically provided in this Agreement, a notice given in accordance with the foregoing clauses (a) or (b) shall be deemed to have been effectively provided when delivered in person or by courier, and a notice given in accordance with the foregoing clause (c) shall be deemed to have been effectively provided when sent, with such transmission confirmed by the sender's transmitting device. A copy of any notice to Mr. Bunker shall simultaneously be delivered in the manner described above to Maurice A. Selinger, III, Esq., Curtis Thaxter LLC, One Canal Plaza, Suite 1000, Portland, Maine 04101.

9.2. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original and all of which taken together shall constitute a single agreement. This Agreement may be executed by facsimile or PDF via email.

9.3. Headings. The headings of the articles and sections of this Agreement are inserted for convenience only and shall not be deemed to constitute a part hereof.

9.4. Successors and Assigns. This Agreement shall inure to the benefit of the Members and shall be binding upon the parties, and, subject to Article VII, their respective successors and permitted assigns.

9.5. Severability. Every term and provision of this Agreement is intended to be severable. If any term or provision hereof is illegal or invalid for any reason whatsoever, such term or provision will be enforced to the maximum extent permitted by law and, in any event, such illegality or invalidity shall not affect the validity of the remainder of this Agreement.

9.6. Non-Waiver. No provision of this Agreement shall be deemed to have been waived except if the giving of such waiver is contained in a written notice given to the party claiming such waiver, and no such waiver shall be deemed to be a waiver of any other or further obligation or liability of the party or parties in whose favor the waiver was given.

9.7. Applicable Law; Jurisdiction. THIS AGREEMENT AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES HERETO SHALL BE INTERPRETED AND ENFORCED IN ACCORDANCE WITH AND GOVERNED BY THE LAWS OF THE STATE OF MAINE, WITHOUT REGARD TO THE CONFLICT OF LAWS PROVISIONS THEREOF. Each of the parties hereto hereby agrees to (a) submit to the personal jurisdiction of the United States District Court for the District of Maine (and all appropriate appellate courts), or, if jurisdiction in such court is lacking, any court of the State of Maine of competent jurisdiction sitting in Cumberland County (and all appropriate appellate courts), in connection with any action or dispute hereunder, and (b) irrevocably waive any objection it may now or hereafter have as to the venue of any proceeding brought in any such court or that any such court is an inconvenient forum.

9.8. Entire Agreement. This Agreement constitutes the entire agreement among the Members with respect to the subject matter hereof, and supersedes any prior agreement or understanding among them with respect to such subject matter.

9.9. Amendments. This Agreement may not be amended except by the unanimous written agreement of the Members.

[remainder of page left blank intentionally—signatures begin on next page]

COUNTERPART SIGNATURE PAGE TO

LIMITED LIABILITY COMPANY AGREEMENT

OF

DC REED LLC

IN WITNESS WHEREOF, the undersigned Sole Member has duly executed this Limited Liability Company Agreement of DC Reed LLC as of the Effective Date.

REED SCHOOL LLC, Sole Member

BY: Reed School Manager, LLC, its Managing Member

By: Children's Odyssey, its Manager

By: _____
Susan Hougaz-McCormick, President

COUNTERPART SIGNATURE PAGE TO

LIMITED LIABILITY COMPANY AGREEMENT

OF

DC REED LLC

IN WITNESS WHEREOF, the undersigned Manager has duly executed this Limited Liability Company Agreement of DC Reed LLC as of the Effective Date.

Kevin R. Bunker, Manager

SCHEDULE A

DC REED LLC Members, Capital Contributions, and Percentage Interests as of Effective Date		
Member Name and Address	Capital Contribution	Percentage Interest
Reed School LLC c/o Children's Odyssey PO Box 6038 Falmouth, ME 04105	$1.00	100%

OPERATING AGREEMENT
OF
REED SCHOOL LLC
(A Manager-Run Limited Liability Company)

THIS OPERATING AGREEMENT is made and entered into as of the 21st day of December, 2017, by and among Reed School LLC (the "Company") and the Persons executing this Operating Agreement as Members and is to take effect on the later of the date of this Operating Agreement or the date on which the initial Certificate of Formation is filed with the Secretary of State of the State of Maine in substantial compliance with the requirements of the Act (the "Effective Date").

WITNESSETH:

In consideration of the mutual covenants contained in this Operating Agreement and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

ARTICLE 1. DEFINITIONS

1.1. Definitions. Any capitalized term used in this Agreement without a definition shall have the meaning assigned to it in **Appendix A** hereto.

ARTICLE 2. FORMATION OF COMPANY

2.1. Formation. The Company shall be formed at the time of the filing of the initial Articles of Organization with the Secretary of State in substantial compliance with the Act, and, until such time, no Person shall be authorized to take any action pursuant to this Operating Agreement except for the purpose of effecting such formation. It is intended by the Members that the Company will be disregarded for United States tax purposes.

2.2. Name. The name of the Company is Reed School LLC.

2.3. Principal Place of Business. The Company's principal place of business shall be in Portland, Maine. The Company may relocate its principal place of business from time to time as the Managers deem advisable.

2.4. Registered Office and Registered Agent. The address of the Company's initial registered office shall be c/o John Kaminski, Drummond Woodsum, 84 Marginal Way, Suite 600, Portland, ME 04101. The name and address of the Company's initial registered agent shall be John Kaminski, Drummond Woodsum, 84 Marginal Way, Suite 600, Portland, ME 04101. The registered office and registered agent may be changed from time to time as the Managers deem advisable by filing notice of such changes with the Secretary of State in accordance with the Act.

ARTICLE 3. BUSINESS OF COMPANY

3.1. Company Purpose. The Company's purposes are limited to the acquisition, ownership, redevelopment, operation, leasing and sale of the former Reed School located at 19 Libby Street in Portland, Maine (the "Project"). The Company shall have the authority to do all things necessary or convenient to operate its business.

ARTICLE 4. IDENTITY OF MEMBERS, MEMBERSHIP INTERESTS, VOTING RIGHTS AND CLASSES

4.1. Members. The names and last known addresses of the Members are set forth on **Exhibit A** attached hereto. The Members shall be required to update **Exhibit A** from time to time as necessary to accurately reflect the information therein.

4.2. Membership Interests and Voting Rights. The initial Capital Contributions to the Company and Membership Interests of each Member are set forth on **Exhibit A**. Each Member shall be entitled to vote their Membership Interest on matters on which the Member's may vote under the Act, the Articles of Organization and this Agreement.

4.3. Classes of Members. There shall be one class of Members.

4.4. Investment Representations. Each Member, by execution of this Agreement or an amendment hereto reflecting such Member's admission to the Company, hereby represents and warrants to the Company as follows:

(a) Such member is acquiring an interest in the Company for his own account for investment only, and not with a view to, or for sale in connection with, any distribution thereof in violation of the Securities Act of 1933, as amended (the "Securities Act"), or any rule or regulation thereunder.

(b) Such member understands that (i) the interest in the Company such member is acquiring has not been registered under the Securities Act or applicable state securities laws and cannot be resold unless subsequently registered under the Securities Act and such laws or unless an exemption from such registration is available; (ii) such registration under the Securities Act and such laws is unlikely at any time in the future, and neither the Company nor the Members are obligated to file a registration statement under the Securities Act or such laws; and (iii) the assignment, sale, transfer, exchange or other disposition of the interests in the Company is restricted in accordance with the terms of this Agreement.

(c) Such member has had such opportunity as such member has deemed adequate to ask questions of and receive answers from representatives of the Company concerning the Company, and to obtain from representatives of the Company such information the Company possesses, or can ac-quire without unreasonable effort or expense, as is necessary to evaluate the merits and risks of an investment in the Company.

(d) Such member has, either alone or with its professional advisors, sufficient experience in business, financial and investment matters to be able to evaluate the merits and

risks involved in investing in the Company and to make an informed investment decision with respect to such investment.

(e) Such member can afford a complete loss of the value of his investment in the Company and is able to bear the economic risk of holding such investment for an indefinite period.

ARTICLE 5. RIGHTS AND DUTIES OF MANAGERS

5.1. Management. The Managers are charged with the responsibility and vested with the exclusive authority to manage the Company's business and its day-to-day operations, except in those cases in which the approval of the Members is expressly required by this Operating Agreement or by the Act. No Member who is not also a Manager shall have authority nor take any action to bind the Company. A Member who takes any unauthorized action purportedly on behalf of the Company shall indemnify and hold the Company harmless from any costs or damages incurred by the Company as a result thereof. In furtherance of their authority, the Managers are authorized and empowered to perform any and all acts customary or incident to the management of the Company's business and purposes.

5.2. Number, Tenure and Qualifications. The Company shall initially have one (1) Manager who shall be Children's Odyssey. The number of Managers of the Company may be increased or decreased from time to time in accordance with the Act by the unanimous vote of the Members, but in no instance shall there be less than one Manager. No Manager shall have a contractual right independent of this Operating Agreement to such position. Managers shall be elected by the unanimous vote of the Members. Managers need not be Members of the Company or natural persons. Each Manager shall hold office until his successor shall have been elected and qualified unless he resigns under Section 5.7.

5.3. Restrictions on Authority of the Managers.

No Manager shall have any authority to take any of the following actions without the unanimous consent of the Members:

(i) cause or permit the Company to engage in any activity that is not consistent with the purposes of the Company as set forth in Section 3.1 hereof;

(ii) knowingly do any act in contravention of this Operating Agreement;

(iii) knowingly do any act which would make it impossible to carry on the ordinary business and purposes of the Company, except as otherwise provided in this Operating Agreement;

(iv) knowingly perform any act that would cause the Company to conduct business in a state which has neither enacted legislation which permits limited liability companies to organize in such state nor permits the Company to register to do business in such state as a foreign limited liability company;

(v) cause the Company to voluntarily take any action that would cause a bankruptcy of the Company;

(vi) cause the Company to admit any additional Members other than pursuant to the provisions hereof; or

(vii) borrow more than $5,000 or sell or lease the Project, except for a lease of the Project of even or near date to Children's Odyssey, or refinance any Project debt.

5.4. Liability for Certain Acts. Each Manager shall exercise his powers and discharge his duties in good faith with a view to the interests of the Company and its Members with the degree of diligence, care and skill that ordinary prudent persons would exercise under similar circumstances in like positions. A Manager who so performs the duties as Manager shall not have any liability by reason of being or having been a Manager of the Company. The Manager does not, in any way, guarantee the return of the Member's capital contributions or a profit for any Member from the operations of the Company.

5.5. Bank Accounts. The Managers may from time to time open bank accounts in the name of the Company, and the Managers shall be the sole signatory thereon, unless the Managers determine otherwise.

5.6. Indemnity of the Managers, Employees and Other Agents. The Company shall indemnify the Managers and make advances for expenses to the maximum extent permitted under the Act. The Company shall indemnify its employees and other agents who are not Managers to the fullest extent permitted by law, provided that such indemnification in any given situation is first approved by the affirmative vote of a Majority in Interest of the Members. No amendment of this Section shall have any retroactive effect except as to enhance such right for the benefit of the indemnities.

5.7. Resignation. Any Manager of the Company may resign at any time by giving written notice to the Members of the Company. The resignation of any Manager shall take effect upon receipt of notice thereof or at such later time as shall be specified in such notice; and, unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective. The resignation of a Manager who is also a Member shall not affect the Manager's rights as a Member and shall not constitute a withdrawal of a Member.

5.8. Vacancies. Any vacancy occurring for any reason in the number of Managers of the Company shall be filled by the unanimous vote of the Members. A Manager elected to fill a vacancy shall be elected for the unexpired term of his predecessor in office and shall hold office until the expiration of such term and until his successor shall be elected and shall qualify or until his earlier death, resignation or removal.

5.9. Right to Rely on the Managers. Any Person dealing with the Company may rely (without duty of further inquiry) upon a certificate signed by any Manager as to:

(a) the identity of any Manager or any Member;

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(b) the existence or nonexistence of any fact or facts which constitute a condition precedent to acts by any Manager or which are in any other manner germane to the affairs of the Company;

(c) the Persons who are authorized to execute and deliver any instrument or document of the Company; or

(d) any act or failure to act by the Company or any other matter whatsoever involving the Company or any Member.

ARTICLE 6. RIGHTS AND OBLIGATIONS OF MEMBERS

6.1. Limitation of Liability. Each Member's liability shall be limited as set forth in this Operating Agreement, the Act and other applicable law.

6.2. Liability of Members. A Member will not be personally liable for any debts or losses of the Company beyond his or her respective Capital Contribution and any obligation of the Member under Section 8.1 to make additional contributions, except as otherwise provided herein or as otherwise required by law.

6.3. List of Members. Upon written request of any Member, the Manager shall provide a list showing the names, addresses and the Membership Interest held by all Members.

6.4. Company Books. The Managers shall maintain and preserve, during the term of the Company, and for five (5) years thereafter, all accounts, books, and other relevant Company documents. Upon reasonable request, each Member shall have the right, during ordinary business hours, to inspect and copy such Company documents at the requesting Member's expense.

6.5. Priority and Return of Capital. Except as may be expressly provided in Articles 9 and 11 hereof, no Member shall have priority over any other Member, either as to the return of its Capital Contribution or as to Profits, Losses or distributions. This Section shall not apply to loans (as distinguished from Capital Contributions) that a Member has made to the Company.

6.6. Indemnification by Manager. The Manager shall indemnify, defend and hold harmless Kevin R. Bunker from and against any and all loss, cost or damages arising from or relating to the Project, including without limitation, payments to lenders and creditors, liability for property taxes and any and all liability for hazardous wastes or substances known or discovered to be on or in the Project in amounts that violate or require reporting or remedial or responsive action under any federal state or local environmental law, regulation or ordinance. Nothing in this Section shall be construed as a waiver of any claims the Manager may have against Mr. Bunker solely in his capacity as a Member of the Company.

ARTICLE 7. RESTRICTIONS ON TRANSFERABILITY

7.1. Limitations on Transfers – General.

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(a) Each Member hereby agrees not to create, incur or permit to exist any pledge, lien, charge, hypothecation, encumbrance or any other security interest whatsoever with respect to its, his or her Membership Interest or any portion thereof, except with the unanimous consent of the Members.

7.2. Option Upon Involuntary Transfer. If, other than by reason of a Member's death or disability, a Member's Membership Interests are transferred by operation of law to any person other than the Company, or a Member or another Permitted Transferee (such as, but not limited to, a Member's trustee in bankruptcy or a purchaser at any creditor's or court sale), the transferring Member or transferee shall give the Company written notice of the transfer (the "Transfer Notice"). The Transfer Notice, in addition to stating the fact of the transfer of his or her Membership Interest, shall state (i) the percent of such Membership Interest transferred and the date of transfer, (ii) the name, business and residence address of the transferee, and (iii) whether or not the transfer was for valuable consideration and, if so, the amount of the consideration and the other terms of the sale. The Company, within sixty (60) days of its receipt of the Transfer Notice or its actual knowledge thereof, whichever is earlier, may exercise an option to purchase any portion or all of the Membership Interests so transferred for the Fair Market Value thereof (as hereinafter defined), and upon such other terms as provided hereinafter. In the event that the Company declines to exercise its option to purchase all or any portion of the Membership Interests of a transferring Member as herein provided, it shall deliver written notice of decision to the Remaining Members. The Remaining Members shall then have an option to purchase their prorata share of the Membership Interests identified in the Transfer Notice that have not been acquired by the Company in proportion to their respective proportionate percentage ownership of Membership Interests in the Company at the Fair Market Value thereof (as hereinafter defined) and upon such other terms as set forth herein. The option may be exercised by the Remaining Members by delivering a written notice to the Company and the Selling Member within ninety (90) days of receipt by the Company of the Transfer Notice. In the event that any Remaining Members decline to exercise said option, the other Remaining Members may purchase any Membership Interest of the transferring Member that remains unpurchased in proportion to their respective proportionate Membership Interests.

7.3. Purchase Option Upon Death or Disability.

(a) Option to Purchase. Upon the death or disability (as hereinafter defined) of a Member, the Company, within sixty (60) days of the appointment of a conservator, guardian or other representative of a disabled Member or the personal representative or other representative of the estate of a deceased Member (the "Representative") or the certification of disability (the "Option Date") may exercise an option to purchase all or any portion of such Selling Member's Membership Interest from the Selling Member or the Representative for the Fair Market Value thereof (as hereinafter defined), and upon such other terms as set forth herein. If the Company does not exercise its option to purchase the entire Membership Interest, the Remaining Members, within ninety (90) days of the Option Date, shall purchase, and the Selling Member or the Representative shall sell, all or any of the Membership Interest remaining after any exercise (or non-exercise) of the Company's option, for the Fair Market Value thereof (as hereinafter defined), and upon such other terms as set forth herein. Any such purchase by the Remaining Members shall be in proportion to their respective proportionate percentage ownership of Membership Interests.

(b) Disability. For purposes of this Agreement, a Member shall be considered disabled if: (i) a doctor selected by the Company licensed to practice medicine in the State of Maine certifies that the physical or mental disability is permanent and prevents the Member from performing the normal duties of that Member for the Company (if any) and/or is an immediate life threatening illness, or (ii) a conservator, guardian or other personal representative is appointed for such Member. A Member shall be considered disabled under this Agreement as of the date on which the Company receives such doctor's certificate, or as of the date of such appointment of a conservator, guardian or other personal representative, as the case may be.

7.4. Effect of Non-Exercise of Options. If the purchase options are forfeited, waived or are not exercised in compliance with the applicable Sections hereof, then: (a) in the case of a proposed transfer under Section 7.2, the Membership Interest may be transferred within 30 days after the expiration of the option periods (or receipt of waiver of purchase options) to the transferee named in the Sale Notice and upon the terms therein stated, and said Membership Interest shall thereafter, in the hands of the transferee remain subject to this Agreement; (b) in the case of a transfer of a Membership Interest under Section 7.3, the Membership Interest no longer subject to the option(s), after the expiration of the option periods or receipt of all written waiver notices, as the case may be, shall, in the hands of the transferee or holder, as applicable, remain subject to this Agreement; and (c) in the case of a transfer of a Membership Interest under Section 7.4, the Membership Interest no longer subject to the option(s), after the expiration of the option periods or receipt of all written waiver notices, as the case may be, shall, in the hands of the Representative, remain subject to this Agreement.

7.5. Transfer Void. If, in the case of a Section 7.2 transfer, the transfer is not upon the terms or is not to the transferee named in the notice required by Section 7.2, or is not within the aforesaid requisite period, then the transfer shall be void and of no effect; or if the transferor, after the transfer, reacquires all or any portion of the transferred Membership Interest, the Membership Interest transferred shall again be subject to this Agreement as if no transfer had been made.

7.6. Requirement that Transferee Execute Agreement. It shall remain a condition, which condition may not be forfeited, that the transferee of any Membership Interest execute this Agreement to memorialize that the Membership Interest remains subject to this Agreement, and the Company need not recognize any transfer of a Membership Interest until such transferee has executed this Agreement or a consent and joinder in form and content satisfactory to the Company.

7.7. Payment of the Purchase Price; Closing.

(a) Form of Payment. With respect to any transfer pursuant to an option exercised under this Article 7, there shall be first credited against the purchase price for any Membership Interest the amount of any indebtedness due and payable to the purchaser by the transferring Member. Unless otherwise agreed by the parties, payment on a sale pursuant to the exercise of an option described herein shall be as follows: at the option of the purchaser, Twenty Percent (20%) or such greater portion of the purchase price as the purchaser may elect shall be paid in cash or by certified, cashier's, or comparable, check at closing and the balance to be in the form of a promissory note, such promissory note to provide for equal annual payments over a

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period of up to five (5) years (as the purchaser may elect) from the date of delivery and shall bear interest at the rate of seven percent (7%) per annum. The obligations of the purchaser, if any, shall be secured by a pledge of the Membership Interests being sold with a Fair Market Value equal to the amount outstanding from time to time under the note.

(b) Unless otherwise agreed by the parties, the closing of the sale and purchase of Membership Interest shall take place at the office of Drummond Woodsum & MacMahon, 84 Marginal Way, Suite 600, Portland, Maine 04101.

(c) In the case of any purchase of Membership Interest hereunder, the closing shall take place within the time required herein or, if no time is specified, within forty-five (45) days after the date of exercise of the option.

(d) Upon the closing of the sale and purchase, the selling and purchasing parties shall execute and deliver to each other the various documents which shall be required to carry out their undertakings hereunder including the payment of the purchase price, and the assignment and delivery of membership interest certificates.

7.8. Fair Market Value.

(a) For purposes of this Article 7, the term "Fair Market Value" of any Membership Interest in the Company transferred hereunder shall be the fair market value of each Membership Interest of the Company (without minority discount or majority premiums, and valuing the Company as a going concern unless liquidation and dissolution is contemplated) as determined by agreement of all the parties or, if they are unable to so agree within thirty (30) days of the event giving rise to the purchase option granted to the Company or the Members hereunder, Fair Market Value shall be determined by the Selling Member on one hand and either the non-selling Members (as a group) or the Company on the other (depending on which is a party to the transaction for which a valuation is sought), each designating an appraiser of their choice. Not less than 15 days following the appointment of said appraisers, the appraisers shall agree upon and appoint a third appraiser (the "Neutral"). Each appraiser shall appraise the Membership Interest (without minority discount or majority premiums and valuing the Company as a going concern unless liquidation and dissolution are contemplated), and shall issue an opinion of value not less than 30 days following the appointment of the Neutral. The average of the three appraisals shall be the Fair Market Value of the Membership Interest.

(b) Suspension of Offering Period. The purchase option exercise and closing periods reference in this Article 7 shall in each instance be suspended while the Fair Market Value of a selling Member's Membership Interest is being determined in accordance with the terms hereof and the period for measuring the purchase option and closing period shall begin on the day following a determination of Fair Market Value in accordance with the terms hereof.

7.9. Put Right. Kevin R. Bunker ("Mr. Bunker") shall have the right by written notice to cause the Company to redeem his Membership Interest for a price equal to his initial capital contribution as set forth on Exhibit A, in the event that the Company has not closed on construction financing for the Project within 12 months from the date of this Agreement, such redemption to occur within 30 days of such notice.

ARTICLE 8. CONTRIBUTIONS TO THE COMPANY AND CAPITAL ACCOUNTS

8.1. Members' Capital Contributions. Each Member's initial Capital Contribution is set forth in **Exhibit A** attached hereto.

8.2. Additional Contributions. Except as set forth in Section 8.1, no Member shall be required to make any additional Capital Contributions.

8.3. Capital Accounts.

(a) A separate Capital Account will be maintained for each Member. The manner in which Capital Accounts are to be maintained pursuant to this Section 8.3 is intended to comply with the requirements of Section 704(b) of the Code and the Treasury Regulations promulgated thereunder. If in the opinion of the Company's accountants the manner in which Capital Accounts are to be maintained pursuant to the preceding provisions of this Section 8.3 should be modified in order to comply with Section 704(b) of the Code and the Treasury Regulations thereunder, then notwithstanding anything to the contrary contained in the preceding provisions of this Section 8.3. The method in which Capital Accounts are maintained shall be so modified; provided, however, that any change in the manner of maintaining Capital Accounts shall not materially alter the economic agreement between or among the Members.

(b) Upon liquidation of the Company (or any Member's Membership Interest), liquidating distributions will be made in accordance with the positive Capital Account balances of the Members as determined after taking into account all Capital Account adjustments for the Company's taxable year during which the liquidation occurs. Liquidation proceeds will be paid in accordance with Section 11.2.

8.4. Withdrawal or Reduction of Members' Contributions to Capital.

(a) A Member shall not receive out of the Company's property any part of his or her Capital Contribution until all liabilities of the Company, except liabilities to Members on account of their Capital Contributions, have been paid or there remains property of the Company sufficient to pay them.

(b) A Member, irrespective of the nature of its Capital Contribution, has only the right to demand and receive cash in return for its Capital Contribution.

ARTICLE 9. ALLOCATIONS AND DISTRIBUTIONS

9.1. Allocations of Profits and Losses from Operations. The Company's Profits and Losses will be allocated among the Members in proportion to their Membership Interests. Except as otherwise provided in this Operating Agreement, for federal income tax purposes every item of the Company's income, gain, loss, deduction, credit or tax preference shall be allocated to each Member according to his/her Membership Interest.

9.2. Net Cash Flow. The Managers may, from time to time, cause the Net Cash Flow of the Company, or any part thereof, of the Company to be distributed to the Members in accordance with their Membership Interests provided, however, that distributions to Members upon dissolution of the Company shall be made to Members in accordance with Article 11.

9.3. Limitation Upon Distributions. No distribution shall be declared and paid if, in the determination of the Managers, after giving effect to the distribution:

(a) the Company would not be able to pay its debts as they become due in the usual course of business; or

(b) all liabilities of the Company, other than liabilities to Members on account of their Membership Interests and liabilities for which the recourse of creditors is limited to specified property of the Company, would exceed the fair value of the Company's assets, except that the fair value of property that is subject to a liability for which the recourse of creditors is limited shall be included in the Company's assets only to the extent the fair value of that property exceeds that liability.

ARTICLE 10. ADDITIONAL MEMBERS

From the date of the formation of the Company, any Person may become a Member in this Company by the unanimous consent of the Members to the issuance by the Company of additional Membership Interests for such consideration as the Members by their unanimous vote shall determine, subject to the terms and conditions of this Operating Agreement. No new Members shall be entitled to any retroactive allocation of losses, income or expense deductions incurred by the Company. The Managers may, at their option, at the time a Member is admitted, close the Company books (as though the Company's tax year had ended) or make pro rata allocations of loss, income and expense deductions to a new Member for that portion of the Company's tax year in which a Member was admitted in accordance with the provisions of Section 706(d) of the Code and the Treasury Regulations promulgated thereunder.

ARTICLE 11. DISSOLUTION AND TERMINATION

11.1. Dissolution.

(a) The Company shall be dissolved upon the occurrence of any of the following events:

(i) the written agreement of all the Members;

(ii) the sale or other disposition of all or substantially all of the assets of the Company or the permanent cessation of the Company's business operations;

(iii) the death, retirement, resignation, expulsion, bankruptcy or dissolution of a Member; or

(iv) any consolidation or merger of the Company with or into any entity following which the Company is not the resulting or surviving entity.

(b) Notwithstanding the occurrence of an event specified in Section 11.1(a)(iii), the Company shall not be dissolved, its business and affairs shall not be discontinued, and the Company shall remain in existence as a limited liability company under the laws of the State of Maine, if all of remaining Members elect within 90 days after such occurrence to continue the Company and its business.

(c) Dissolution of the Company shall be effective on the day on which the event giving rise to the dissolution occurs, but the Company shall not terminate until the Company's Articles of Organization shall have been canceled, and the assets of the Company shall have been distributed, as provided herein. Notwithstanding the dissolution of the Company, the business of the Company and the affairs of its Members, as such, prior to the termination of the Company as aforesaid, shall continue to be governed by this Agreement. A liquidator appointed by the remaining Members (who may also be a Member) shall liquidate the assets of the Company, distribute the proceeds thereof and cause the cancellation of the Company's Articles of Organization.

11.2. Winding Up, Liquidation and Distribution of Assets.

(a) Upon dissolution, the Managers shall immediately proceed to wind up the affairs of the Company in accordance with the requirements of the Act and other applicable law. In furtherance of the winding up of the Company, the Managers shall :

(i) sell or otherwise liquidate all of the Company's assets as promptly as practicable (except to the extent the Managers may determine to distribute any assets to the Members in kind);

(ii) discharge or make reasonable provision for all liabilities of the Company, including liabilities to Members who are also creditors (other than liabilities to Members for distributions and the return of capital) and establish such Reserves as may be reasonably necessary to provide for contingent liabilities of the Company (for purposes of determining the Capital Accounts of the Members, the amounts of such Reserves shall be deemed to be an expense of the Company);

(iii) distribute the remaining assets of the Company in the follow order of priority:

(a) To each Member, with respect to the cumulative amount of all accrued but unpaid pre-dissolution distributions for which the Company is liable to such Member, the amount of such liability;

(b) To each Member, with respect to his unreturned Capital Contribution, an amount equal to the positive balance (if any) in his Capital Account (as determined after taking into account all

Capital Account adjustments for the Company's taxable year during which the liquidation occurs), or, if the assets available to be distributed hereunder are insufficient to cover the aggregate of the Members' positive balances, a proportionate amount based upon the relative positive balances of the Members; and

(c) To each Member, pro rata with respect to his or her Membership Interest, the remaining assets.

(b) If any assets of the Company are distributed in kind, the net fair market value of such assets as of the date of dissolution shall be determined by independent appraisal or by agreement of the Members. Such assets shall be deemed to have been sold to the Members pro rata in proportion to their Membership Interests as of the date of dissolution for their fair market value, and the Capital Accounts of the Members shall be adjusted to reflect such deemed sale.

11.3. Certificate of Cancellation. Upon completion of the winding up, liquidation and distribution of the assets, the Company shall be deemed terminated and the Managers shall forthwith file with the Secretary of State a certificate of cancellation. Thereafter, the Managers, as liquidating trustees, shall have authority to distribute any Company property discovered after termination, convey real estate and take such other action as may be necessary on behalf of and in the name of the Company.

11.4. Return of Capital Contribution--Nonrecourse. Except as provided by law or as expressly provided in this Agreement, upon dissolution, each Member shall look solely to the assets of the Company for the return of his Capital Contribution. If the Company property remaining after the payment or discharge of the debts and liabilities of the Company is not sufficient to return the Capital Contribution of a Member, such Member shall have no recourse against any other Member.

ARTICLE 12. MISCELLANEOUS PROVISIONS

12.1. Notices. Any notice, demand, or communication required or permitted to be given by any provision of this Operating Agreement shall be deemed to have been sufficiently given or served for all purposes if delivered personally to the Person or to an executive officer of the Person to whom the same is directed or, if sent by registered or certified mail, postage and charges prepaid, addressed to the Member's and/or Company's address, as appropriate, which is set forth in this Operating Agreement. Except as otherwise provided herein, any such notice shall be deemed to be given three business days after the date on which the same was deposited in a regularly maintained receptacle for the deposit of United States mail, addressed and sent as aforesaid.

12.2. Books of Account and Records. Proper and complete records and books of account shall be kept or shall be caused to be kept by the Managers in which shall be entered fully and accurately all transactions and other matters relating to the Company's business in such detail and completeness as is customary and usual for businesses of the type engaged in by the Company. The books and records shall be at all times maintained at the principal executive

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office of the Company and shall be open to the reasonable inspection and examination of the Members or their duly authorized representatives, during reasonable business hours.

12.3. Application of Maine Law. This Operating Agreement, and the application and interpretation hereof, shall be governed exclusively by its terms and by the laws of the State of Maine.

12.4. Waiver of Action for Partition. Each Member irrevocably waives during the term of the Company any right that it may have to maintain any action for partition with respect to the property of the Company.

12.5. Amendments. This Operating Agreement may not be amended except by the unanimous vote of the Members.

12.6. Execution of Additional Instruments. Each Member hereby agrees to execute such other and further statements of interest and holdings, designations, powers of attorney and other instruments necessary to comply with any laws, rules or regulations.

12.7. Construction. Whenever the singular number is used in this Operating Agreement and when required by the context, the same shall include the plural and vice versa, and the masculine gender shall include the feminine and neuter genders and vice versa.

12.8. Headings and Pronouns. The headings in this Operating Agreement are inserted for convenience only and are in no way intended to describe, interpret, define, or limit the scope, extent or intent of this Operating Agreement or any provision hereof. All pronouns and only variations thereof shall be deemed to refer to masculine, feminine, or neuter, singular or plural as the identity of the Person or Persons may require.

12.9. Waivers. The failure of any party to seek redress for violation of or to insist upon the strict performance of any covenant or condition of this Operating Agreement shall not prevent a subsequent act, which would have originally constituted a violation, from having the effect of an original violation.

12.10. Rights and Remedies Cumulative. The rights and remedies provided by this Operating Agreement are cumulative and the use of any one right or remedy by any party shall not preclude or waive the right to use any or all other remedies. Said rights and remedies are given in addition to any other rights the parties may have by law, statute, ordinance or otherwise.

12.11. Severability. If any provision of this Operating Agreement or the application thereof to any person or circumstance shall be invalid, illegal or unenforceable to any extent, the remainder of this Operating Agreement and the application thereof shall not be affected and shall be enforceable to the fullest extent permitted by law.

12.12. Heirs, Successors and Assigns. Each and all of the covenants, terms, provisions and agreements herein contained shall be binding upon and inure to the benefit of the parties hereto and, to the extent permitted by this Operating Agreement, their respective heirs, legal representatives, successors and assigns.

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12.13. Creditors. None of the provisions of this Operating Agreement shall be for the benefit of or enforceable by any creditors of the Company except as required by the Act.

12.14. Counterparts. This Operating Agreement may be executed in counterparts, each of which shall be deemed an original but all of which shall constitute one and the same instrument.

12.15. Word Meanings. Words such as "herein," "hereinafter," "hereof" and "hereunder" refer to this Agreement as a whole, and not merely to a subdivision in which such words appear unless the context otherwise requires. The singular shall include the plural, and the masculine gender shall include the feminine and neuter, and vice versa, unless the context otherwise requires.

12.16. No Employment Rights. NOTHING CONTAINED IN THIS AGREEMENT SHALL CONSTITUTE OR BE DEEMED TO CONSTITUTE, AND THE MANAGERS AND MEMBERS ACKNOWLEDGE AND AGREE THIS AGREEMENT DOES NOT CONSTITUTE AN OBLIGATION OF THE COMPANY OR ANY AFFILIATE TO EMPLOY ANY MEMBERS OR, EXCEPT AS EXPRESSLY OTHERWISE PROVIDED HEREIN, TO ELECT ANY SUCH MEMBERS AS A MANAGER OR AN OFFICER OF THE COMPANY.

IN WITNESS WHEREOF the Members have signed and sealed this Operating Agreement as of the date first written above.

WITNESS

_____

_____

MEMBERS

CHILDREN'S ODYSSEY

By: Susan Hougaz-McCormick
President

Kevin R. Bunker

EXHIBIT A

Member's Names	Membership Interest	Capital Contribution
Children's Odyssey 110 Davis Farm Road Portland, Maine 04103	1%	$1
Kevin R. Bunker c/o Developers Collaborative 100 Commercial Street, Suite 414 Portland, ME 04101	99%	$99

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APPENDIX A

(DEFINITIONS)

(a) "Act" means the Maine Limited Liability Company Act, 31 M.R.S.A. § 1501-1693 and all amendments thereto.

(b) "Articles of Organization" means the Articles of Organization of the Company as filed with the Secretary of State as the same may be amended from time to time by the Members.

(c) "Capital Account" means, as of any given date, the Capital Contribution to the Company by a Member as adjusted up to the date in question pursuant to Article 8.

(d) "Capital Contributions" means the total amount of cash, tangible or intangible property, or services which a Member or his predecessor in interest has contributed or has agreed to contribute to the Company net of liabilities secured thereby that Company is considered to assume or to be subject to under Section 752 of the Code.

(e) "Code" means **the** Internal Revenue Code of 1986, as amended.

(f) "Company" means the limited liability company formed pursuant to this Operating Agreement.

(g) "Manager" means a Person initially designated as such by this Operating Agreement or elected to such position in accordance with Section 5.2.

(h) "Member" means each of the parties who executes a counterpart of this Operating Agreement as a Member and each of the parties who may hereafter become Members. To the extent a Manager has purchased Membership Interests in the Company, he will have all the rights of a Member with respect to such Membership Interests, and the term "Member" as used herein shall include a Manager to the extent he has purchased such Membership Interests in the Company.

(i) "Membership Interest" or "Interest" means a Member's ownership interest in the Company as set forth on Exhibit A as such may be adjusted from time to time pursuant to the terms of the Operating Agreement and such other rights and privileges that the Member may enjoy by being a Member.

(j) "Net Cash Flow" means, with respect to any fiscal period, all cash revenues of the Company during that period (including interest or other earnings on the funds of the Company, and including proceeds from any refinancing or disposition of Company property), less the sum of the following to the extent made from those cash revenues:

(i) All principal and interest payments on any indebtedness of the Company;

(ii) All cash expenses incurred incident to the operations of the Company's business;

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(iii) Funds set aside as reserves for contingencies, working capital, debt service, taxes, insurance, or other costs or expenses incident to the conduct of the Company's business which the Managers deem reasonably necessary or appropriate.

(k) "Operating Agreement" means this Operating Agreement as originally executed and as amended from time to time.

(l) "Permitted Transferee" means the equity owners, ancestors, spouse, siblings or issue of a Member or any trustee or trustees of a trust for their benefit or another Member.

(m) "Person" shall mean any individual or Entity, and the heirs, executors, personal representatives, administrators, legal representatives, successors, and assigns of such "Person" where the context so permits.

(n) "Profits" and "Losses" mean, respectively, for each fiscal year or other period, the net income or losses of the Company as determined for federal income tax purposes, and all items required to be separately stated under Section 702 of the Code and the treasury Regulations thereunder.

(o) "Reserves" shall mean with respect to any fiscal period, funds set aside or amounts allocated during such period to reserves which shall be maintained in amounts deemed sufficient by the Manager for working capital and to pay taxes, insurance, debt service or other costs or expenses incident to the ownership or operation of the Company's business.

(p) "Secretary of State" means the Secretary of State of the State of Maine.

(q) "Treasury Regulations" shall include proposed, temporary and final regulations promulgated under the Code in effect as of the date of filing the Articles of Organization and the corresponding sections of any regulations subsequently issued that amend or supersede such regulations.

QUITCLAIM DEED WITH COVENANT

CHILDREN'S ODYSSEY, a Maine nonprofit corporation having a mailing address of P.O. Box 6038, Falmouth, Maine 04105 ("Grantor"), FOR CONSIDERATION PAID, grants to **REED SCHOOL LLC**, a Maine limited liability company with a mailing address of P.O. Box 6038, Falmouth, Maine 04105 ("Grantee"), WITH QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located on Libby Street and Homestead Avenue in the City of Portland, County of Cumberland and State of Maine, more particularly described on Exhibit A attached hereto and made part hereof (the "Property").

MAINE REAL ESTATE TAX PAID

IN WITNESS WHEREOF, Grantor has signed and sealed this instrument on this 8th day of May, 2018.

CHILDREN'S ODYSSEY

By: _____
Susan Hougaz-McCormick
Its: ~~President~~

STATE OF MAINE
COUNTY OF CUMBERLAND

May 8, 2018

Personally appeared the above-named Susan Hougaz-McCormick, President of Children's Odyssey, and acknowledged the foregoing to be her free act and deed in her said capacity, and the free act and deed of said Children's Odyssey.

Before me,

_____
~~Attorney-at-Law/Notary Public~~
~~Commission Expires:~~ John S. Kaminski
~~Print Name:~~

Exhibit A

(2.51 acre Parcel and Public Access Easement)

A certain lot or parcel of land with the buildings thereon situated between Homestead Avenue and Libby Street in the city of Portland, Cumberland County, Maine. Said parcel being comprised of two parcels acquired by the city of Portland as described in the following deeds recorded in Cumberland County Registry of Deeds book 1202, page 62 and book 1372, page 351. Said combined parcel having been recently surveyed and being more particularly bounded and described as follows:

Beginning at a 6" by 6" granite monument found with brass plug on the northwesterly sideline of said Homestead Avenue at the easterly corner of land now or formerly of Robert Elder, Jr. as described in Cumberland County Registry of Deeds book 23138, page 123;

Thence, North 44 degrees 19 minutes 05 seconds West, a distance of 200.04 feet by land of said Elder and land now or formerly of Andrew Bowman as described in Cumberland County Registry of Deeds book 21413, page 242 to a 6" by 6" granite monument found with brass plug;

Thence, North 48 degrees 07 minutes, 39 seconds West, a distance of 50.09 feet by land of said Bowman and land now or formerly of Albert and Deborah Asali as described in Cumberland County Registry of Deeds book 22727, page 19 to a 6" by 6" granite monument found with brass plug;

Thence, North 44 degrees 19 minutes 16 seconds West, a distance of 200.04 feet by land of said Asali and land now or formerly of Angel Wiggin as described in Cumberland County Registry of Deeds book 19772, page 181 to a 7" by 7" granite monument found with brass plug at the southeasterly sideline of Libby Street;

Thence, North 45 degrees 38 minutes 32 seconds East, a distance of 249.85 feet along the southeasterly sideline of said Libby Street to a 6" by 6" granite monument found with brass plug at land now or formerly of Ryan and Rachael Salamon as described in Cumberland County Registry of Deeds book 32167, page 291;

Thence, South 43 degrees 04 minutes 39 seconds East, a distance of 250.13 feet by land of said Salamon and by land now or formerly of Holly Benoit as described in Cumberland County Registry of Deeds book 32922, page 22, by land now or formerly of Lauren Greenslade as described in Cumberland County Registry of Deeds book 32298, page 272, and by land now or formerly of Jere Dewaters and Elise Scala as described in Cumberland County Registry of Deeds book 9079, page 275 to a 6" by 6" granite monument found with brass plug;

Thence, South 43 degrees 02 minutes 24 seconds East, a distance of 99.97 feet by land of said Dewater and Scala, by land now or formerly of Zoran and Biljana Mandic as described in Cumberland County Registry of Deeds book 21916, page 171, and by land now or formerly of Julia Georgieva as described in Cumberland County Registry of Deeds book 24567, page 256 to a 6" by 6" granite monument found with brass plug;

Thence, South 42 degrees 44 minutes 42 seconds East, a distance of 100.15 feet by land of said Georgieva and by land now or formerly of Stephen and Sylvia Gelinas as described in Cumberland County Registry of Deeds book 29557, page 259 to a point at the northwesterly sideline of said Homestead Avenue; Said point being situated South 45 degrees 39 minutes 32 seconds West, at a distance of 0.6 feet from a 7" by 7" concrete monument found;

Thence, South 45 degrees 39 minutes 32 seconds West, at a distance of 236.12 feet along the northwesterly sideline of said Homestead Avenue to the Point of Beginning.

Said parcel contains 2.51 acres, more or less and the bearings are referenced to Grid North of the Maine Coordinate System 1983 West Zone.

The courses and distances as herein used were derived from a Plan of Land made for Pinkham and Greer Civil Engineers dated August 2017 prepared by Maine Survey Consultants, Inc.

The parcel herein described is conveyed together with and subject to any and all easements or appurtenances of record, insofar as the same are in force and applicable.

Being the same premises conveyed to the Grantor herein by Quitclaim Deed Without Covenant of the City of Portland dated December 21, 2017 and recorded in the Cumberland County Registry of Deeds in Book 34564, Page 145 (the "City Deed"). The premises conveyed by this Quitclaim Deed with Covenant are subject to the covenants, restrictions and option to repurchase described in the City Deed and the public access easement reserved in the City Deed.

Received
Recorded Register of Deeds
May 09,2018 11:16:55A
Cumberland County
Nancy A. Lane

ZONING ANALYSIS Relevant Zone(s) R-3

All Projects:

	Required	Proposed
Lot Size	2.51 Acres	2.51 Acres
Area Per Dwelling Unit	6,500	13,667
Minimum Street Frontage	50	236
Front Yard Minimum	25	37 & 217
Front Yard Maximum	-	-
Rear Yard	25	41
Yard Right	16	21
Yard Left	16	-
Side Street Setback	20	-
Step Back	-	-
Maximum Lot Coverage	35%	19.6%
Minimum Lot Coverage	-	-
Maximum Height	35	Existing Bldg
Open Space	-	-
Maximum Impervious Area	-	-
Pavement Setback	-	-
Floor Area Ratio	-	-
Off Street Parking Spaces	-	-
Loading Bays	-	-
Other 1	-	-
Other 2	-	-
Other 3	-	-

Planned Residential Unit Developments (PRUD) Requirements N/A

	Required	Proposed
Minimum Lot Size		
Minimum Lot Area per Dwelling		
Maximum # Units per Building		
Maximum Building Length		
Maximum Accessory Building Length		
Minimum Setbacks		
Minimum Building Separation		
Minimum Open Space		

Affordable Housing Density Bonuses (if applicable) N/A

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

DECLARATION OF CONDOMINIUM

OF

REED SCHOOL CONDOMINIUM

May 8, 2018

This Declaration of Condominium (the "Declaration") is executed and recorded pursuant to the Maine Condominium Act (the "Act"), 33 M.R.S.A. Sections 1601-101 et seq., which statute is incorporated herein by reference. There is hereby created, pursuant to the terms of the Act and this Declaration, Reed School Condominium and Reed School Condominium Association (the "Association"), a Maine non-profit corporation under Title 13-B of the Maine Revised Statutes Annotated.

1. Declaration and Description of Condominium.

(a) Reed School LLC, a Maine limited liability company with a place of business in Portland, Maine (the "Declarant") hereby submits that certain parcel of land, and the buildings and improvements thereon, located at 19 Libby Street in the City of Portland, Cumberland County, Maine, described in Schedule A attached hereto and made a part hereof, together with all easements, rights and appurtenances thereto (collectively the "Premises") to the provisions of the Act and hereby creates with respect to the Premises a condominium, as defined in the Act, referred to in this Declaration as the "Condominium." The name of the Condominium is "Reed School Condominium" and the address of the Condominium is 19 Libby Street, Portland, Maine, 04101.

(b) The Premises are subject to:

(i) The easements, covenants, restrictions and reservations contained in and created by this Declaration and the Bylaws of the Association.

(ii) All matters shown on the Condominium Plat prepared by Archetype, P.A., dated May 1, 2018 (the "Plat") and Plans (four sheets total) prepared by Archetype, P.A., dated March 30, 2018, entitled "Reed School Condominium Plans " (the "Plans;" the Plat and the Plans are referred to collectively as the "Plat"), to be recorded in the Cumberland County Registry of Deeds herewith.

(iii) All easements and encumbrances described in Schedule A attached hereto and made a part hereof.

(iv) The Level 1 Site Alteration approval, and all conditions thereof, of the Portland Planning Board, dated January 22, 2018 (the "Site Plan Approval").

2. Definitions. The terms hereinafter defined shall have the meanings as hereinafter set forth. Any term not defined herein shall have the meaning accorded it by the Act.

(a) "Allocated Interests" means the undivided interests in the Common Elements, the Common Expense Liability and votes in the Association allocated to each Unit Owner.

(b) "Association" means Reed School Condominium Association.

(c) "Common Elements" means all portions of the Premises other than the Units and Limited Common Elements. Without limiting the generality of the foregoing, the driveways, parking areas, walkways, appurtenant easements described in Schedule A, open space, [dumpster,] and common wall separating Unit 1 and Unit 2, all as shown on the Plat, are Common Elements. All Common Elements are subject to the provisions set forth below.

(d) "Common Expenses" means expenditures made by or financial liabilities of the Association together with any allocations to reserves. To the greatest extent possible, unless otherwise provided in this Declaration, each Unit Owner shall be responsible for paying all costs and expenses associated with its ownership and use of its respective Unit.

(e) "Common Expense Liability" means liability for Common Expenses allocated to each Unit pursuant to Section 1602-107 of the Act.

(f) "Declarant" means Reed School LLC and its successors and assigns.

(g) "Eligible Mortgage Holder" means any holder of a recorded first mortgage on a Unit which has delivered written notice to the Association by prepaid United States mail, return receipt requested, or by delivery in hand securing a receipt therefor, which notice shall state the mortgagee's name and address, the owner's name and address, and the identifying number of the Unit, and shall state that the mortgage is a recorded first mortgage.

(h) "Executive Board" means the body designated in the Bylaws to act on behalf of the Association.

(i) "Limited Common Elements" means those portions of the Common Elements allocated by the Declaration and the Act for the exclusive use of one of the Units. At present, the parking spaces allocated in Section 5 (b) below are Limited Common Elements in the Condominium. In addition, the Limited Common Elements allocated to Unit 1 also include (i) "playground" and "toddler playground" shown on the Plat and (ii) the space located between the building and such playgrounds shown on the Plat.

(j) "Unit" means a unit of the Condominium as described herein and as shown on the Plat.

(j) "Unit Owner" means the Declarant or other Owner(s) of a Unit.

3. Description of Condominium; No Reserved Rights. The Condominium is made up of land and two buildings connected to each other, the original two-story brick school building built in 1926 (sometimes referred to herein as the "Original Building") and a single story addition built in 1950 (sometimes referred to herein as the "1950 Building"), together with related improvements. The 1950 Building is designated as Unit 1 and the Original Building is designated as Unit 2. The location and dimensions of the Units, and the layout, location, dimensions, and the unit numbers of the Units, and the description and location of the Common Elements and the Limited Common Elements are shown on the Plat. Brick and wood are the principal materials of which the Units are built. The Declarant does not reserve the right to add land to the Condominium, to add Common Elements to the Condominium, or to add additional units to the Condominium. Nothing contained in this Section shall prohibit the owner of Unit 2 from redeveloping Unit 2 for any lawful purpose.

4. Description of Units, Unit Boundaries, Allocation of Common Element Interests, Unit Boundaries and Maintenance.

(a) Description of Units. Unit 1 comprises the 1950 Building. Unit 2 comprises the Original Building. The maximum number of Units to be created pursuant to this Declaration is two (2) Units.

(b) Unit Boundaries. The boundaries of each Unit created pursuant to this Declaration are situated as shown on the Plat and Plans and shall consist of:

(i) Upper and Lower (horizontal) Boundaries: The upper and lower boundaries of each Unit shall be the following boundaries extended to an intersection with the vertical boundaries:

A. *Upper Boundary*: The exterior surface of the roof of each Unit.

B. *Lower Boundary*: The exterior surface of the foundation or slab of each Unit, including all footings with respect thereto, each Unit to include all portions of said foundations and footings .

(ii). Vertical Boundaries: Except with respect to the common boundary between Unit 1 and Unit 2, the vertical boundaries of each Unit are the vertical planes,

extended to intersections with each other and with the Unit's upper and lower boundaries, of the exterior finished surface of the exterior walls bounding the Unit and all other components thereof. The common vertical boundary between Unit 1 and Unit 2 shall be a vertical plane extending to intersections with each Unit's upper and lower boundaries and with the other vertical boundaries of the Units, all as more particularly shown on the Plat and Plans. Boundary lines shall also be, and the Units shall include, the exterior surfaces of doors, windows and glass walls of the respective Units, and their frames, sills and thresholds, where applicable.

(iii) Components and Mechanical Systems; Easements. Each Unit shall have and include independent mechanical systems serving such Unit, including but not limited to heating and cooling systems; hot water systems and lines, pipes and conduits; communications systems and lines, wires and conduits; electrical lines, wires conduits, receptacles and junction boxes; gas lines, pipes and conduits and water and sewer lines, pipes and conduits serving each Unit. Each Unit Owner is solely responsible for maintaining, repairing and replacing all mechanical and utility systems within its Unit. All maintenance, repair and replacement shall be done in such a manner as not to damage the other Unit or the Common Elements. To the extent any utility line, pipe, chute, conduit or other device lies outside a Unit but benefits a Unit, the Unit Owner so benefited is hereby granted an easement for the installation, repair, replacement and maintenance of such utility line, pipe, chute, conduit or other device, and the benefited Unit Owner may enter such areas (including the other Unit and the Common Elements) to perform such installation, repair, replacement and maintenance provided such entry does not unreasonably interfere with the other Unit Owner's use and enjoyment of its Unit, and provided further that the benefitted Unit Owner shall perform such installation, repair, replacement and maintenance in a good and workerlike manner and shall promptly and fully repair all areas so entered to their condition existing immediately prior to the performance of such installation, repair, replacement or maintenance.

(c) The areas within the boundaries of a Unit may be altered, modified or enlarged by the Unit Owner, provided such alteration does not encroach upon the other Unit, upon any Common Element or upon any Limited Common Element allocated to the other Unit, and further provided that the Unit Owner complies with all laws, ordinances and regulations of the City of Portland and the provisions of the Maine Condominium Act. Neither Unit Owner may expand its Unit beyond the boundaries created in this Section 4 unless the other Unit Owner consents thereto in writing.

(d) Percentage Interests. Each Unit shall be allocated a percentage of undivided interests in the Common Elements and in the Common Expenses of the Association. The Allocated Interest for each Unit is shown on Schedule B attached hereto. The undivided interests in Common Elements and shares of Common Expense liability have been determined on the basis of the approximate relative square footages of each of the 1950 Building and Original Building. Notwithstanding such different square footages, each Unit has been allocated one vote in the Association.

(e) Maintenance of Units. Each Unit Owner shall be responsible for the maintenance of its respective Unit and mechanical systems.

5. Common Elements and Limited Common Elements.

(a) Maintenance of Common Elements. The Association shall maintain, repair and replace all Common Elements, including but not limited to driveways, parking areas, open spaces and walkways, light fixtures, surveillance cameras and equipment, if any, on the Property, and drainage systems on the Property. Without limiting the generality of the foregoing, the Association shall be responsible for snowplowing, salting, sweeping and sanding all driveways, walkways (including City sidewalk adjacent to said Property) and parking areas, with all costs for the foregoing to be included as Common Expenses. The Association shall assess as a Common Expense the Common Expenses associated with the maintenance, repair or replacements of such Common Elements. Notwithstanding the Allocated Interests set forth in Schedule B hereto, the Common Expense liability for the parking areas and driveways on the Premises shall be allocated on the basis of the total number of parking spaces allocated to each Unit Owner under this Declaration, as follows: 12% to Unit 2 and 88% to Unit 1.

(b) Limited Common Elements. Unit 2 is allocated 9 parking spaces, two handicapped spaces are allocated a Common Elements as shown on the Plat, and Unit 1 is allocated the remaining parking spaces, as shown on the Plat. The Owner of Unit 2 and its tenants, guests and invitees may use parking spaces allocated to Unit 1 during non-business hours and on weekends and holidays, but only if such use in no way interferes with the use by the Owner of Unit 1, its tenants guests and invitees, of the parking spaces allocated to Unit 1; the Owner of Unit 1 may set reasonable restrictions on such use by written notice to the Owner of Unit 2. Limited Common Elements shall include those parking spaces allocated to each of the Units as set forth above and as shown on the Plat. The Association shall be responsible for maintenance, repair and replacement of those parking spaces allocated as Limited Common Elements. Common Expense liability for the parking spaces is as set forth in subsection (a) above. As noted above, the Limited Common Elements allocated to Unit 1 also include (i) "playground" and "toddler playground" shown on the Plat and (ii) the space located between the building and such playgrounds shown on the Plat.. Except for the parking spaces, any expense associated with the maintenance, repair or replacement of a Limited Common Element that is not paid or incurred directly by the responsible Unit Owner shall be assessed against the Unit Owner to which that Limited Common Element is allocated. Any common expense benefiting only one Unit shall be assessed exclusively against the Unit benefited. Nothing in this Section shall prohibit a Unit Owner from undertaking repairs or maintenance of the Limited Common Elements appurtenant to his or her Unit. No Limited Common Element may be used by its Unit Owner in such a way as to deprive the other Unit Owner of the reasonable use and enjoyment of its Unit. Notwithstanding the allocation of the space located between the buildings and such playgrounds to Unit 1 as a Limited Common Element, both Unit 1 and Unit 2 shall have the right to reasonable use of that space for the purpose of accessing the electrical transformer presently located in that space for the purposes of maintenance, repair, replacement or making electrical connections thereto. Any use of said space for any of these purposes by Unit 2 or its agents shall be conducted in such a manner which minimizes the disruption to the owner of Unit 1 and its tenants. Any Unit Owner making use of said space for these purposes shall after repairing,

maintaining, replacing or making electrical connections to the transformer restore said space to substantially the same condition said space was in before such use.

6. Easements and Other Matters.

(a) Structural Support. With respect to the common wall separating Unit 1 from Unit 2, each Unit Owner shall have an easement to the extent necessary for structural and subjacent support over the other Unit, and each Unit and the Common Element dividing wall shall be subject to an easement for structural and lateral support in favor of the other Unit.

(b) Encroachments. If any portion of the Common Elements or Limited Common Elements hereafter encroaches upon any Unit, or if any Unit hereafter encroaches upon any other Unit or upon any portion of the Common Elements or Limited Common Elements, as a result of settling or shifting of the buildings, or if the buildings or Units are not constructed precisely in accordance with the dimensions shown on the Plat or otherwise except as a result of the purposeful or negligent act or omission of the Owner of the encroaching Unit, or of the Association in the case of encroachments by the Common Elements or Limited Common Elements, a valid easement appurtenant to the encroaching Units, Common Elements or Limited Common Elements for the encroachment and for the use and maintenance of the same shall exist for so long as the encroachment shall exist. In the event that the buildings shall be partially destroyed as a result of fire or other casualty or as a result of taking by the power of, or in the nature of, eminent domain or by an action or deed in lieu of condemnation, and then are rebuilt, encroachments of a portion or portions of the Common Elements or Limited Common Elements upon any Unit or of either Unit upon the other Unit or upon any portion of the Common Elements or Limited Common Elements, due to such rebuilding, shall be permitted, and valid easements appurtenant to the encroaching Units, Common Elements or Limited Common Elements for such encroachments and the use and maintenance thereof shall exist so long as such building as so rebuilt shall stand.

(c) Common Elements Easement in Favor of Unit Owners. The Common Elements (including, but not limited to, the Limited Common Elements, if any) shall be and are hereby made subject to the following easements in favor of the Units benefited: (1) for the installation, repair, maintenance, use, removal and/or replacement of lighting fixtures, electrical receptacles, panel boards and other electrical installations which are a part of or serve any Unit but which enter or encroach into the Common Elements adjacent to such Unit; provided that the installation, repair, maintenance, use, removal or replacement of any such item does not unreasonably interfere with the common use of any part of the Common Elements, adversely affect either the thermal or acoustical character of the Units or the building or impair or structurally weaken the Units or the building; (2) for driving and removing nails, screws, bolts and other attachment devices into the Unit side surface of the walls bounding the Unit and the Unit side surface of the studs which support the dry wall or plaster perimeter walls bounding the Unit; provided that any such action will not unreasonably interfere with the common use of any part of the Common Elements, adversely affect either the thermal or acoustical character of the Units or the building or impair or structurally weaken the Units or the building; (3) for the installation, repair, maintenance, use, removal and/or replacement of pipes, ducts, heating and air conditioning systems, electrical, telephone, and other wiring and cables for communication and computer operations and all other utility lines and conduits which are a part of or serve either

Unit and which pass across or through a portion of the Common Elements or Limited Common Elements, if any, provided that the installation, repair, maintenance, use, removal or replacement of any such item does not unreasonably interfere with the common use of any part of the Common Elements, adversely affect either the thermal or acoustical character of the Units or the building or impair or structurally weaken the Units or the building, and the Unit is restored to its original condition after any work; and (4) for the maintenance of the encroachment of any lighting devices, outlets, exhaust fans, ventilation ducts, registers, grilles and similar fixtures which serve only one Unit but which encroach into any part of the other Unit or any Common Elements or Limited Common Elements on the date this Declaration is recorded or is thereafter installed by either Unit Owner.

(d) The Executive Board shall not establish any rule or regulation depriving either Unit Owner or their respective successors, assigns, tenants, agents and invitees of reasonable ingress and egress to and from its Unit, the Premises and Common Elements or Limited Common Elements, and the adjoining public streets. Each Unit shall have an easement in common with the other Unit to use all pipes, wires, ducts, cables, conduits, public utility lines and other Common Elements serving one Unit and located in the Common Elements or in the Limited Common Elements appurtenant to the other Unit. Each Unit shall be subject to an easement in favor of the other Unit to use the pipes, ducts, cables, wires, conduits, public utility lines and other Common Elements located in such Unit serving the other Unit. The Executive Board shall have the right to grant to third parties such additional utility easements as shall be deemed reasonable by the Executive Board in connection with the supply of utility services to the Units and/or the Common Elements.

7. Role of Executive Board; No Rights Reserved by Declarant.

Subject to the provisions of the Act, this Declaration and the Bylaws, the Executive Board shall have the power to act on behalf of the Association. The Declarant does not reserve any Declarant Control or other rights hereunder. The affairs of the Association shall be governed by an Executive Board composed of four (4) natural persons. Each Unit Owner may designate two representatives to serve as Executive Board members. The act of a majority of the members of the Executive Board present at a meeting at which a quorum is present shall be deemed the act of the Executive Board. Deadlocks of the Executive Board shall be handled as provided in the Bylaws.

8. Amendment and Termination.

(a) This Declaration may be amended only in accordance with the procedures specified in Section 1602-117 of the Act and this Declaration. No amendment may change the boundaries of any Unit, the Allocated Interests allocated to a Unit, or the Limited Common Elements allocated to either Unit without the unanimous consent of both Unit Owners. No amendment may change the boundaries of a Unit unless the Eligible Mortgage Holders as to both Units consent in writing. No amendment of this Declaration shall make any change which would in any way affect any of the rights, privileges, powers and options of the Declarant, its successors or assigns, unless the Declarant, or its successors or assigns, shall join in the execution of such amendment.

(b) The Condominium shall not be terminated except by unanimous consent of the Unit Owners and Eligible Mortgage Holders. In addition, the Condominium shall not be terminated unless the Unit Owners make provisions so that each Unit either:

(i) is located on a lot of land owned by the Unit Owner that meets all applicable federal, state and local land use laws, rules, ordinances and regulations; or

(ii) is located on such a lot of land leased to the Unit Owners pursuant to a ground lease.

9. Reed School Condominium Association. Pursuant to the Act, the Association shall be Reed School Condominium Association. The address of the Association is c/o Children's Odyssey, 110 Davis Farm Road, Portland, Maine 04103. The Unit Owners of both Units shall be members of the Association. Use, occupancy and enjoyment of the Condominium shall be subject to the terms and conditions of the Bylaws, this Declaration and the Act. Both Units are subject to assessment for common expenses of the Association.

10. Repair, Restoration, Use and Occupancy of Units and Common Elements -- Restrictions Thereon.

The repair, restoration, occupancy and use of the Condominium shall be subject to the following restrictions:

(a) The Units, Limited Common Elements and Common Elements shall be used, repaired, maintained and replaced at all times in compliance with all applicable federal, state and local laws and approvals and this Declaration.

(b) Subject to any required governmental approvals, the Owner of Unit 2 shall have the right to subdivide Unit 2 into up to 8 units, to be used for residential purposes. The Owner of Unit 2 shall at its expense cause to be prepared an amendment to this Declaration to accomplish such division, and the Owner of Unit 1 shall not unreasonably withhold, delay or condition its approval of such amendment. Without limiting the generality of the foregoing, it shall be deemed reasonable for the Owner of Unit 1 to withhold its consent to any such amendment which reallocates the parking spaces or area or causes additional costs (including without limitation insurance) attributable to the residential use of Unit 2 to increase the Association budget without specifically allocating those costs to Unit 2.

(c) Furthermore notwithstanding anything to the contrary set forth in this Declaration:

(i) Any change by the Declarant or its successors or assigns to Unit 2 or any Common Element or change to the appearance of any other portion of the Condominium property within 5 years of Unit 1 being placed in service shall require (a) appropriate submittals to the Maine Historic Preservation Commission ("MHPC") and U.S. Department of Interior, National Park Service ("NPS") describing the proposed work; (b) MHPC and NPS approval for such work prior

to the start of any construction work; and (c) that all such work shall be done in a manner consistent with the MHPC and NPS approval; and

(ii) In the event that Unit 2 is later developed using the Federal and/or Maine historic tax credit, then any change by the Declarant or its successors or assigns to Unit 1 or any Common Element or change to the appearance of any other portion of the Condominium property within 5 years of Unit 2 being placed in service shall require (a) appropriate submittals to the MHPC and NPS describing the proposed work; (b) MHPC and NPS approval for such work prior to the start of any construction work; and (c) that all such work shall be done in a manner consistent with the MHPC and NPS approval.

11. Budget; Common Expenses; Assessments and Enforcement.

(a) Budget Ratification Vote. In accordance with Article V of the Bylaws of the Association, the Executive Board shall propose a budget for the Condominium, which budget shall be submitted to the Unit Owners for ratification. At the budget ratification meeting, unless Unit Owners unanimously reject the budget, it shall be adopted.

(b) Monthly Assessments. All Common Expense assessments, if any, including but not limited to outdoor lighting and snow plowing, sanding, shoveling, made in order to meet the requirements of the Association's annual budget shall be deemed to be adopted and assessed on a monthly basis (rather than on an annual basis payable in monthly installments) and shall be due and payable in advance on the first day of each month, the first such assessment to be made for the first month of the first fiscal year as determined by the Executive Board of the Association under Article V of the Bylaws. If they both agree, the Unit Owners may elect to pay their assessments in a manner other than monthly. The first regular assessment, if any, shall be made no later than sixty (60) days after the conveyance of Unit 2 to a party other than Declarant. Special assessments, if any, shall be due and payable in one or more monthly payments, in advance, on the first day of each month, as determined by the Executive Board.

All assessments unpaid for longer than ninety (90) days after their due date shall constitute a lien on the Unit against which such assessment is made. Payments for assessments which are more than ninety (90) days late shall, at the option of the Association, accrue interest at a rate established by the Association.

(c) Subordination of Certain Charges. Any fees, charges, late charges, fines and interest which may be levied by the Executive Board pursuant to Article 3 of the Act, shall be subordinate to: (i) the lien of any mortgage recorded before or after the date on which the assessment sought to be enforced becomes delinquent; and (ii) any mortgage held by the Declarant or a successor of the Declarant.

(d) Surplus. Any surplus funds of the Association remaining after payment of, or provision for, Common Expenses including provisions for a working capital fund and/or reserve fund shall be held by the Association and shall be credited to the Units on a pro rata basis to reduce their future Common Expense assessments.

(e) Limited Common Expenses. Limited Common Expenses are those Common Expenses associated with the maintenance, repair or replacement of a Limited Common Element. Limited Common Expenses shall be assessed against the Unit to which that Limited Common Element has been assigned. Any Common Expense benefiting only one Unit shall be assessed exclusively against the Unit benefited as a Limited Common Expense.

12. Rights of Eligible Mortgage Holders and Others.

(a) The Association shall send reasonable prior written notice, being a minimum of 30 days prior written notice, by prepaid United States mail to Eligible Mortgage Holders of the consideration by the Association of any matters required pursuant to Section 1602-119 of the Act.

(b) In the event of the consideration by the Association of any of the following matters:

(i) the termination of the Condominium pursuant to section 1602-118 of the Act;

(ii) a change in the Allocated Interest of a Unit, a change in the boundaries of a Unit or a subdivision of a Unit;

(iii) the merger or consolidation of the Condominium with another condominium;

(iv) the conveyance or subjection to a security interest of any portion of the Common Elements; or

(v) the proposed use of any proceeds of hazard insurance required to be maintained by the association under section 1603-113 (a) of the Act, for purposes other than the repair or restoration of the damaged property,

any Eligible Mortgage Holder shall have the right but not the obligation in place of the Unit Owner to cast the votes allocated to the Unit covered by the Eligible Mortgage Holder's mortgage or give or withhold any consent required of the Unit Owner for such action by delivering written notice to the Association with a copy to the Unit Owner prior to or at the time of the taking of the proposed action, which notice shall be sent by certified or registered prepaid United States mail, return receipt requested, or by delivery in hand; provided, however, no Eligible Mortgage Holder shall have the right to prevent the Owner of Unit 2 from subdividing Unit 2 in accordance with Section 10 (b) above. Failure of the Eligible Mortgage Holder to so exercise such rights within thirty (30) days from receipt of any such notice shall constitute a waiver thereof and shall not preclude the Unit Owner from exercising such right. In addition, an Eligible Mortgage Holder, or its representative, shall have the right to attend Association and Executive Board meetings for the purposes of discussing the matters described in Section 12, subsection (a).

Failure to comply with the requirements set forth above shall in no way invalidate otherwise proper actions of the Association and the Executive Board.

13. Limitation of Liability.

(a) Limited Liability of the Executive Board. The members of the Executive Board:

(i) Shall not be liable for any injury or damage to persons or property caused by the natural elements or by either Unit Owners or persons on the Premises, or resulting from electricity, gas, water, rain, dust or sand which may leak or flow from any of its pipes, drains, conduits, appliances, or equipment, or from any other place unless in each such instance such injury or damage has been caused by the Executive Board members' willful misconduct or gross negligence;

(ii) Shall not be liable to the Unit Owners as a result of the performance of the Executive Board members' duties, for any mistake of judgment, negligent or otherwise, except for the Executive Board members' own willful misconduct or gross negligence;

(iii) Shall have no personal liability in contract to a Unit Owner or any other person or entity under any agreement, check, contract, deed, lease, mortgage, instrument or transaction entered into by them on behalf of the Executive Board or the association in the performance of the Executive Board members' duties;

(iv) Shall not be liable to a Unit Owner, or such Unit Owner's tenants, employees, agents, customers or guests, for loss or damage caused by theft of or damage to personal property left by such Unit Owner or his tenants, employees, agents, customers or guests in the building, or in or on the Common Elements or Limited Common Elements, except for the Executive Board members' own willful misconduct or gross negligence;

(v) Shall have no personal liability in tort to a Unit Owner or any other person or entity, direct or imputed, by virtue of acts performed by or for them in their official capacity, except for the Executive Board members' own willful misconduct or gross negligence in the performance of their duties; and

(vi) Shall have no personal liability arising out of the use, misuse or condition of the building, or which might in any other way be assessed against or imputed to the Executive Board members as a result of or by virtue of their performance of their duties, except for the Executive Board member's own willful misconduct or gross negligence.

(b) Indemnification. Each member of the Executive Board, in his or her capacity as an Executive Board member, officer or both, shall be indemnified by the Association against all expenses and liabilities, including attorneys' fees, reasonably incurred by or imposed upon him or her in connection with any proceeding in which he or she may become involved by reason of his being or having been a member and/or officer of the Executive Board, or any settlement of any such proceeding, whether or not he or she is an Executive Board member, officer or both at

the time such expenses are incurred, except in such cases wherein such Executive Board member and/or officer is adjudged guilty of willful misconduct or gross negligence in the performance of his or her duties; provided that, in the event of a settlement, this indemnification shall apply only if and when the Executive Board (with the affected member abstaining if he or she is then an Executive Board member) approves such settlement and reimbursement as being in the best interests of the Association; and provided further that indemnification hereunder with respect to any criminal action or proceeding is permitted only if such Executive Board members and/or officer had no reasonable cause to believe his or her conduct was unlawful. The indemnification by the Unit Owners set forth in this Section 13 shall constitute a Common Expense and shall be assessed and collectible as such. Such right of indemnification shall not be deemed exclusive of any other rights to which such Executive Board member and/or officer may be entitled as a matter of law or agreement or by vote of the Unit Owners or otherwise.

(c) Defense of Claims. Complaints brought against the Association, the Executive Board or the officers, employees or agents thereof in their respective capacities as such, or the Condominium as a whole, shall be directed to the Executive Board of the Association, which shall promptly give written notice thereof to the Unit Owners and Eligible Mortgage Holders, and such complaints shall be defended by the Association. The Unit Owners and Eligible Mortgage Holders shall have no right to participate in such defense other than through the Association.

(d) Insurance. The Executive Board may obtain insurance to satisfy the indemnification obligations of the Association and all Owners set forth in this Paragraph 13, to the extent such insurance is available.

14. Notice. The Association shall give notice of matters affecting the Condominium to Unit Owners in writing, and notice shall be deemed to have been given if delivered personally or sent by United States mail, postage prepaid, or if notification is of a default or lien, then by registered or certified mail, return receipt requested, postage prepaid, to a Unit Owner at the address of the Unit. If a Unit is owned by more than one person, each such person who so designates an address in writing to the Secretary shall be entitled to receive all notices hereunder. The Association shall make available for inspection upon request to Unit Owners and their Eligible Mortgage Holders, current copies of this Declaration, the Bylaws, the Rules and Regulations and the books and records of the Condominium.

15. Insurance Coverage. Each Owner shall maintain a policy of "all risks" hazard insurance insuring its Unit and Limited Common Elements for 100% of the full replacement cost of the Unit, including all habitability of the Unit, Limited Common Elements and one half of the cost of all Common Elements. The Association shall also maintain a policy of public liability insurance on the Common Elements with a combined single limit of not less than $2,000,000 insuring against claims for personal injury and property damage arising out of one occurrence, naming the Unit Owners as additional insureds. The Association and each Unit Owner shall provide each other with a copy of said policies of insurance and evidence that said policies may not be canceled without at least ten (10) days' prior written notice. At the time of recording of this Declaration, it is anticipated that both Units will be used for nonresidential purposes. Upon the transfer of Unit 2 to a party other than Declarant that intends to use Unit 2 for residential

purposes, the Association shall put into place insurance coverages required by Section 1603-114 of the Act. Each Unit Owner shall be solely responsible for any unusual or extraordinary insurance costs that may be incurred as a result of such Unit Owner's operations or business.

16. Eminent Domain. If any part of the Condominium shall be taken or condemned by any authority having the power of eminent domain, the Association shall notify the Unit Owners and Eligible Mortgage Holders of the Units affected and shall represent the Unit Owners in any condemnation proceedings or in negotiations, settlements and agreements with the condemning authority with respect to the Common Elements, and the portion of the award attributable to the Common Elements taken shall be paid to the Association for the use and benefit of the Unit Owners and their Mortgagees as their interests may appear. The Association shall divide any portion of the award not used for any restoration or repair of the remaining Common Elements among the Unit Owners and their Mortgagees, as their interests may appear, in proportion to their Allocated Interests in the Common Elements prior to such taking or condemnation, but the portion of the award attributable to the acquisition of any Limited Common Element shall be equally divided among the Unit Owners to which such Limited Common Element was allocated at the time of such taking or condemnation and their Mortgagees, as their interests may appear. Each Unit Owner appoints the Association as attorney-in-fact for the purposes described in this Section. Notwithstanding anything to the contrary in this Section 16, lien holders on any Unit, Common Element or Limited Common Element, shall have a lien on any such awards in order of priority of their respective liens, as their interests may appear. Nothing contained in this Section shall be deemed to limit or abrogate the right of a Unit Owner to participate in or defend any condemnation action or proceeding dealing with that Unit Owner's Unit.

17. NOTICE OF LIMITED WAIVER. EXCEPT AS MAY BE OTHERWISE SET FORTH IN THIS DECLARATION OR IN THE BYLAWS RELATING TO RESALE OF UNITS, EACH UNIT OWNER, TENANT AND THEIR RESPECTIVE INVITEES, GUESTS, LICENSEES, SERVANTS, AGENTS, EMPLOYEES AND ANY OTHER PERSON OR PERSONS THAT SHALL BE PERMITTED TO USE A UNIT, THE COMMON ELEMENTS OR BOTH, BY VIRTUE OF OWNERSHIP, RENTAL OR OCCUPANCY OF ANY UNIT, THE COMMON ELEMENTS, OR BOTH, WAIVE AND RELINQUISH THE APPLICATION OF THE PROVISIONS, RIGHTS, AND REMEDIES PROVIDED IN ARTICLE 4 OF THE ACT RELATING TO EVERY ASPECT OF THE CONDOMINIUM AND THE MARKETING AND SALE OF UNITS.

[remainder of page left blank intentionally—signatures begin on next page]

IN WITNESS WHEREOF, REED SCHOOL LLC, the Declarant, has caused this Declaration of Condominium to be executed by its duly authorized Managing Member as of the 8th day of May, 2018.

WITNESS:

REED SCHOOL LLC

BY: Reed School Manager LLC, its Managing Member

By: Children's Odyssey, its Manager

By: _____
Susan Hougaz-McCormick,
Its President

STATE OF MAINE
Cumberland, SS.

May 8, 2018

Personally appeared the above-named Susan Hougaz-McCormick, President of Children's Odyssey, Manager of Reed School Manager LLC, Managing Member of Reed School LLC as aforesaid, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said corporation and limited liability companies.

Before me,

_____
~~Notary Public~~/Attorney-at-Law
Printed Name: John S. Kamiaski
~~My commission expires:~~ _____

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SCHEDULE A

A certain lot or parcel of land with the buildings thereon situated between Homestead Avenue and Libby Street in the city of Portland, Cumberland County, Maine. Said parcel being comprised of two parcels acquired by the city of Portland as described in the following deeds recorded in Cumberland County Registry of Deeds Book 1202, Page 62 and Book 1372, Page 351. Said combined parcel having been recently surveyed and being more particularly bounded and described as follows:

Beginning at a 6" by 6" granite monument found with brass plug on the northwesterly sideline of said Homestead Avenue at the easterly corner of land now or formerly of Robert Elder, Jr. as described in Cumberland County Registry of Deeds Book 23138, Page 123;

Thence, North 44 degrees 19 minute 05 seconds West, a distance of 200.04 feet by land of said Elder and land now or formerly of Andrew Bowman as described in Cumberland County Registry of Deeds Book 21413, Page 242 to a 6" by 6" granite monument found with brass plug;

Thence, North 48 degrees 07 minutes, 39 seconds West, a distance of 50.09 feet by land of said Bowman and land now or formerly of Albert and Deborah Asali as described in Cumberland County Registry of Deeds Book 22727, Page 19 to a 6" by 6" granite monument found with brass plug;

Thence, North 44 degrees 19 minutes 16 seconds West, a distance of 200.04 feet by land of said Asali and land now or formerly of Angel Wiggin as described in Cumberland County Registry of Deeds Book 19772, Page 181 to a 7" by 7" granite monument found with brass plug at the southeasterly sideline of Libby Street;

Thence, North 45 degrees 38 minutes 32 seconds East, a distance of 249.85 feet along the southeasterly sideline of said Libby Street to a 6" by 6" granite monument found with brass plug at land now or formerly of Ryan and Rachael Salamon as described in Cumberland County Registry of Deeds Book 32167, Page 291;

Thence, South 43 degrees 04 minutes 39 seconds East, a distance of 250.13 feet by land of said Salamon and by land now or formerly of Holly Benoit as described in Cumberland County Registry of Deeds Book 32922, Page 22, by land now or formerly of Lauren Greenslade as described in Cumberland County Registry of Deeds Book 32298, Page 272, and by land now or formerly of Jere Dewaters and Elise Scala as described in Cumberland County Registry of Deeds Book 9079, Page 275 to a 6" by 6" granite monument found with brass plug;

Thence, South 43 degrees 02 minutes 24 seconds East, a distance of 99.97 feet by land of said Dewater and Scala, by land now or formerly of Zoran and Biljana Mandic as described in Cumberland County Registry of Deeds Book 21916, Page 171, and by land now or formerly of Julia Georgieva as described in Cumberland County Registry of Deeds Book 24567, Page 256 to a 6" by 6" granite monument found with brass plug;

Thence, South 42 degrees 44 minutes 42 seconds East, a distance of 100.15 feet by land of said

Georgieva and by land now or formerly of Stephen and Sylvia Gelinas as described in Cumberland County Registry of Deeds Book 29557, Page 259 to a point at the northwesterly sideline of said Homestead Avenue; Said point being situated South 45 degrees 39 minutes 32 seconds West, at a distance of 0.6 feet from a 7" by 7" concrete monument found;

Thence, South 45 degrees 39 minutes 32 seconds West, at a distance of 236.12 feet along the northwesterly sideline of said Homestead Avenue to the Point of Beginning.

Said parcel contains 2.51 acres, more or less and the bearings are referenced to Grid North of the Maine Coordinate System 1983 West Zone.

Subject to and with the benefit of the following easements and other matters:

1. Rights set forth in a Deed from City of Portland to Children's Odyssey dated December 21, 2017 and recorded in the Cumberland County Registry of Deeds in Book 34564, Page 145, including but not limited to rights of others in and to a Public Access Easement on a portion of the insured premises, as set forth therein.

2. Rights and easements of record.

3. Such state of facts as set forth on a Plan of Land for Pinkham &Greer Civil Engineers dated August 23, 2017 prepared by Maine Survey Consultants, Inc.

SCHEDULE B

Unit	Vote	Allocated Interest
1	1	66.64%
2	1	33.33%

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Received
Recorded Register of Deeds
May 09,2018 11:19:33A
Cumberland County
Nancy A. Lane

Standard to be Waived: Cite Ordinance or Technical Manual Standard	**Cite Standard Language:** Cite specific language of applicable Ordinance or Technical Manual Standard	**Waiver Being Sought:** Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
No Waivers Requested			

Bangor Savings Bank

You matter more.

June 21, 2018

City of Portland
389 Congress Street
Portland, ME 04101

RE: Reed School Apartments, 19 Libby Street

To Whom It May Concern:

On behalf of Bangor Savings Bank, I am pleased to provide this letter in support of DC Reed LLC for the development of eight residential units at the historic Reed School. Bangor Savings Bank has worked with Kevin Bunker, Manager of DC Reed LLC, on multiple projects of similar nature. Based on our prior experience working with Kevin Bunker, we believe that the applicant has the ability to finance projected project costs. In addition, they possess the management skill and development expertise to successfully complete the proposed project on time and on budget.

While this letter of support is not a commitment to lend, Bangor Savings Bank would welcome the opportunity to be a resource for project financing. Please feel free to call me with any questions.

Sincerely,

Shawn McKenna
Vice President

Technical Capacity
Reed School, Phase Two

The following consultants have been retained by the owner to complete the project. See Technical Capacity 2 Document.

Archetype Architects
48 Union Wharf
Portland, ME 04101

Walsh Engineering Associates, Inc.
One Karen Drive, Suite 2A
Westbrook, ME 04092-1928

Maine Survey Consultants, Inc.
PO Box 485
Harrison, ME 04040

ARCHETYPE
architects
48 Union Wharf | Portland, ME. 04101 | tel. 207.772.6022

www.archetype-architects.com

Company Background and History

Archetype Architects has, since 1983, developed an extensive portfolio of building projects in Maine and New England. We are a commercial architectural firm specializing in business, retail and housing developments. Our areas of service include master- planning, architectural design, and interior design. Prior to 1983 David Lloyd and Bill Hopkins maintained separate practices after having begun their careers in Boston and New York, respectively.

Archetype regularly designs and completes commercial projects in a very diverse field of typologies. Everything from hospitality and multi-family residential to offices and light industrial projects is well within our purview.

Personnel:

Principals:	David Lloyd William Hopkins
Architects:	David Mele Barry Yudaken Virginie Stanley Katherine Detmer
Architectural Associates:	Michael Hutchins Mike Coyne Devin Cough
Architectural Designers:	Matthew Maiello
Drafter:	Maryna Nelson Sam Berry
Interior Designer:	Sally Anderson
Office Manager:	Susan Geffers

Registration Status:

Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, RI and US Virgin Islands

Professional Affiliations:

National Council of Architectural Registration Board
International Building Code
National Fire Protection Association

DAVID LLOYD PRINCIPAL/ARCHITECT

EDUCATION AND REGISTRATION

B. Arch - Boston Architectural Center Boston, MA
Architectural Association London, England
NCARB Certification
Registered Architect Maine, New Hampshire, Massachusetts

ARCHETYPE 1983 - Present

REPRESENTATIVE PROJECTS

Housing:

- Riverview Lofts, Westbrook, ME – Mill Conversion
- North Berwick Mill, North Berwick, ME – Conversion to 45 units housing
- Great Diamond Island Hotel, Diamond Island, ME – Mill conversion to hotel
- Walker Terrace, Portland ME – 40 Unit Apartment Building, Designed under MSHA Green Standards
- Casco Terrace, Portland, ME –27 Unit Apartment Building - MSHA
- Ellen M. Leach Memorial Home, Brewer, ME – 90 Units of Elderly/Congregate Housing - MSHA
- Deer Run Apartments, Pittsfield, ME – 24 units of Family Housing
- Shalom House, Portland, ME – Numerous Housing through greater Portland area

Office Buildings:

- 10 Dana Street, Portland, ME – 10,000 square foot Office Addition/Renovation
- Monument Way, Portland, ME – Renovation of 45,000 square feet of Offices, Retail and Restaurant space
- Maliseet Gardens, Bangor, ME – New 25,000 square feet of Office Space and 36 units of Housing
- Blake Building, Portland, ME – 50,000 square foot Renovation and Addition
- Reader's Digest Auditorium, New Castle, NY – New 400 seat auditorium and 200,000 square feet of additions and alterations during the past several years.
- Dr. Llewellyn Nathaniel Edwards Wing, Boardman Hall, University of Maine, Orono, ME – An 11,000 square foot addition to Boardman Hall for The National Center of Geographic Information and Analysis on the Orono Campus

Churches:

- United Methodist Church – Gorham, ME
- St. Maximilian Kolbe Church – Scarborough, ME
- Most Holy Trinity Church – Saco, ME

WALSH
ENGINEERING ASSOCIATES, INC.

Firm Qualifications

Walsh Engineering Associates Inc. (WEA) is a professional consulting engineering firm based in Westbrook, Maine. WEA offers civil engineering, permitting, site planning, project feasibility analysis, landscape design, project management, and construction administration services. The firm was founded in 2009 by William R. Walsh, PE, who has been practicing engineering in New England for over 24 years. Grounded in technical strength, WEA provides expertise in all facets of site work development and construction.

As of January 1, 2018, Pinkham and Greer Civil Engineers has merged with WEA. Tom Greer, the principal of P&G has joined WEA continuing to manage his client base. Tom brings a depth of knowledge and over 35 years' experience as the principal of his company to WEA. Tom's experience in permitting and design for school districts, architects, private developers and industrial clients compliments the WEA team.

The principal and staff have extensive experience in design, permitting (local, state and federal) and construction administration of a wide variety of projects throughout New England. We are licensed professional engineers, LEED Accredited Professionals and accomplished designers committed to the design of sustainable projects.

Walsh Engineering Associates Inc. approaches each project with the utmost concern and attention to detail that each client deserves. WEA prides itself in providing complete consulting services that will be designed, permitted and, most importantly, constructed. By following projects through construction, WEA provides continuity to projects that will serve the clients' best interests. We pride ourselves in being timely and responsive as well as practical in our designs.

The firm's primary services relate to the following types of projects:

- Master Planning
- Institutional Planning and Design
- Commercial Development
- Shoreline Stabilization
- Local, State, and Federal Permitting
- Roadway Design
- Columbarium Planning and Design
- Feasibility Studies
- Construction Management
- Residential Development
- Stormwater Management
- Environmental Permitting
- Utility Planning and Design
- Cemetery Design

WALSH
ENGINEERING ASSOCIATES, INC.

Thomas S. Greer, PE

Professional Experience

Walsh Engineering Associates Inc., Westbrook, Maine: Tom joins Walsh Engineering Associates, Inc. with multiple ongoing civil engineering projects. This project brings a wide array of engineering design considerations. His design expertise and knowledge of permitting procedures make the projects successful. These projects include:

- 40 Unit Senior Housing, Portland
- 10 Lot Clustered Subdivision, North Yarmouth
- Gravel Pit, Cornish
- 78 Unit Residential Project, Portland
- Mixed Commercial and Residential Project, Portland
- Church Expansion, Scarborough
- Commercial Transportation Facility, Buxton
- 24 Unit Multi Family, Kennebunk
- Hotel Renovation, Old Orchard Beach
- 10 Lot residential Subdivision, Bridgton,
- School Parking Lot Expansions, Naples
- 400 Unit Master Plan, Gray

Pinkham & Greer, Civil Engineers: Tom has over 40 years of experience in consulting engineering. This includes construction inspection, civil engineering design, and project management, as well as company management as a Principal of Pinkham & Greer; each experience building on the previous to form a well-rounded background in civil engineering and business management.

Mr. Greer's principal responsibilities within the company include management of civil engineering projects such as site designs and permit applications, and the financial management of the firm. Civil engineering projects include subdivision and land planning, stormwater management plans, site designs for commercial and institutional clients, and utility design for sewer and water projects.

The responsibility of corporate management adds to Mr. Greer's direct, hands-on experience when addressing each client's individual business concerns; developing solutions sensitive to the issues important to the client, such as financing, in addition to the technical engineering issues.

Mr. Greer has chaired the American Society of Civil Engineering subcommittee reviewing the stormwater management manual prepared by the Maine Department of Environmental Protection and was a member of the Technical Advisory Committee in developing the DEP Stormwater Management Program. He has also assisted the DEP with training programs for Non Point Source Stormwater through the Non Point Source Technical Advisory Committee.

Education

University of Maine – Orono, Maine B.S. Civil Engineering, 1976

Registration

Professional Engineer, Maine #4206
Professional Engineer, New Hampshire #5879
Professional Engineer, Connecticut # 16331

Professional Associations and Board Affiliations

American Society of Civil Engineers

Maine Survey Consultants, Inc.

P.O. Box 485, Harrison, Maine 04040

PH: 207-583-6159, Fax: 207-583-2334

www.mainesurveyconsultants.com
info@mainesurveyconsultants.com

Maine Survey Consultants, Inc. was established in 1988 by Delmore A. Maxfield, PLS. The company was formally called D.A. Maxfield, Jr. Land Surveying and has been providing professional land surveying services from offices in Harrison, Maine since 1980. Prior to that Mr. Maxfield was employed by Whitman & Howard, Inc., a civil engineering firm with offices located in Westbrook, Maine and Boston, Massachusetts.

The company currently consists of 4 employees performing all aspects of surveying; research, fieldwork, CAD. Our experience includes large and small boundary surveys, topographic surveys, GPS control surveys, development site surveys, street detail surveys, surveys for road and bridge design, and subdivision surveys.

The company currently incorporates the use of Leica Total Stations, Topcon Ranger data collectors, JAVAD & Topcon GPS equipment, and computers using AutoCad, Land Desktop, and Carlson survey software. We have full high speed internet capability and can transfer files electronically as needed. Our drafting department includes large format copying and scanning equipment as well.

Maine Survey Consultants, Inc.

Delmore A. Maxfield, Jr.
Professional Land Surveyor

Present Occupation:

1988-2018 Maine Survey Consultants, Inc. Harrison, Maine 04040
Owner: Providing professional land surveying services to the general public, developers, municipalities, and other professionals. Performing land boundary surveys, topographic, construction, GPS, and aerial photo control surveys.

Professional License:

1977 Professional Land Surveyor, State of Maine, Number 1177

Formal Education:

1972-1976 EMAPLS correspondence courses in land surveying

1971-1972 Northeastern University, Boston MA
Civil Engineering program

1970 Oxford Hills High School graduate South Paris, Maine

Past Employment:

1980-1988 D.A. Maxfield, Jr. – Land Surveying Owner, Harrison, Maine

1972-1980 Whitman & Howard, Inc. survey department Westbrook, Maine

Professional Membership:

1972-2018 Maine Society of Land Surveyors
1988-2012 American Congress on Surveying and Mapping
1990-2018 National Society of Professional Surveyors

Awards:

1987 MSLS annual meeting Map Contest Second Place
2001 MSLS annual meeting Map Contest Best of Show
2003 MSLS annual meeting Map Contest First Place Topographic

Other Memberships:

1983-2018 Harrison Volunteer Fire Department

Transportation Analysis
Reed School, Phase Two

The parking and on site circulation were addressed in Phase One. 8 new units in this neighborhood will have no significant impact on the traffic.

Access and Circulation
Reed School, Phase Two

The parking lot will be accessed off Libby Street. A sidewalk to Libby Street is part of Phase One. The existing sidewalk on Homestead Avenue will be utilized with a designated walk along the exit only driveway. ADA access is from the parking lot side of the building.

Public Transit
Reed School, Phase Two

Public transit is available on Forest Avenue, ½ block away.

Off-Street Parking
Reed School, Phase Two

The parking was addressed in Phase One. See chart on sheet C1.2.

Bicycle Parking
Reed School, Phase Two

See note on sheet C2.1.

Snow Storage
Reed School, Phase Two

See Snow Clearance Notes on sheet C1.2.

Street Trees
Reed School, Phase Two

There are 5 trees in front of the building on Homestead Avenue. The developer will pay into the tree fund for the remaining trees.

Stormwater
Reed School, Phase Two

Stormwater was addressed in Phase One.

Public Safety and Fire Prevention
Reed School, Phase Two

The access to the building from the parking lot was approved as part of Phase One. The units will be fully sprinkled.

Available Public Utilities
Reed School, Phase Two

The existing sewer, water, and electrical services will be utilized for the 8 units. These are adequate for the use.

Site Design
Reed School, Phase Two

No changes to the existing site are planned. No new buildings are being constructed.

Historic Resources
Reed School, Phase Two

Although not in a Historic District, the building modifications such as windows are being reviewed by the Historic Coordinator.

Zone Related Design Standards
Reed School, Phase Two

The building is being renovated keeping the historic character intact.

WALSH
ENGINEERING ASSOCIATES, INC.

Neighborhood Meeting Certification

I, Thomas S. Greer hereby certify that a neighborhood meeting was held on August 23, 2018 at 19 Libby Street (Reed School), in Portland at 6:00PM to discuss the redevelopment of the Reed School into 8, 1 bedroom apartments.

I also certify that on August 8, 2018, invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development and the residents on the "interested parties" list.

A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and the assigned planner to be forwarded to those on the interested citizen list who receive email notices.

Signed:

Thomas S. Greer 8/28/18 (date)

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

WALSH
ENGINEERING ASSOCIATES, INC.

Neighborhood Meeting

August 8, 2018

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plan to develop the original Reed School into 8, one bedroom apartments at 19 Libby Street.

Meeting Location: Reed School
19 Libby Street, Portland

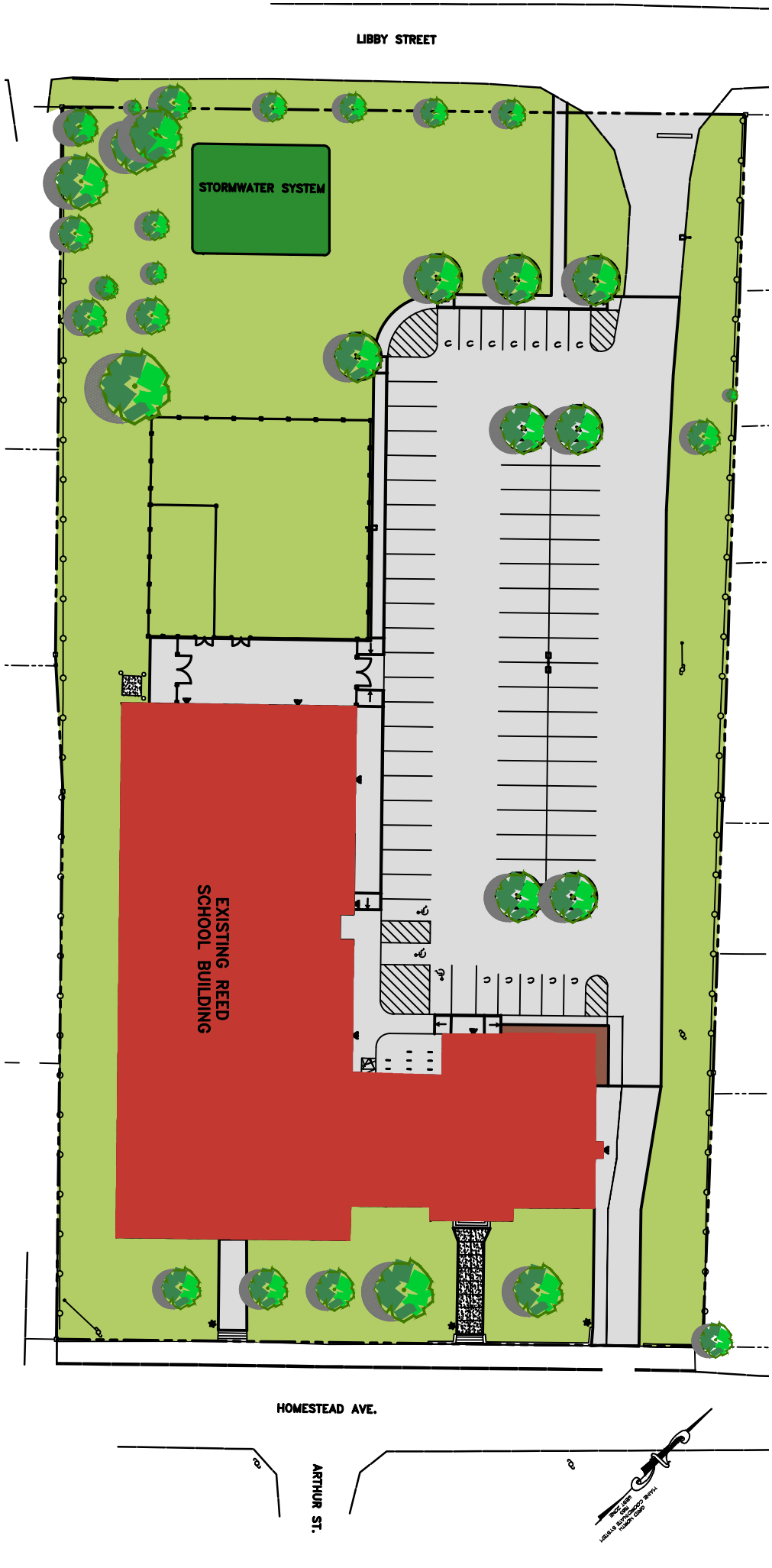
Meeting Date: August 23, 2018 (Thursday)
Meeting Time: 6:00-7:30pm

The purpose of this meeting is to introduce the project to our neighbors as part of the City approval process.

- The front walks and the access driveway from Homestead Avenue will be redone.
- The application is filed with the City.
- The developer, Developers Collaborative for DC Reed LLC can be contacted at:

  Address: Developers Collaborative
  Attn: DC Reed LLC
  100 Commercial St. Suite 414
  Portland, ME 04101
  Phone #: (207) 772-7673
  Email: bunker.kevin@gmail.com

- The City Planning Authority can be contacted at :
  Website: https://www.portlandmaine.gov/314/Planning-Urban-Development
  Phone #: (207) 756-8246


LIBBY STREET
STORMWATER SYSTEM
EXISTING REED SCHOOL BUILDING
HOMESTEAD AVE.
ARTHUR ST.

Reed School Neighborhood Meeting Sign-In Sheet

Date: August 23, 2018
Location: Reed School, 19 Libby Street, Portland
Project: Reed School Apartments, 19 Libby Street, Portland

Developer and Consultant Team in Attendance:

NAME	EMAIL
1. Mike Lyne	mlyne@dcmaine.com
2. Laura Reading	reading.lauraj@gmail.com
3.	
4.	

Members of the Public in Attendance:

NAME	EMAIL
1. Elise Scala	Scala@maine.edu
2. Craig Dorais	craig_dorais@yahoo.com
3. Carol Murray	camurray@maine.rr.com
4. Betty Peterson	jbpeterson05@yahoo.com
5. John Kelley	
6. ~~Anne Collett~~	
7. Dane ~~Collett~~ Mason	
8. Ernest a Beverly Bonnie	
9. Judy Stanhope	
10. Cathy Gibbi	
11. Brenda Hayes	brenda.soulbeautiful@gmail.com
12. R. Dean Hayes	
13. Nancy + Joe McNeill	nmcneill56@gmail.com

Reed School Neighborhood Meeting Minutes
Reed School, 19 Libby Street, Portland
August 23, 2018
6:00 PM

ML = Mike Lyne
Q = Public Question/Comment

ML: This will be a Level III review for Planning Board. We've received the text amendment for the zoning change and October 9th is the tentative meeting. We're proposing 4 units per floor, 8 units total, all market-rate units. There will also be two guest rooms and we'll use historic tax credits to help finance the project.

Q: How will the entrance/exit be set up?

ML: Libby Street will be our entrance and exit and Homestead will be exit only.

Q: Will the "no exit" signs be moved closer to the road?

ML: Yes, likely.

Q: Will there be an elevator?

ML: We don't need to provide any ADA units and the costs to renovate this building are already high enough that we won't be adding an elevator. Elevators cost about $50k/stop so it adds a lot of cost and takes up a lot of space.

Q: Will the chalkboards stay?

ML: Yes, where they exist now.

Q: What will be in the basement?

ML: Tenant storage, fitness.

Q: What will be the scope of construction?

ML: Mostly interior but there will be some repointing, window restoration/replacement. Most of the site work has been completed as part of the school project. Construction will probably take roughly 7 months.

Q: If they're a couple, where are they going to park?

ML: Well there's one space per unit and they're not allowed to park overnight on Homestead. Lease will allow one vehicle per unit.

Q: Why is this being called 19 Libby and not Homestead?

ML: The apartment building may have a Homestead address.

Q: What about the traffic?

ML: We did a traffic study and estimated counts and traffic won't be worse than its original use as a school.

Q: Lights at Riverside Street screw up the whole area.

Q: I can't wait to see this done. It will be nice.

Q: You still have to keep the same size windows right?

ML: Yes. By virtue of going through the historic process, we have to restore or replace if necessary the same windows.

Q: Would you have oil heat?

ML: We haven't designed the system yet but it will likely be heat pumps for heating and cooling. The big boiler that was downstairs is gone now and we do have natural gas.

Q: Will there be a gym in the basement?

ML: Yes, we'll have a fitness area and some tenant storage. Hopefully a nice gathering space as well.

Q: What other projects have you worked on?

ML: We developed the Nathan Clifford School and this is a mini Nathan Clifford School. We're also finishing construction on the Motherhouse, which is 88 units of 55+ housing.

Q: There's no age restriction here right?

ML: No, this will be more like Nathan Clifford than Motherhouse.

Q: What phase are you in for the Motherhouse?

ML: That will be ready for move-in during October. Plummer School in Falmouth is another project we worked on, renovating another school into 55+ apartments with light services and a concierge.

WALSH
ENGINEERING ASSOCIATES, INC.

File: 478

September 19, 2018

Ms. Barbara Barhydt, Planning
City of Portland
389 Congress Street 4th Floor
Portland, ME 04101

RE: Reed School Apartments, Libby Street

Dear Jean,

Below are responses to your comments:

- *Parking provision for the new residential units: Plan C1.2 (Plat) refers to 16 parking spaces are being provided; the recorded condo docs as submitted state that only 9 parking spaces are being provided for the residential units. Please clarify and ensure that the submissions are consistent.*

  Both are correct. The Site Plan shows the number of spaces allocated to each use to show compliance with the City's Parking Standards. The Condo Documents allocate the spaces between the tenants. We have adequate parking.

- *Heatpumps and associated compressors: it is noted (Neighborhood Meeting notes) that heatpumps are envisaged. These need to be shown on the site plans/elevations/floorplans (roof?) in order for reviewers to determine if they meet the following site plan standard:*

  a. HVAC and Mechanical Equipment.

  - *(i) All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment shall meet applicable state and federal emissions requirements and shall comply with the following:*

    (a) Be located to the interior of the site, away from abutting residential properties;
    (b) Be screened from view from any public street and from adjacent sites by structure walls, evergreen landscaping, fencing, masonry wall or a combination thereof.

  The HVAC equipment has not been selected. It will be located where the existing oil tank is housed or in the center of the roof. Those locations have been noted on the Site Plan.

- *Fencing/buffers: the approval for Phase 1 included the following requirement: "The applicant shall repair the fence along the property boundary as needed." I note that the proposals do not include any new or repaired fencing despite the fact that much of the existing fencing is rusty chain link. We are crafting a condition of approval that will specify what repairs, new fencing or new planting is recommended to meet the site plan ordinance that requires "landscaped buffers".*

The existing fencing has significant plant growth on it and provides the screening noted by the neighbors. The project will leave that fencing and screening in place.

- *Signage and pedestrian walkway: Please revise the site plan to show "no entry" signs where the drive meets Homestead and add signs or striping for the pedestrian part of the exit driveway, so that its clear to the vehicles who has priority in that area.*

  The "Do Not Enter" signs will be relocated to Homestead Avenue. A 4' striped walk will be placed on the driveway to the back of the building providing pedestrian access to the parking from Homestead. This is currently shown on the Site Plan. It is now labeled.

- *Lighting: I note that 2 building mounted lights were shown on the photometric plan for the school building (subject of this review) when phase 1 was being reviewed/constructed - please add these to the current site plans and elevations (and if they have already been installed, pl note that). Please add lighting to the main front walkway from the Homestead sidewalk to that entrance.*

  Lights are shown on the Site Plan already.

- *Management of Solid Waste: Please describe/show how this will be stored and removed from the site. Also please clarify the function and future treatment of the sections of chain link around the northeast corner of the building.*

  The units will handle solid waste inside the building. No exterior dumpsters are planned.

- *Amendments from Phase 1 approved Site Plan: I note that new chain link fencing has been installed next to the school building, and a flagpole has replaced a required tree in the parking lot. Please show these amendments on the submitted site plan and clarify the background.*

  The tree has been replaced with the flag pole and the short section of fence has been added to the plan.

- *Subdivision Plat: Please note that the plat is intended to include all elements of the proposal, including legal and management issues, that impact future owners and users. The plat therefore needs to include references to the Condo Docs, Stormwater Management Agreement, restrictions to access points, etc. These revisions are not needed prior to the hearing, as in any case the PB conditions of subdivision approval would need to be added to the plat and a final review would be required via a "standard' condition regarding the plat.*

  This will be amended based on Planning Board Conditions and Staff Review.

Respectfully,

Thomas S. Greer, PE
Walsh Engineering Associates, Inc.

cc: Mike Lyne, File

PLAN REFERENCES:

1) PLAN OF LAND FOR ALBERT ASALI DATED APRIL 21, 2005 PREPARED BY ROBERT GREENLAW RECORDED IN CCRD PB 205, PG 319.

2) SITE PLAN DRIVEWAY RECONSTRUCTION REED SCHOOL DATED AUGUST 1989 PREPARED BY PINKHAM & GREER ENGINEERS.

3) HOMESTEAD AVENUE SEWER PLAN DATED JULY 29, 1949 CITY OF PORTLAND PLAN #628/5.

4) PLAN OF HOMESTEAD VILLAGE DATED OCTOBER 1936 PREPARED BY H.I. JORDAN RECORDED IN CCRD P.B. 23, PG 37.

5) CITY OF PORTLAND ADDITION TO THOMAS REED SCHOOL HOUSE LOT DATED JUNE 2, 1931.

6) CITY OF PORTLAND HOMESTEAD AVE. SCHOOL HOUSE LOT DATED APRIL 30, 1925.

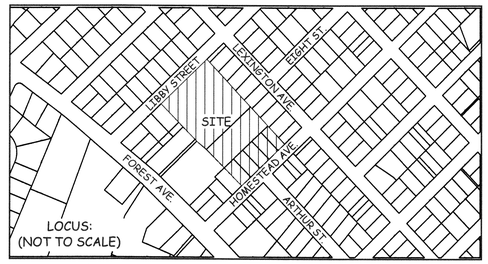
7) PLAN OF LAND MADE FOR BENJAMIN F. LIBBY DATED JUNE 30, 1924 PREPARED BY E.C. JORDAN & CO. RECORDED IN CCRD PB 16, PG 9.

8) PLAN OF CENTRAL PARK DATED OCTOBER 1901 PREPARED BY VARNEY & CHURCHILL RECORD IN CCRD PB 9, PG 129.

9) PLOT PLAN & DETAILS ADDITION TO THOMAS REED SCHOOL BY WADSWORTH & BOSTON ARCHITECTS.

10) CITY OF PORTLAND DEPT OF PUBLIC WORKS PLAN OF HOMESTEAD AVE. DATED SEPTEMBER 11, 1925.

11) CITY OF PORTLAND DEPT OF PUBLIC WORKS PLAN OF LIBBY STREET DATED JULY 28, 1931.



NOTES:

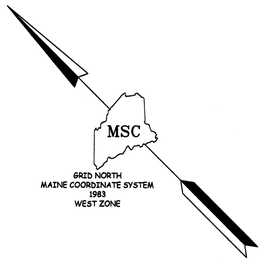
1) ELEVATIONS ARE ADJUSTED TO CITY OF PORTLAND VERTICAL DATUM.

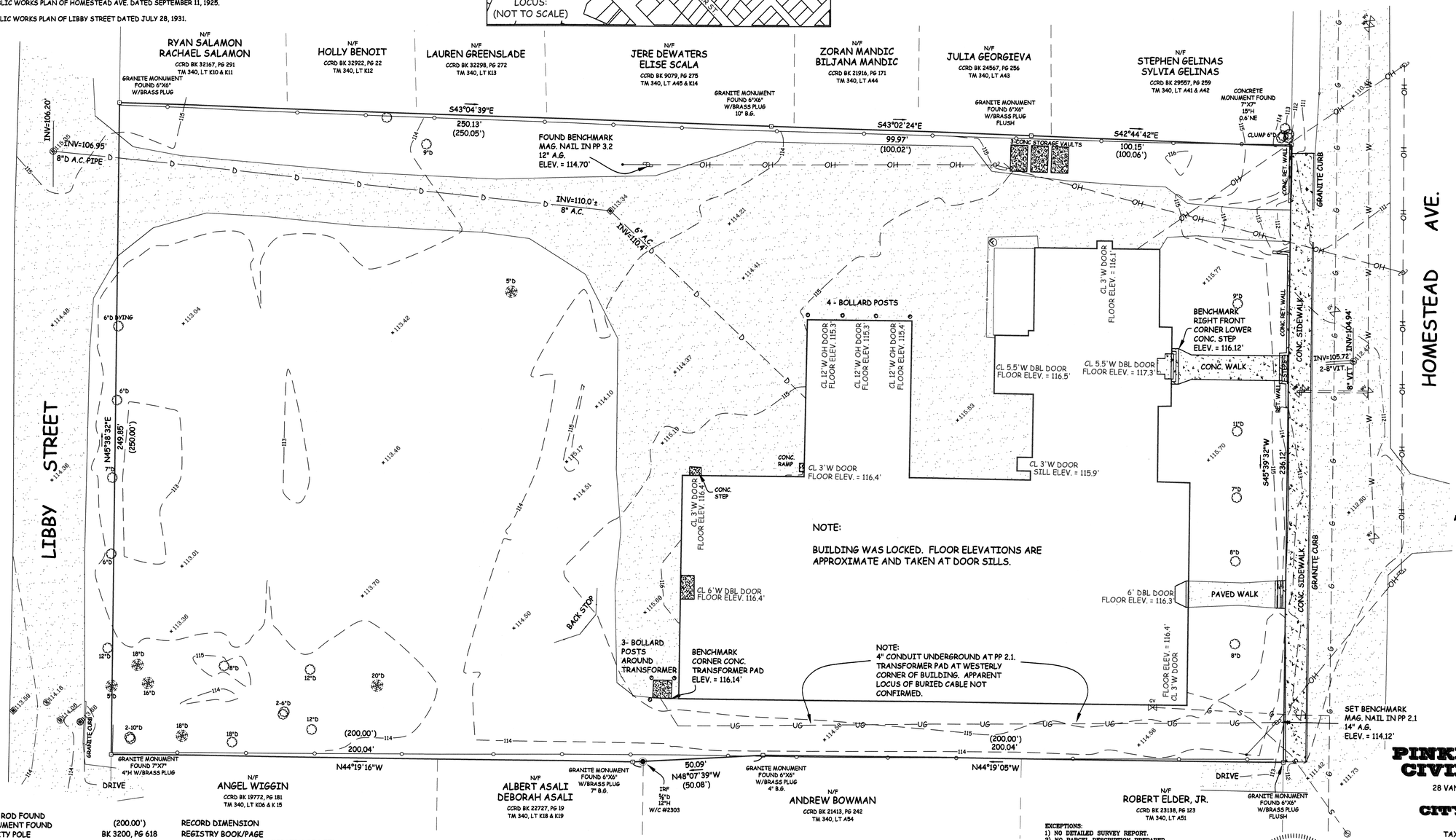
2) UDERGROUND UTILITIES WERE NOT LOCATED BUT WERE TAKEN FROM PLAN REFERENCES 2, 3, & 9.

3) DIGSAFE SHOULD BE CONTACTED BEFORE ANY EXCAVATION OR CONSTRUCTION.

4) COORDINATE SYSTEM IS MAINE WEST 1983 DERIVED FROM STATIC GPS OBSERVATION ON SITE.

5) AREA OF PARCEL EQUALS 109,471 SQUARE FEET OR 2.51 ACRES, MORE OR LESS.





LEGEND:

●	IRON ROD FOUND	(200.00')	RECORD DIMENSION
■	MONUMENT FOUND	BK 3200, PG 618	REGISTRY BOOK/PAGE
	UTILITY POLE	C.C.R.D.	CUMBERLAND COUNTY REGISTRY OF DEEDS
	GUY WIRE		PARCEL BOUNDARY
	CONIFEROUS TREE		EDGE PAVED TRAVELWAY
	DECIDUOUS TREE		BUILDING
	ROUND CATCH BASIN	210	CONTOUR
	DRAIN MANHOLE	D	STORM DRAIN LINE
	SEWER MANHOLE	OH	OVERHEAD UTILITY LINE
	WATER VALVE	UG	UNDERGROUND UTILITY LINE
	GAS VALVE		CHAIN LINK FENCE
—	SIGN (SINGLE POST)	G	GAS LINE
200.00	SPOT ELEVATION		CONCRETE SIDEWALK
N/F	NOW OR FORMERLY	S	SEWER LINE
TM 340, LT K13	TAX MAP #, LOT #		

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

EXCEPTIONS:
1) NO DETAILED SURVEY REPORT.
2) NO PARCEL DESCRIPTION PREPARED.

NOTES:

1)THE PARCEL BOUNDARIES AS DEPICTED ON THIS MAP WERE DERIVED FROM A THOROUGH REVIEW OF RECOVERED EXISTING RECORD EVIDENCE AND ACTUAL FIELD SURVEY LOCATION OF FOUND PHYSICAL EVIDENCE AND REPRESENT IN MY PROFESSIONAL OPINION THE POSITION OF THE RECORD PARCEL BOUNDARIES.

2)THIS SURVEY CONFORMS TO THE CURRENT STANDARDS ADOPTED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS. EXCEPTIONS AS NOTED ABOVE.

3)NOT VALID OR TRUE COPY OF ORIGINAL UNLESS SIGNED AND EMBOSSED BY SURVEYOR.

STATE OF MAINE
DELMORE A. MAXFIELD, JR.
1177
PROFESSIONAL
LAND SURVEYOR

Delmore A. Maxfield, Jr.

DATE: 8-23-17

PLAN OF LAND
FOR
PINKHAM & GREER
CIVIL ENGINEERS
28 VANNAH AVE. PORTLAND, MAINE 04103

OWNER OF RECORD:
CITY OF PORTLAND
CCRD BOOK 1202, PAGE 62
TAX MAP 338, LOTS A046-A050,A055
CCRD BOOK 1372, PAGE 351
TAX MAP 338, LOT K004

LOCATED AT:
HOMESTEAD AVENUE
LIBBY STEET
PORTLAND, MAINE

PREPARED BY:
MAINE SURVEY CONSULTANTS, INC.
P.O. BOX 485 HARRISON, MAINE 04040
SCALE: 1" = 20' DATE: AUGUST 2017
JN/PRJ 117025/DWG BASE117025 FB 159.147 & 161.129

REED SCHOOL APARTMENTS

19 LIBBY STREET
PORTLAND, ME

DATE OF ISSUE

SUBMISSION - DATE

ARCHETYPE architects

LOCATION MAP NOT TO SCALE

SIGNATURES

OWNER: _____ DATE: _____

ARCHITECT: _____ DATE: _____

CONTRACTOR: _____ DATE: _____

MAINE HOUSING: _____ DATE: _____

CONSTRUCTION LENDER: _____ DATE: _____

BUILDING TOTALS - GROSS SF

FIRST FLOOR:	4,636 SF
SECOND FLOOR:	4,636 SF
TOTAL:	**9,272 SF**

UNIT COUNT - 8 UNITS

DRAWING LIST

GENERAL
AC0.1 CODE SUMMARY
AC0.2 CODE SUMMARY SPECIAL NOTES ON ACCESSIBILITY
LS1.1 LIFE SAFETY

ARCHITECTURAL DRAWINGS
A1.00 BASEMENT PLAN
A1.01 FIRST FLOOR PLAN
A1.02 SECOND FLOOR PLAN
A2.01 NORTH ELEVATION
A2.02 EAST AND WEST ELEVATIONS
A2.03 SOUTH ELEVATION

Client:
Developers Collaborative
100 Commercial Street
Portland, ME
04101

Architect:
Archetype Architects
48 Union Wharf
Portland, ME
04101
207.772.6022

Civil Engineer:
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Surveyor:
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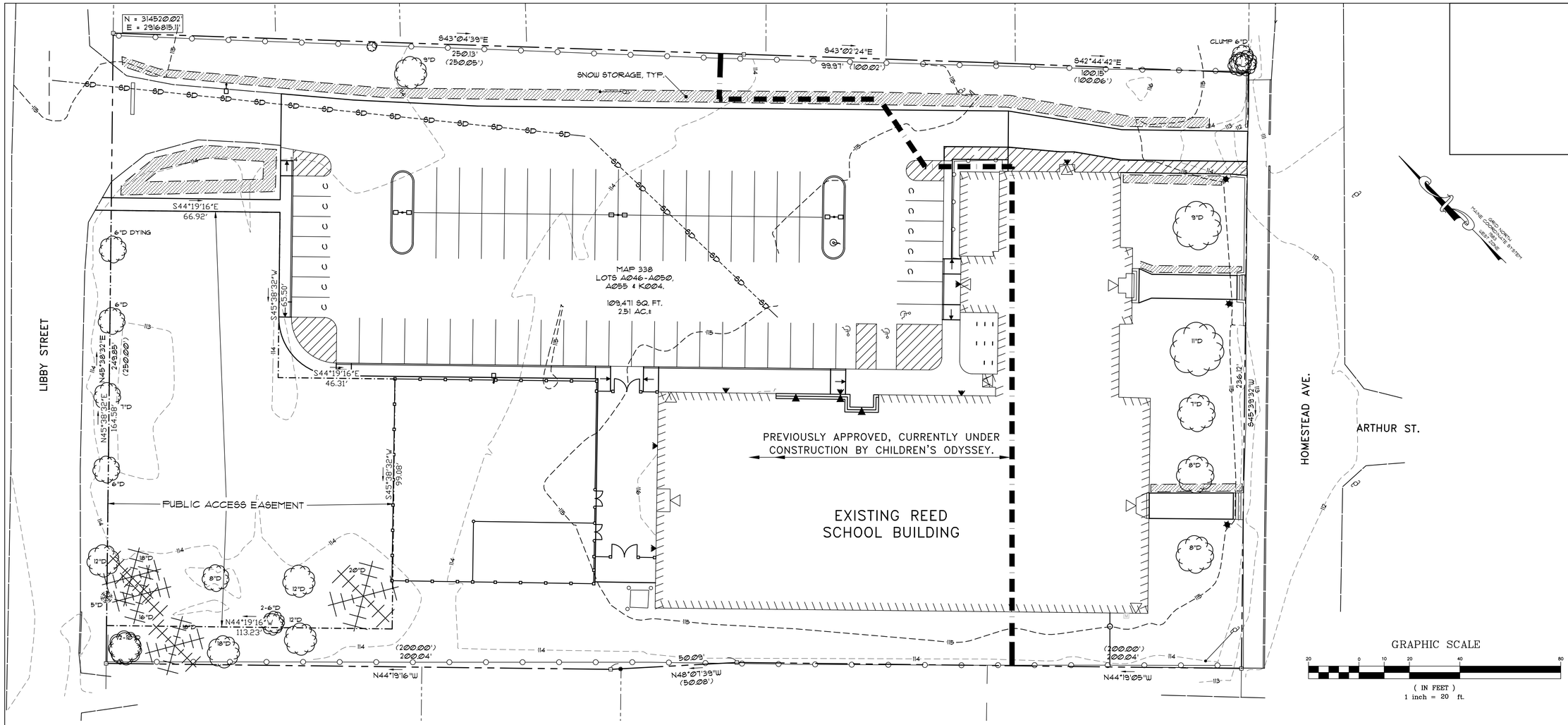


LEGEND

EXISTING

- PROPERTY LINE
- ABUTTERS PROPERTY
- EDGE OF PAVEMENT
- 200 CONTOURS
- BUILDING
- BUILDING DOORS
- CURB
- CHAINLINK FENCE
- G GAS LINE
- S SANITARY SEWER
- SD STORMDRAIN
- OHU OVERHEAD UTILITY
- UGU UNDERGROUND UTILITY
- W WATER LINE
- CATCH BASIN
- DRAIN MANHOLE
- TR TRANSFORMER
- S SEWER MANHOLE
- UTILITY POLE
- UTILITY POLE W/ GUY WIRE
- IRON PIPE FOUND
- IRON ROD FOUND
- MONUMENT FOUND
- GATE VALVE
- GAS VALVE
- CONIFEROUS TREE
- DECIDUOUS TREE

PROPOSED

- EDGE OF PAVEMENT
- BUILDING
- BUILDING ENTRY/EGRESS
- SIGN
- CHAINLINK FENCE
- FULL DEPTH BITUMINOUS PAVEMENT
- SLOPED BITUMINOUS CURB
- SURFACE DRAINAGE
- CONTOURS
- GRASS BERM
- FLAGPOLE
- WALKWAY LIGHTING
- WALL MOUNTED LIGHT
- LIGHT POLE

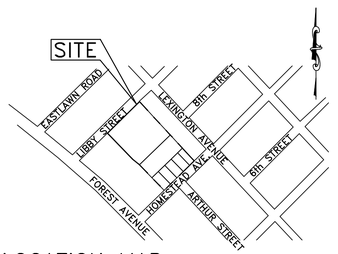
PROPOSED – APARTMENTS

- EDGE OF PAVEMENT
- FULL DEPTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- SLOPED BITUMINOUS CURB
- SNOW STORAGE AREAS

PREVIOUSLY APPROVED, CURRENTLY UNDER CONSTRUCTION BY CHILDREN'S ODYSSEY.

PAINTED PAVEMENT SYMBOLS

- HANDICAP PARKING
- "STOP" LINE
- "NO PARKING" AREA
- 8' 8' 8' VAN ACCESSIBLE PARKING SPACE



LOCATION MAP

SCALE: 1"=400'±

GENERAL NOTES

1. OWNER: REED SCHOOL, LLC, P.O. BOX 6038, FALMOUTH, ME. CUMBERLAND COUNTY REGISTRY OF DEEDS BK. 34830, PG 100, FILING DATE MAY 9, 2018.
2. APPLICANT: DC REED, LLC, P.O. BOX 6038, FALMOUTH, ME.
3. ENGINEER: WALSH ENGINEERING ASSOCIATES, INC., ONE KAREN DRIVE, SUITE 2A, WESTBROOK, MAINE, 04092.
4. ARCHITECT: ARCHETYPE ARCHITECTS, 48 UNION WHARF, PORTLAND, MAINE 04101.
5. TOPOGRAPHIC AND BOUNDARY INFORMATION: MAINE SURVEY CONSULTANTS, INC., HARRISON, MAINE. COORDINATE SYSTEM IS MAINE WEST 1983 DERIVED FROM STATIC GPS OBSERVATION ON SITE. BENCHMARKS: AS SHOWN ON PLAN
6. SOILS MAPPING PROVIDED BY MARK HAMPTON ASSOCIATES, INC., PORTLAND, MAINE.
7. ZONE: R-3 RESIDENTIAL, PROPOSED USE: RESIDENTIAL UNITS
8. TAX MAP REFERENCE: MAP 338/LOTS A046-A050, A055 & K004.
9. TOTAL PARCEL = 2.51 acres±
10. WAIVERS: NONE REQUESTED.
11. CALL DIG-SAFE PRIOR TO COMMENCING WORK, 811 OR 1-888-DIG-SAFE.
12. EXISTING BUILDING IS SERVICED BY PUBLIC WATER AND SEWER.
13. POWER, TELEPHONE AND CABLE ARE EXISTING, NO CHANGE IS PLANNED.
14. ALL CONSTRUCTION AND SITE ALTERATIONS SHALL BE DONE IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION, MARCH 2016.

SUBDIVISION PLAN, REED SCHOOL APARTMENTS, APPROVED BY THE CITY OF PORTLAND PLANNING BOARD

DATE

WALSH
ENGINEERING ASSOCIATES, INC.
One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

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STATE OF MAINE
THOMAS S. GREER
No. 4206
LICENSED PROFESSIONAL ENGINEER
9/19/18

REED SCHOOL APARTMENTS
19 LIBBY STREET
PORTLAND, MAINE

REED SCHOOL, LLC
P.O. BOX 6038, FALMOUTH, MAINE
PORTLAND, MAINE

Rev.	Date	Description	Drawn	Check
1	9/19/18	REV PER CITY COMT.	JWG	TSG

Sheet Title:
SUBDIVISION RECORDING PLAT
SHEET 1 of 2

		Sheet No.:
Job No.:	478	C1.1
Date:	JUNE 19, 2018	
Scale:	AS SHOWN	
Drawn:	JDC	
Checked:	TSG	

P:\478 - Reeds School - Phase II Housing\3. CAD\478 BASE.dwg,last date: 9/19/2018 8:19 AM

GENERAL NOTES

1. OWNER: REED SCHOOL, LLC, P.O. BOX 6038, FALMOUTH, ME. CUMBERLAND COUNTY REGISTRY OF DEEDS BK. 34830, PG 100, FILING DATE MAY 9, 2018.
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CITY OF PORTLAND SITE PLAN NOTES

1. LANDSCAPING SHALL MEET THE "ARBORICULTURAL SPECIFICATIONS AND STANDARDS OF PRACTICE AND LANDSCAPE GUIDELINES" OF THE CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS AND GUIDELINES.
2. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATION TO OR DEVIATION FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION: TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION, AND SURFACING OF PARKING AREAS AND LOCATION AND SIZE OF BUILDINGS.
3. ALL POWERLINE UTILITIES ARE OVERHEAD OR UNDERGROUND AS SHOWN ON THE PLAN. NO CHANGE TO THE SERVICE IS PLANNED.
4. SIDEWALKS AND CURBING SHALL BE DESIGNED AND BUILT WITH TIPDOWN RAMPS AT ALL STREET CORNERS, CROSSWALKS AND DRIVEWAYS IN CONFORMANCE WITH THE CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS AND GUIDELINES.
5. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS PUBLISHED BY THE BUREAU OF LAND AND QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2016 OR LATEST EDITION.
6. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING.
7. ALL DISTURBED AREAS ON THE SITE NOT COVERED BY BUILDINGS OR PAVED AREAS SHALL BE STABILIZED WITH LOAM AND SEED OR OTHER METHODS AS REQUIRED BY BEST MANAGEMENT PRACTICES (SEE ABOVE).
8. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE WITH THE CONTRACTOR, DEVELOPMENT REVIEW COORDINATOR, PUBLIC WORK'S REPRESENTATIVE AND OWNER TO REVIEW THE CONSTRUCTION SCHEDULE AND CRITICAL ASPECTS OF THE SITE WORK. AT THAT TIME, THE SITE/BUILDING CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A DETAILED CONSTRUCTION SCHEDULE TO THE ATTENDING CITY REPRESENTATIVE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A MUTUALLY AGREEABLE TIME FOR THE PRECONSTRUCTION MEETING.
9. EXISTING VEGETATION SHALL BE CONSERVED IN AREAS SHOWN ON THIS SITE. FENCING OR OTHER PROTECTIVE BARRIERS SHALL BE ERECTED OUTSIDE THE DRIP-LINE OF INDIVIDUAL, GROUPINGS OF TREES DESIGNATED FOR PRESERVATION PRIOR TO THE ONSET OF CONSTRUCTION. REGRADING SHALL NOT TAKE PLACE WITHIN THE DRIP-LINE OF TREES DESIGNATED FOR PRESERVATION. NO STORAGE OR CONSTRUCTION MATERIALS SHALL BE PERMITTED WITHIN THE DRIP-LINE OF TREES TO BE PRESERVED.

LEGEND

EXISTING

- PROPERTY LINE
- ABUTTERS PROPERTY
- EDGE OF PAVEMENT
- CONTOURS
- BUILDING
- BUILDING DOORS
- CURB
- CHAINLINK FENCE
- GAS LINE
- SANITARY SEWER
- STORMDRAIN
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- WATER LINE
- CATCH BASIN
- DRAIN MANHOLE
- TRANSFORMER
- SEWER MANHOLE
- UTILITY POLE
- UTILITY POLE W/ GUY WIRE
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PROPOSED

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- WALKWAY LIGHTING
- WALL MOUNTED LIGHT
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PROPOSED – APARTMENTS

- EDGE OF PAVEMENT
- FULL DEPTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- SLOPED BITUMINOUS CURB
- SNOW STORAGE AREAS

PREVIOUSLY APPROVED, CURRENTLY UNDER CONSTRUCTION BY CHILDREN'S ODYSSEY.

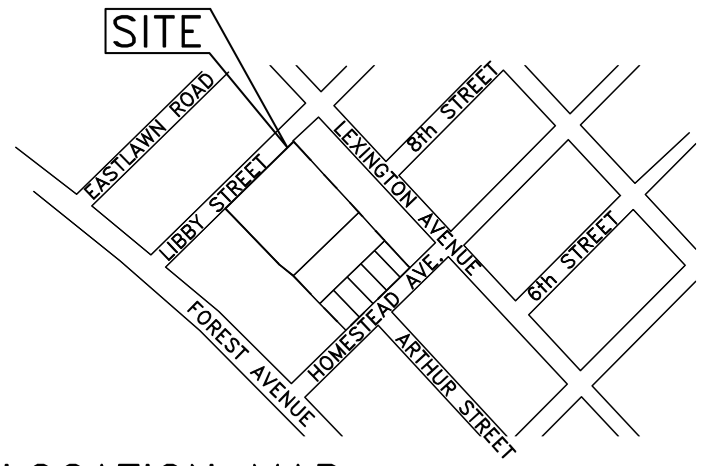
PAINTED PAVEMENT SYMBOLS

- HANDICAP PARKING
- "STOP" LINE
- "NO PARKING" AREA
- VAN ACCESSIBLE PARKING SPACE

ZONE INFORMATION

ZONE: RESIDENTIAL 3 (R-3)
PERMITTED USE & PROPOSED USES:
MULTI-FAMILY RESIDENTIAL

SPACE STANDARDS	R-3
LOT AREA PER UNIT	6,500 SQ. FT.
MINIMUM LOT SIZE	6,500 SQ. FT.
MINIMUM STREET FRONTAGE	50 FEET
MINIMUM FRONT YARD	25 FEET
MINIMUM REAR YARD	25 FEET
MINIMUM SIDE YARD	
2 1/2 STORY STRUCTURE	16 FEET
SIDE YARD ON A SIDE STREET	20 FEET
MAXIMUM LOT COVERAGE	35%
MINIMUM LOT WIDTH	65 FEET
MAXIMUM BUILDING HEIGHT	35 FEET



LOCATION MAP

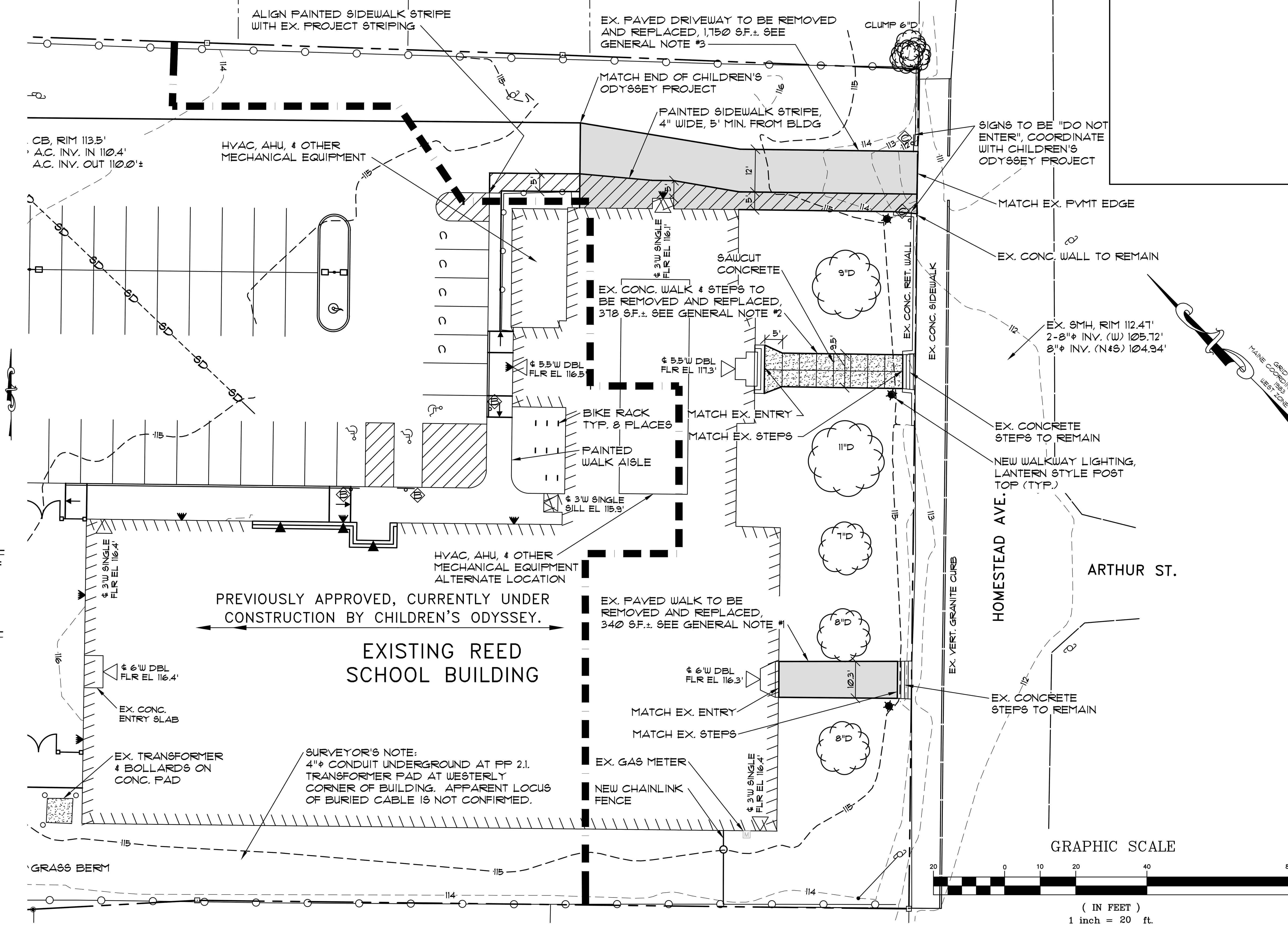
SCALE: 1"=400'±

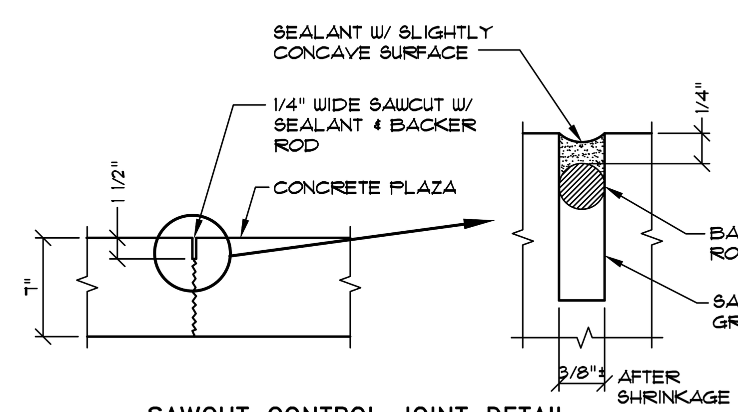
PROJECT DRAWINGS

C1.1	SUBDIVISION RECORDING PLAT, SHEET 1 of 2
C1.2	SUBDIVISION RECORDING PLAT, SHEET 2 of 2
C2.1	SITE PLAN, NOTES AND DETAILS
	PLAN OF LAND, HOMESTEAD AVENUE, LIBBY STREET

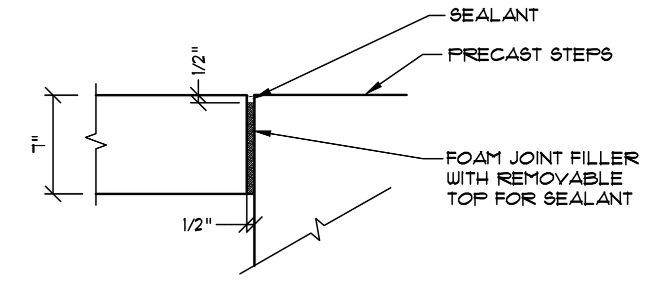
SITE PLAN, REED SCHOOL APARTMENTS, APPROVED BY THE CITY OF PORTLAND PLANNING BOARD

DATE





SAWCUT CONTROL JOINT DETAIL

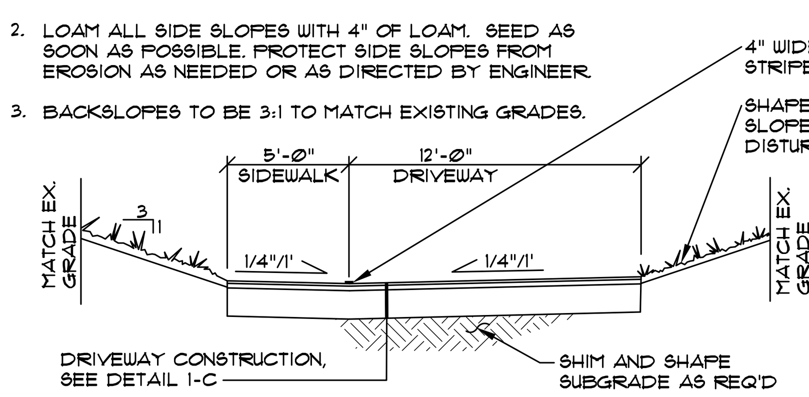


TYP. ISOLATION JOINT

2 SITE CONCRETE JOINTS

NOT TO SCALE

NOTES:
1. HMA = HOT MIX ASPHALT.
2. LOAM ALL SIDE SLOPES WITH 4" OF LOAM. SEED AS SOON AS POSSIBLE. PROTECT SIDE SLOPES FROM EROSION AS NEEDED OR AS DIRECTED BY ENGINEER.
3. BACKSLOPES TO BE 3:1 TO MATCH EXISTING GRADES.

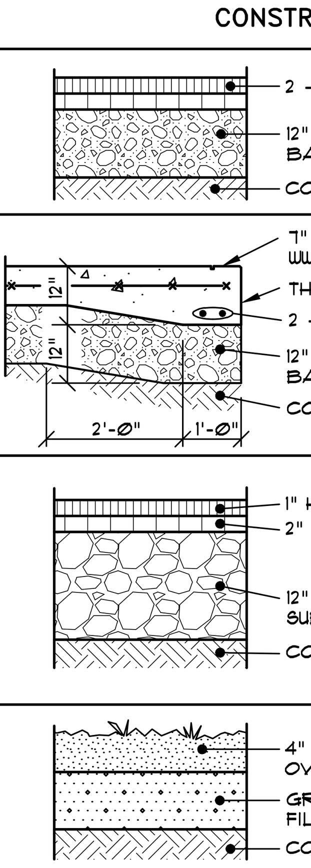


3 DRIVEWAY SECTION

NOT TO SCALE

APARTMENT GENERAL NOTES

1. REMOVE EXISTING PAVEMENT AND REPLACE, SEE DETAIL 1-A.
2. REMOVE EXISTING CONCRETE WALK AND REPLACE WITH CONCRETE WALK, SEE DETAIL 1-B.
3. REMOVE EXISTING PAVEMENT. REPLACE WITH 12' WIDE EXIT ONLY DRIVE AISLE AND 5' WIDE SIDEWALK. SEE SECTION 1-C AND DETAIL 3.
4. LOAM AND SEED ALL UNPAVED AREAS DISTURBED BY CONSTRUCTION, SEE DETAIL 1-D.



	CONSTRUCTION	USE
A	2 - 1" LAYERS OF HMA MDOT 9.5mm 12" COMPACTED AGGREGATE BASE, MDOT 703.06(a) TYPE A COMPACTED SUBGRADE	BITUMINOUS SIDEWALK
B	7" CONC. SLAB W/ 6x6 W2.9xW2.9 WWF @ MIDHEIGHT OF SLAB THICKENED SLAB 2 - #4 CONT. 12" COMPACTED AGGREGATE BASE, MDOT 703.06(a) TYPE A COMPACTED SUBGRADE 12" / 12" / 2'-0" / 1'-0"	CONCRETE SIDEWALK
C	1" HMA MDOT 9.5mm 2" HMA MDOT 19.0mm 12" COMPACTED AGGREGATE SUBBASE, MDOT 703.06(b) TYPE C COMPACTED SUBGRADE	BITUMINOUS DRIVEWAY SEE DETAIL 3
D	4" TOPSOIL, NO STONES OVER 3/4" DIA. GRANULAR MATERIAL IN FILL AREAS COMPACTED SUBGRADE	GRASS ALL UNPAVED DISTURBED AREAS

NOTES:
1. HMA = HOT MIX ASPHALT. MDOT = MAINE DEPARTMENT OF TRANSPORTATION.
2. ALL COURSE THICKNESS AFTER FINAL COMPACTION.

1 SCHEDULE OF SURFACE FINISHES

NOT TO SCALE

WALSH ENGINEERING ASSOCIATES, INC.
One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

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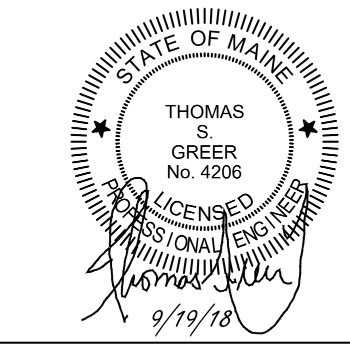


REED SCHOOL APARTMENTS
19 LIBBY STREET
PORTLAND, MAINE

REED SCHOOL, LLC
P.O. BOX 6038, FALMOUTH, MAINE
PORTLAND, MAINE

Rev.	Date	Description	Drawn	Check
1	9/19/18	REV PER CITY COMT.	JWG	TSG

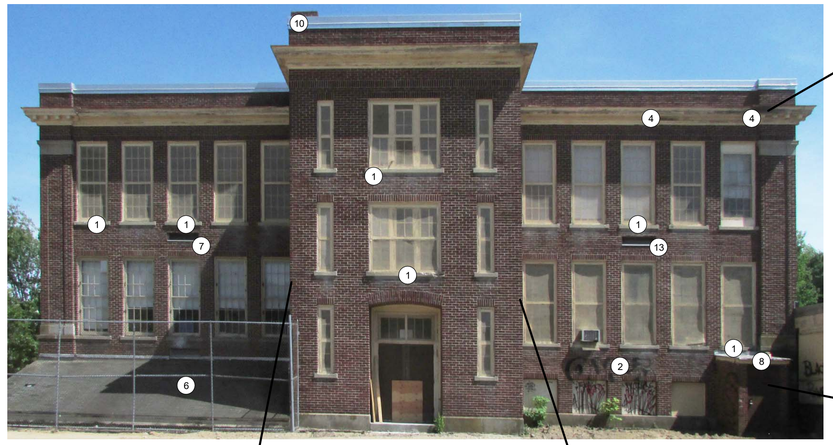
Sheet Title:
SITE PLAN, NOTES AND DETAILS

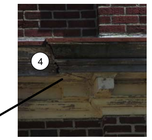
Job No.:	478
Date:	JUNE 19, 2018
Scale:	AS SHOWN
Drawn:	JDC
Checked:	TSG

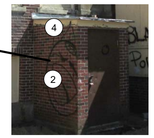
Sheet No.: C2.1

SPECIFIC NOTES
1. REPAIR/REPLACE PRECAST BAND/LINTEL/SILL
2. REMOVE GRAFFITI
3. REPLACE MISSING BRICK
4. REPAIR MISSING/ROTTED TRIM/CORNICE
5. PROVIDE NEW COATING ON SILL TOP
6. DEMOLISH MECHANICAL ENCLOSURE
7. PROVIDE NEW GRILL
8. PROVIDE NEW EPDM ROOF AND METAL DRIP EDGE
9. PROVIDE NEW METAL ROOF
10. PROVIDE CHIMNEY CAP
11. REMOVE SIGN/BIRDHOUSE/ELEC BOXES
12. PATCH/REPAIR DOOR
13. REPAINT GRILL/MISC. ELEMENT

GENERAL NOTES
REMOVE ALL PLYWOOD WINDOW PROTECTION
REFURBISH ALL WINDOWS
PROVIDE EXTERIOR STORM WINDOWS
REPAINT ALL TRIM
SCRAPE AND REPAINT STEEL LINTELS
REMOVE EXISTING AND PROVIDE NEW EPDM AND METAL DRIP EDGE ABOVE CORNICES
REPOINT ALL JOINTS IN PRECAST







1 NORTH ELEVATION
1/8" = 1'-0"

Prepared For:
DEVELOPERS COLLABORATIVE
Address
City, State

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
REED SCHOOL

Revisions:

Scale:
As indicated

Date:
06/15/2018

NORTH ELEVATION

A2.01

SPECIFIC NOTES
1. REPAIR/REPLACE PRECAST BAND/LINTEL/SILL
2. REMOVE GRAFFITI
3. REPLACE MISSING BRICK
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6. DEMOLISH MECHANICAL ENCLOSURE
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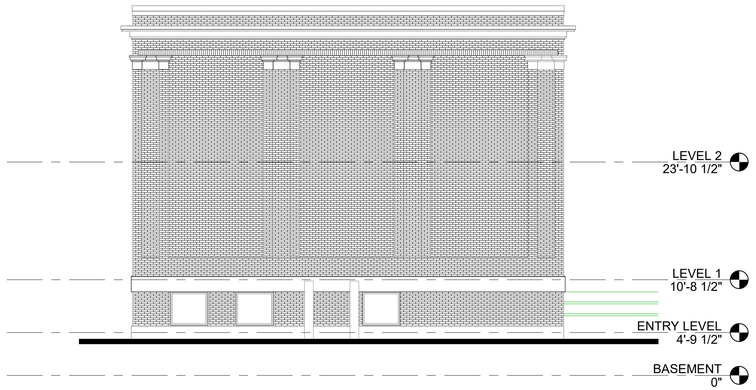
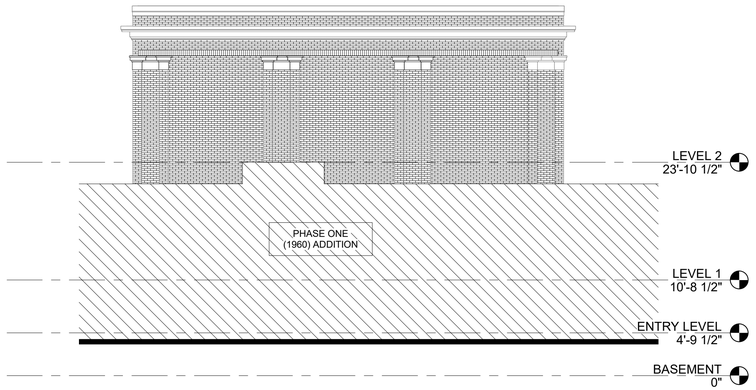


1 EAST ELEVATION
1/8" = 1'-0"



3 WEST ELEVATION
1/8" = 1'-0"

Prepared For:
DEVELOPERS COLLABORATIVE

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
REED SCHOOL

Revisions:

Scale: As indicated

Date: 06/15/2018

EAST AND WEST ELEVATIONS

A2.02

SPECIFIC NOTES
1. REPAIR/REPLACE PRECAST BAND/LINTEL/SILL
2. REMOVE GRAFFITI
3. REPLACE MISSING BRICK
4. REPAIR MISSING/ROTTED TRIM/CORNICE
5. PROVIDE NEW COATING ON SILL TOP
6. DEMOLISH MECHANICAL ENCLOSURE
7. PROVIDE NEW GRILL
8. PROVIDE NEW EPDM ROOF AND METAL DRIP EDGE
9. PROVIDE NEW METAL ROOF
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REFURBISH ALL WINDOWS
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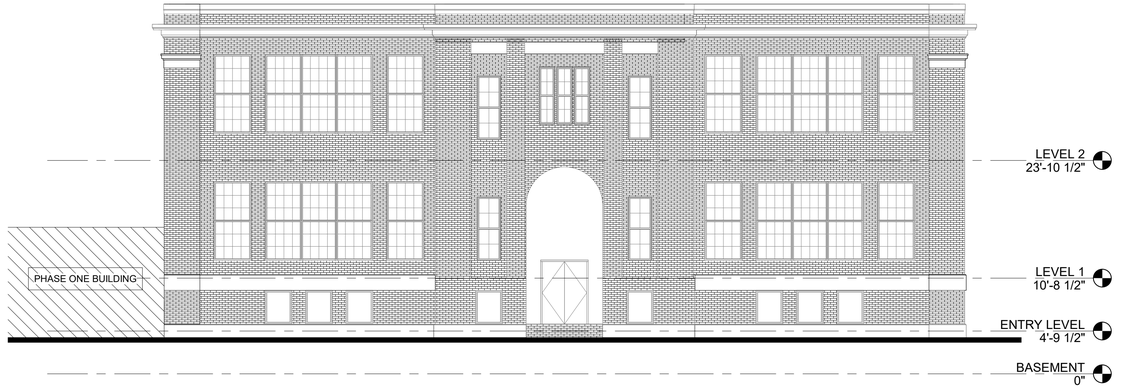
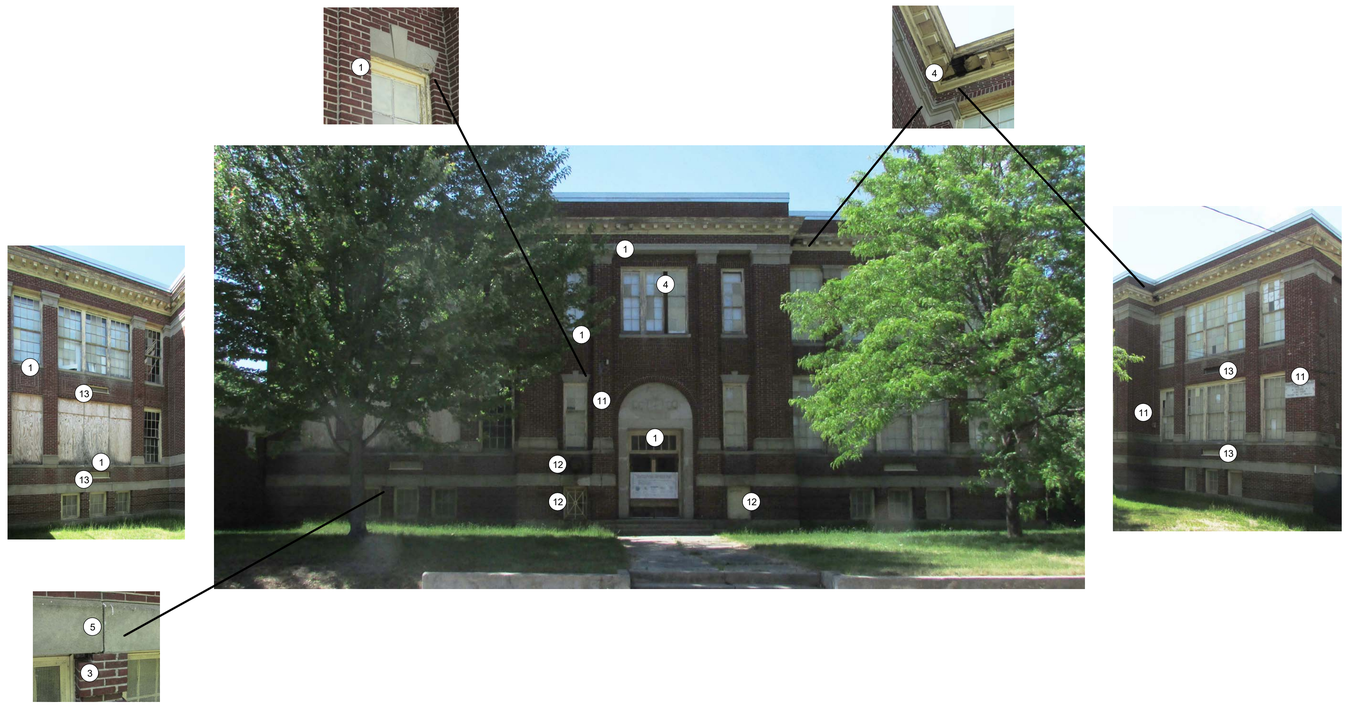
REPAINT ALL TRIM
SCRAPE AND REPAINT STEEL LINTELS
REMOVE EXISTING AND PROVIDE NEW EPDM AND METAL DRIP EDGE ABOVE CORNICES
REPOINT ALL JOINTS IN PRECAST



1 SOUTH ELEVATION
1/8" = 1'-0"



Prepared For:
DEVELOPERS COLLABORATIVE

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
REED SCHOOL

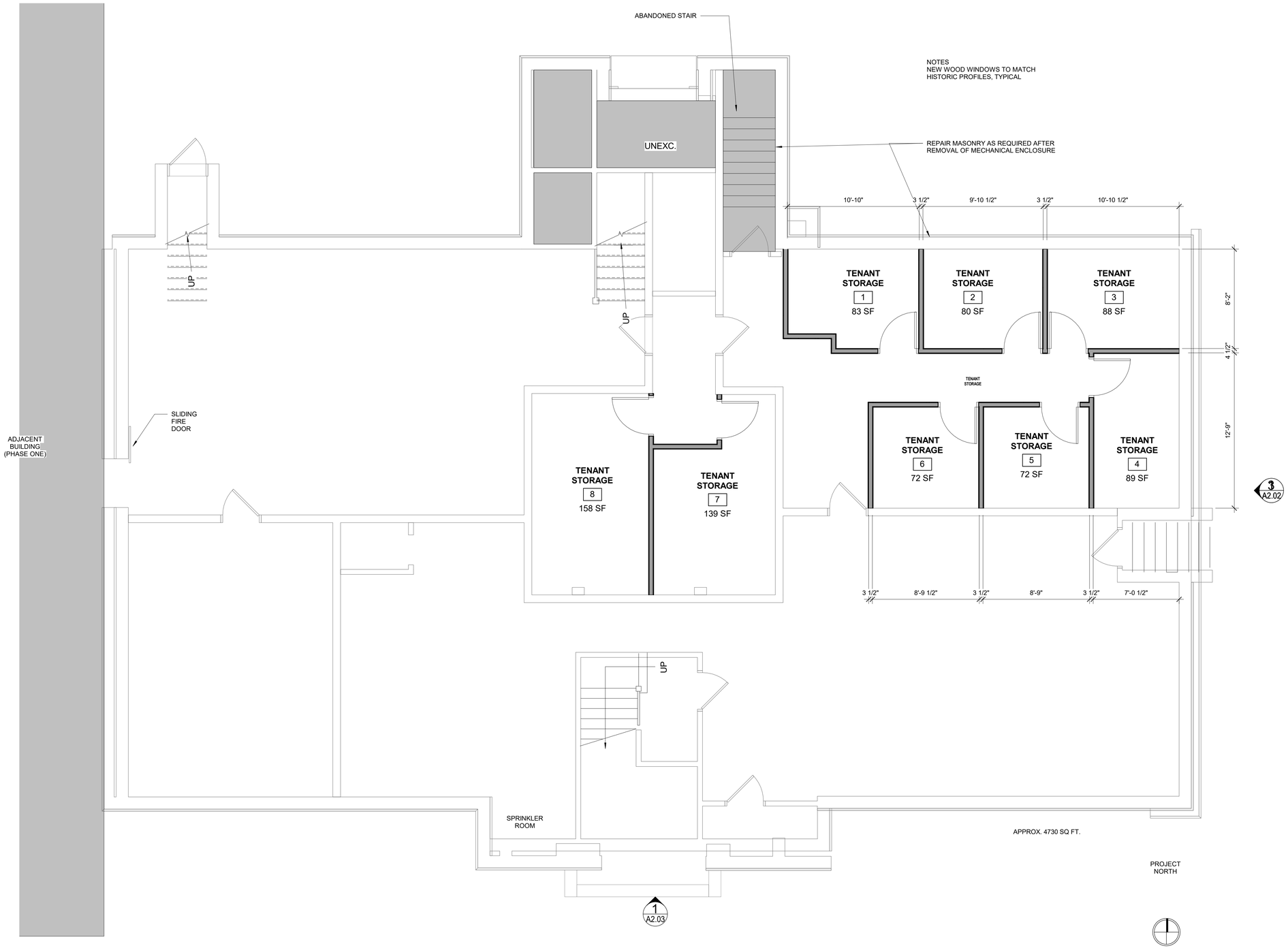
Revisions:

Scale:
As indicated

Date:
06/15/2018

SOUTH ELEVATION

A2.03



1 BASEMENT
1/4" = 1'-0"

Prepared For:
DEVELOPERS COLLABORATIVE

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
REED SCHOOL

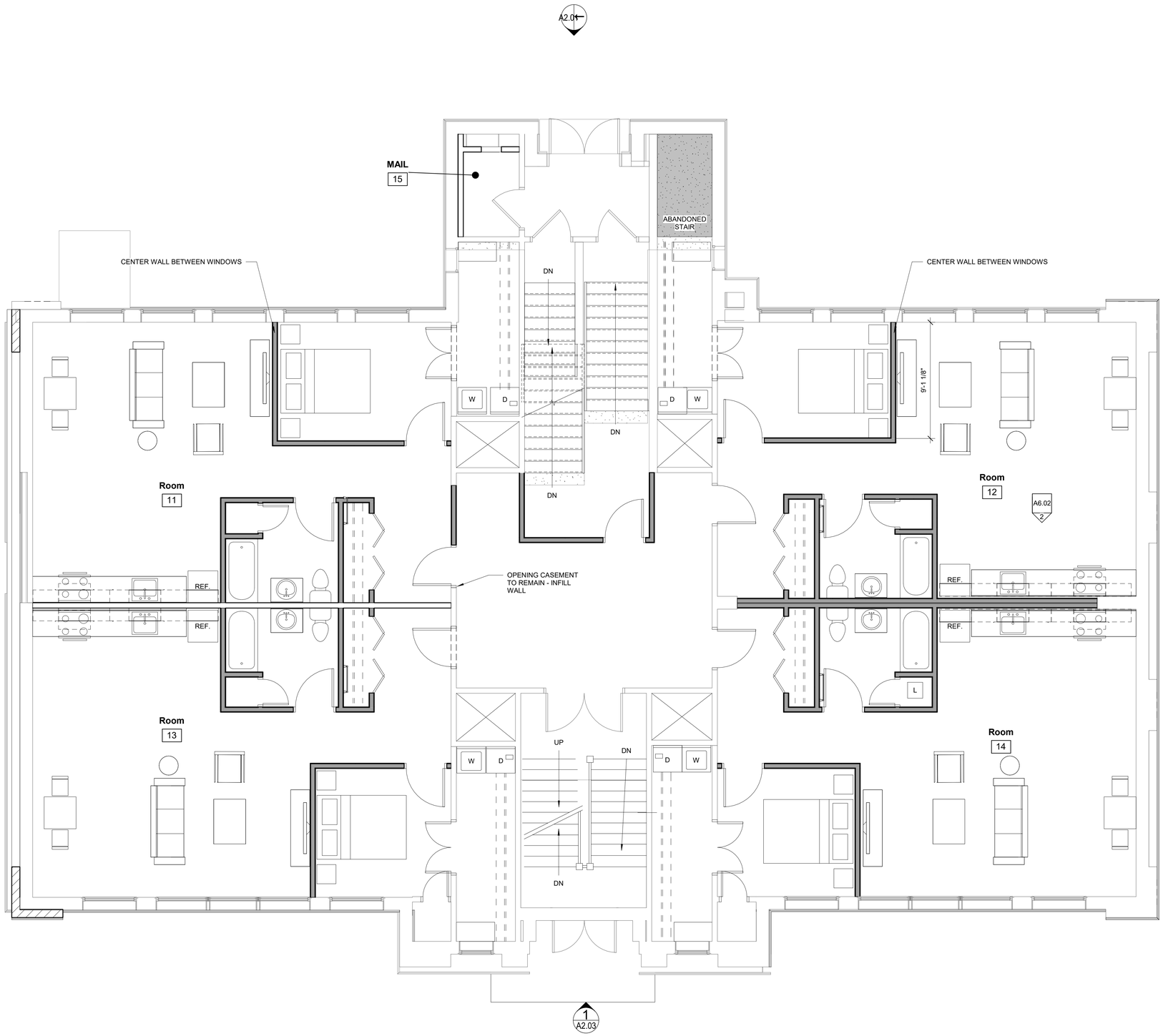
Revisions:

Scale: 1/4" = 1'-0"

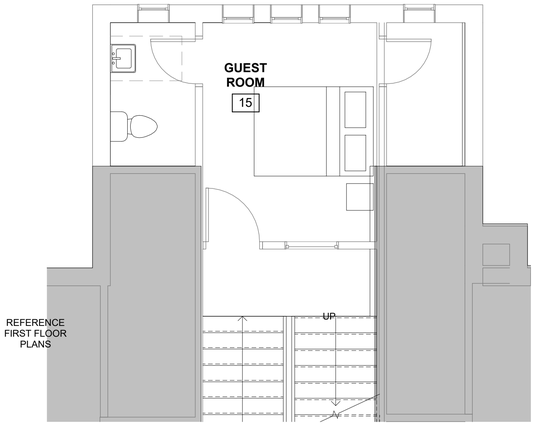
Date: 06/15/2018

BASEMENT PLAN

A1.00



1 | 1ST FLOOR
1/4" = 1'-0"



2 | LEVEL 1.5
1/4" = 1'-0"

Prepared For:
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Project:
REED SCHOOL

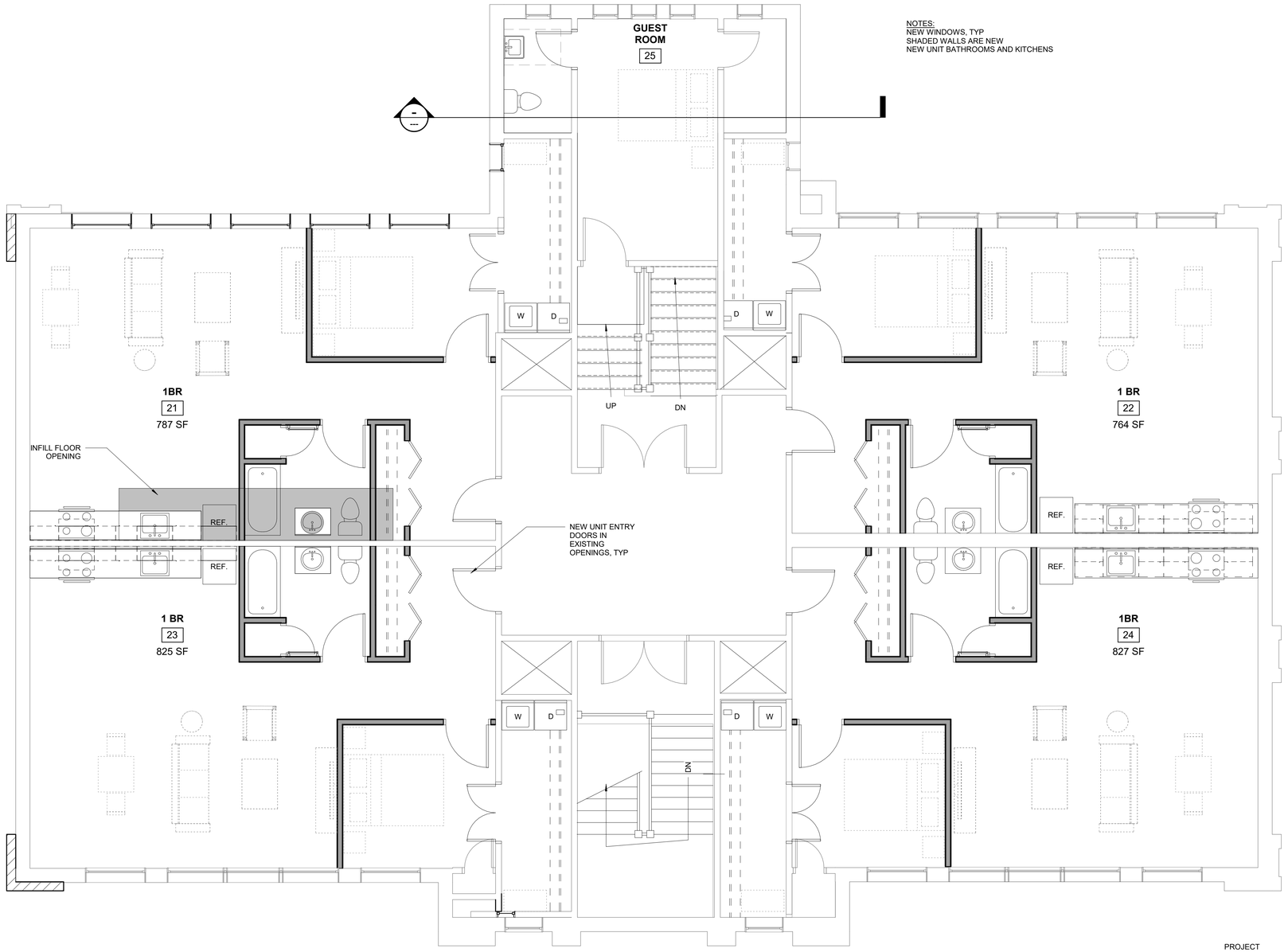
Revisions:

Scale: 1/4" = 1'-0"

Date: 06/15/2018

FIRST FLOOR PLAN

A1.01



1 SECOND FLOOR
1/4" = 1'-0"

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SECOND FLOOR PLAN

A1.02

CODE SUMMARY

Applicable Codes
- MUBEC - Maine Uniform Building and Energy Code
  2015 International Building Code - IBC
  2009 IECC: International Energy Conservation Code
  2015 IEBC: International Existing Building Code
- NFPA 101 Life Safety

Accessibility Codes
- UFAS Fair Housing Act Section 504
- State of Maine Human Rights Act
- ADAAG Americans with Disabilities Act
- ICC ANSI 117.1 Accessible and Usable Buildings and Facilities

PROJECT SUMMARY:

This is the second phase in the renovation of the Reed School. The school consists of the original 1926 building and a 1960 addition. Phase 1 converted the addition into a daycare facility. Phase 2 will convert the original 1926 building into 8 apartment units.

This building is an historic renovation and is subject to the provisions and exceptions provided by the International Building Code's Chapter 12: Historic Buildings.

Square Footages:

I-4 = 16,509 SF (PHASE 1)
R-2 = 9,272 (PHASE 2) FLOORS 1 & 2
S-1 = 4,636 (PHASE 2) BASEMENT

Unit Count:

8 units

CODE SUMMARY :

Chapter 3- Use and Occupancy Classification

310.4 Residential Group R-2 apartments

Chapter 4-
420 Group R-2
420.2 Separation Walls. Walls separating dwelling units in the same building, walls separating sleeping units in the same building and walls separating dwelling and sleeping units from other occupancies contiguous to them in the same building shall be constructed as fire partitions in accordance with Section 708.

420.3 Horizontal Separation. Floor assemblies separating dwelling units in the same buildings, floor assemblies separating sleeping units in the same building and floor assemblies separating dwelling or sleeping units from all other occupancies contiguous to them in the same building shall be constructed as horizontal asseblies in accordance with section 711.

***IEBC 1205.4 Occupancy Separation.**
Required occupancy separations of 1 hour may be omitted when the building is provided with an approved automatic sprinkler system.

New horizontal and vertical assemblies separating dwelling units will be rated 1-hr. Existing assemblies to remain meet the requirements of the code.

Chapter 5- General Building Heights and Areas

Table 504.3 Allowable building height in feet above grade plane
occupancy R, S13R, Type VB = 60' max height above grade plane

Table 504.4 Allowable number of stories above grade plane
occupancy R-2, S13R, Type VB = 3 stories max above grade plane.

Table 506.2 Allowable area factor
occupancy R-2, S13R, Type VB = 7,000 SF max

506.2.4 Mixed-occupancy, multi-story buildings
Each story of a mixed-occupancy building with more than one story above grade plane shall individually comply with the applicable requirements of Section 508.1.

Exception: For buildings designed as separated occupancies under Section 508.4 and equipped throughout with an automatic sprinkler system installed in accordance with 903.3.1.2, the total building area shall be such that the aggregate sum of the ratios of the actual area of each story divided by the allowable area of such stories determined in accordance with Equation 5-3 based on the applicable provisions of Section 508.1, shall not exceed four.

508 Mixed Use and Occupancy
508.1 General

508.2 Accessory Occupancies
Aggregate accessory occupancies, ancillary to principal occupancy, shall not occupy more than 10% of the building area of the story and shall not exceed Table 503 values (without building area increases). Accessory occupancies shall be individually classified.

Note: Storage areas on each floor account for less than 10% of total floor area and are Accessory Occupancies (non-separated).

508.2.4 No separation is required between accessory occupancies and the main occupancy. (Exception 2: R2 occupancy dwelling units must be separated from accessory occupancies per Section 420 (1 hour).

508.4 Separated Occupancies
508.4.1 Occupancy Classification
Separated Occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code based on the occupancy classification of that portion of the building.

508.4.2 Allowable building area.
In each story, the building area shall be such that the sum of the ratios of the actual building area of each separated occupancy divided by the allowable building area of each separated occupancy shall not exceed 1.

sum of the ratios not to exceed 4 per 506.2.4.

I4 actual: 16,509 / I4 allowable:36,000 + R2 actual: 4,636 / R2 allowable: 7,000 = 1.12 < 4

508.4.4 Separation.
Individual Occupancies shall be separated from adjacent occupancies in accordance with table 508.4

Group R required to be separated from Group I-4 with 1 hour separation per **TABLE 508.4**

508.4.3 Allowable Height: Each separated occupancy shall comply with building height limitations based on the type of construction

Type VB:		
Occupancy	**Allowed**	**Actual**
R-2 Residential	3 Stories	2 Stories

Table 601 - Fire Resistance Ratings for Building Elements

Building Element	**Type VB**
Primary Structural Frame	0 hour
Bearing Walls	
Exterior Walls	0 hours
Interior Walls	0 hour
Non-Bearing Walls and Partitions, Exterior	(See Table 602)
Non-Bearing Walls and Partitions, Interior	0 hour
Floor Construction and Secondary Members	0 hour
Roof Construction and Secondary Members	0 hour

Table 602- Fire Resistance Rating Requirements For Exterior Walls Based on Fire Separation Distance (non-loadbearing walls)

Fire Separation Dist.	Construction Type	Group I,R
x < 5'	All	1 hour
5' ≤ x <10'	Type VB	1 hour
10' ≤ x < 30'	Type VB	0 hour
x ≥ 30'	All	0 hour

***Higher of 2 determining factors (Tables 601 and 602) indicate exterior bearing walls to be 0 hour fire resistance rated.*

602.3 Type V Construction
Structural elements, exterior walls, and interior walls are of any materials permitted by Code.

Chapter 7- Fire and Smoke Protection Features

705 Exterior Walls
705.2 Projections shall not extend any closer to the line used to determine the fire separation distance than shown in Table 705.2

T705.2 Minimum Distance of Projection. Fire Separation Distance > 3'-0"; minimum distance from line used to determine FSD = 24" plus 8 inches for every foot of FSD beyond 3 feet or fraction thereof.

705.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 705.8

Table 705.8 Maximum Area of Wall Openings Based on Fire Separation Distance and Degree of Opening Protection

Fire Separation Dist.	**Degree of Opening Protection**	**Allowable Area**
0' to less than 3'	Unprotected, Sprinklered	Not Permitted
3' to less than 5'	Unprotected, Sprinklered	15%
5' to less than 10'	Unprotected, Sprinklered	25%
10' to less than 15'	Unprotected, Sprinklered	45%
15' to less than 20'	Unprotected, Sprinklered	75%
20' to less than 25'	Unprotected, Sprinklered	No Limit
25' to less than 30'	Unprotected, Sprinklered	No Limit
30' or greater	Unprotected, Sprinklered	Not Required

705.8.5 Vertical Separation of openings
Not Required, Exception no. 2, Automatic Sprinkler System in accordance with 903.3.1.1

705.11 Parapets
Not required on exterior walls per Exception No. 1, The wall is not required to be fire-resistance rated in accordance with Table 602 because of fire separation distance.

707 Fire Barriers (shafts, exit and floor opening enclosures)
707.3.1 Shaft enclosures shall comply with Section 713.4 (1 hour)

707.3.2 The fire resistance rating of exit enclosures shall comply with Section 1023.1 (1 hour).

*** IEBC 1203.6 Stairway Enclosure.**
In buildings of three stories or less, exit enclosure construction shall limit the spread of smoke by the use of tight-fitting doors and solid elements. Such elements are not required to have a fire resisitance rating.

***IEBC 1203.4 Transoms.**
In groups of R-2 occupancy, existing transoms in corridors and other fire-resistance-rated wallls may be maintained if fixed in the closed position. A sprinkler shall be installed on each side of the transom.

The existing stair walls meet the requirements of the IEBC that the walls be smoke-tight. The new wall enclosing the stair and separating it from the first floor will be 1 hour fire-rated.

707.3.6 Incidental Accessory Occupancies Fire barriers separating incidental accessory occupancies shall have a fire resistance rating of not loss than that indicated in Table 509. *Not required due to automatic sprinkler system.*

707.6 Openings in fire barrier shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width or 25% of length of wall, with max area of any single opening not to exceed 156 sf. Openings in exit enclosures and passageways shall comply with Sections 1019, 1023.4 and 1024.5.
- Exception 1: Openings not limited to 156 sf with automatic sprinkler systems.
- Exception 2: Openings not limited to 156 sf or 25% of length at fire door serving exit enclosure.

713 Shaft Enclosures (stairs, chutes, elevators, duct shafts, etc.)
713.2 Shaft enclosures to be constructed as fire barriers

713.4 Shaft enclosures shall have a 1 hour fire resistance rating where connecting less than 4 stories.

***IEBC 2015 1203.7 One-hour fire-resistant assemblies.**
Where 1-hour fire-resistance-rated construction is required by these provisions, it need not be provided, regardless of construction or occupancy, where the existing wall and ceiling finish is wood or metal lath and plaster.

713.7.1 Penetrations other than those necessary for the purpose of the shaft shall not be permitted.

714 Penetrations
714.3 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.3.1 through 714.3.3

708 Fire Partitions (exit access corridors, dwelling unit separations, etc.)

708.1 General

Fire partitions shall have a fire resistance rating of not less than 1 hour.
- Walls Separating Dwelling Units (420.2) — One hour
- Corridor Walls per Table 1020. — 1/2 hour(when fully sprinklered per NFPA 13)

***IEBC 1205.4 Occupancy Separation.**
Required occupancy separations of 1 hour may be omitted when the building is provided with an approved automatic sprinkler system.

708.4 Continuity: Fire partitions shall extend from floor below to underside of floor/roof sheathing above. Supporting structure shall be protected simliarly to wall. Fire blocking is not required if equipped with automatic sprinkler system and sprinklers are installed within combustible floor/ceiling and roof/ceiling spaces.

708.5 Where exterior walls serve as part of the required fire resistance rating separation, walls shall comply with Section 705 Exterior Walls and fire resistance rated requirements shall not apply.

711.2.4.3 Dwelling units and sleeping units. Horizontal assemblies serving as dwelling or sleeping unit separations in accordance with Section 420.3 shall be not less than 1-hour fire-resistance-rated construction
Exception: 1/2 hour rating required when sprinklered.

***IEBC 1205.4 Occupancy Separation.**
Required occupancy separations of 1 hour may be omitted when the building is provided with an approved automatic sprinkler system.

711.2.6 Ceiling membrane not required over unusable crawl spaces or unusable ceiling spaces.

716.5 Fire Door and Shutter Assemblies
Table 716.5

Type of Assembly	**Required Assembly Rating**	**Min Door Assembly Rating (hrs)**
Fire walls and fire barriers	1 hour	3/4 hour
Exit access enclosures (1hr)	1 hour	1 hour
Fire Partitions		
Corridor walls	.5 hour	1/3 hour
Other fire partitions	1 hour	3/4 hour

716.5.3.1 Fire door assemblies shall meet requirements for smoke and draft control door assemblies

Chapter 8- Interior Finishes

Table 803.11 Interior Wall and Ceiling Finish Requirements By Occupancy- Sprinklered

Group	**Exit Enclosures**	**Corridors**	**Rooms and Enclosed Spaces**
R-2	Class C	Class C	Class C

Chapter 9- Fire Protection Systems

Table 903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

903.3.1.2 NFPA 13R Sprinkler Systems
The building will be equipped throughout with an automatic sprinkler system in accordance with NFPA 13R

903.3.2 Quick response or residential automatic sprinklers shall be installed in dwelling units.

903.4 Valve controlling water supply for automatic sprinkler system shall be electronically supervised by a fire alarm control unit.

905 Standpipe Systems
905.2 Standpipe Systems will be provided in accordance with NFPA 14

905.3.1 Height- Class 1 Standpipes are allowed in buildings equipped throughout with an automatic sprinkler system.

905.4 Class I standpipe hose connections shall be provided in the following locations:
- In every stairway at an intermediate floor level between floors, unless otherwise approved by the fire code official
- On each side of the wall adjacent to exit opening of horizontal exit (Not required where hose stream is reachable).

906 Portable Fire Extinguishers- Required in Group R-2
- in each dwelling unit provided with a minimum rating of 1-A:10-B:C
- on each floor of structures under construction
- where required by the International Fire Code Table 906.1
- special hazard areas where required by the code official

907 Fire Alarm and Detection Systems
907.2 Where Required-New Buildings and Structures
Exception 2: The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is accessible to the public.

907.2.9.2 Group R-2: Manual fire alarm station is not required per exception 2, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.

907.2.11 Smoke alarms shall be installed per Section 907.2.11 (within sleeping units)

907.2.11.2 Group R-2: Smoke alarms shall be installed outside each sleeping area and within each room used for sleeping.

907.5.2.3.3 Group R-2: All dwelling and sleeping units shall be capable of supporting visual alarm notification and extended to the unit smoke detectors.

912.2.1 Fire Department Connections: Locations as approved by fire chief so vehicles and hose lines will not interfere with building access (visible location on street side of building).

Chapter 10- Means of Egress

1004 Occupant Load
Table 1004.1 Maximum Floor Area Allowances per Occupant
Residential 200 gross sf

1005 Egress Width

Function of Space	**Location**	**Floor Area**	**Occupants**	**Req'd Egress Width (1005.1)**
Residential		4636 sf max (23 occupants)	23 x .3" 23 x .2"	6.9" Stairs 4.6" Other

Notes:
1. min 36" wide doors and 36" wide stairs provided within units, minimum 44" wide stairs provided elsewhere.

1006.2.1 spaces with one exit or exit access doorway
R-2, max OL = 10, 125' max common path of egress travel distance with sprinkler

1009 Accessible Means of Egress

1009.3 Stairways
Clear width 48". Not Required in buildings with automatic sprinkler system. Exception no. 2
Area of Refuge- Not Required in Group R-2, Exception no. 8

1010 Doors, Gates and Turnstiles
1010.1.1 Size of Doors- Minimum Clear width = 32", maximum leaf width 48" Exception no. 1- Minimum and maximum widths do not apply to door openings not part of the required means of egress in Group R-2 occupancies.

1010.1.5 Provide a level landing on each side of door, except at exterior locations with 2% slope pitch for drainage.

1010.1.8 48" plus door width required minimum space between doors in series.

1010.1.9.10 Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

1011 Stairways
1011.2 Stairway width - Minimum required width of 44".
Exception 1: Stairways serving an occupant load of less than 50 shall have a width of not less than 36 inches.

1011.3 Headroom 80 inches minimum measured vertically from a line connecting the edge of the nosings.

1011.11 Handrails required on each side of stair.
Exception 1: Stairways within dwelling units are permitted to have a handrail on one side only.

Section 1017 Exit Access

1017.2 Exit Access Travel Distance.
Group R sprinklered max distance = 250'

NFPA 101 - 2009
OCCUPANCY - RESIDENTIAL - **NFPA 6.1.8**
CONSTRUCTION TYPE NFPA TABLE A.8.2.1.2 (V000) - **NFPA TABLE A.8.2.1.2**
SPRINKLED WITH NFPA 13R
STAIR MATERIALS SAME AS BUILDING CONSTRUCTION **7.2.2.3.1.2**
NO DIAGONAL MEASUREMENT SEPARATION REQUIRED **7.5.1.3.5**

COMMON PATH OF TRAVEL < 50 FT. **30.2.5.3.2**
DEAD END CORRIDOR < 50 FT. **30.2.5.4.2**
TRAVEL DISTANCE FROM UNIT TO EXIT < 200 FT. **30.2.6.3.2**
TRAVEL DISTANCE WITHIN UNIT < 125 FT. **30.2.6.2**
SPRINKLED BLDG. EXIT ENCLOSURE 1 HOUR **30.2.2.1.2**
AREA OF REFUGE NOT REQUIRED **30.2.2.12.1**
CORRIDOR WALLS: 1/2 HOUR (SPRINKLED) **30.3.6.1.2**
CORRIDOR DOORS: 20 MIN. RATED (.33 HOURS) **30.3.6.2.1.**
CORRIDOR DOORS: SELF CLOSING AND SELF LATCHING **30.3.6.2.3**
DWELLING UNIT DEMISING WALLS: 1/2 HOUR **30.3.7.2**

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Project: REED SCHOOL

Revisions:

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Date: 06/15/2018

CODE SUMMARY

AC0.1

Accessibility Review for the Proposed Alterations to the Reed School,
The existing school building will be changed into 8 apartments.

Residential Use Apartments (R-2)

1. MAINE HUMAN RIGHTS ACT
   The project is not financed with public funds, nor does it have more than 20 units, and is therefore not "Public Housing" and Accessible Units are not required. (Maine Revised Statutes, 4582-C, 1. F, 2 and 3.B).
   The cost of the alterations will not exceed 75% of the replacement cost of the completed facility and therefore cannot be considered to be "new construction." For this reason the conditions pertaining to "Covered Multifamily Dwellings" do not apply, including the requirement for an accessible route into and through the building. (Maine Revised Statutes, 4582-C, 1. E, 2 and 3.A).

2. 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
   The Apartments are not constructed by, on behalf of, or for the use of a Public Entity and therefore do not have to comply with the requirements of Title II, 2010 ADA. (28 CFR Part 35, 35.151 a).
   The Apartments are not a place of public accommodations or a commercial facility and therefore do not have to comply with the requirements of Title III, 2010 ADA. (28 CFR Part 36, 36.402 b).

3. IEBC 2015, CHAPTER 7, SECTION 705, ALTERATIONS—LEVEL 1
   705.1 A facility that is altered shall comply with the applicable provisions of Sections 705.1.1 through 705.1.14, and Chapter 11 if the International Building Code
   705.1 exception 3. Type B dwelling units required by Section 1107 of the IBC 2015 are not required to be provided in existing facilities undergoing less than a Level 3 alteration.
   705.1.8 .Type A accessible units are not required where there are less than 20 units (IBC 2015, 1107.6.2.2.1).
   705.2.Where an alteration contains an area of primary function, the route to the primary function shall be accessible. **705.2 exception 5** – this provision does not apply to Type B units.

   The facility is undergoing a Level 3 alteration, therefore 705.1 exception 3 does not apply and Type B units as specified in Chapter 11 of the IBC are required.
   IBC 1107.7.1.1 states that where there is no elevator service in a structure, only one story is required to have Type B units. The requirement for an accessible route to that story is overridden by the scoping clause (1012.8.2) in Chapter 10, Change of Occupancy (see item 6 below).

   The four units on the First floor will be Type B units

4. IEBC 2015, CHAPTER 8, SECTION 806, ALTERATIONS—LEVEL 2
   Required to comply with Section 705 (see item 3 above).
   806.2 an accessible route shall be provided where a stair or escalator is added where none existed before. The stairs exist and an accessible route is not required.

5. IEBC 2015, CHAPTER 9, SECTION 906, ALTERATIONS—LEVEL 3
   906.2. Where four or more R-2 dwelling units are being altered, the requirements of Section 1107 of the International Building Code for Type B units apply only to the quantity of spaces being altered.
   This requirement is overridden by the scoping clause (1012.8.2) in Chapter 10, Change of Occupancy (see item 6 below)

6. IEBC 2015, CHAPTER 10, CHANGE OF OCCUPANCY
   1012.8 Accessibility.
   1012.8.2 Complete Change of Occupancy requires compliance with Section 705 (see item 3 above), Section 806 (see item 4 above), and Section 906 (see item 5 above), and shall have
   - 1, one accessible building entrance,
   - 2, one accessible route to primary function areas,
   - 3, signage per IBC Section 111.
   - 4, Accessible parking where parking is provided
   - 5, one accessible passenger loading zone where loading zones are provided
   - 6, one accessible route connecting accessible parking and loading to an accessible entrance

   1012.8.2 exception – the accessible features listed in items 1 through 6 aboveare not required for an accessible route to Type B units.
   We have asked IBC Technical Services Dept for a ruling on this and it was confirmed by Mr. John Gonzalez that, even though IBC is referred to in IEBC Chapter 9 (906.2) and Chapter 7 (705.1), the work is being done in an existing building and not in a new building, and the scoping requirements of the IEBC override that of IBC. Therefore an accessible entrance, an accessible route, and accessible parking is not required.

7. THE FAIR HOUSING ACT
   The Fair Housing Act does not apply to buildings built for first occupancy before March 1991.

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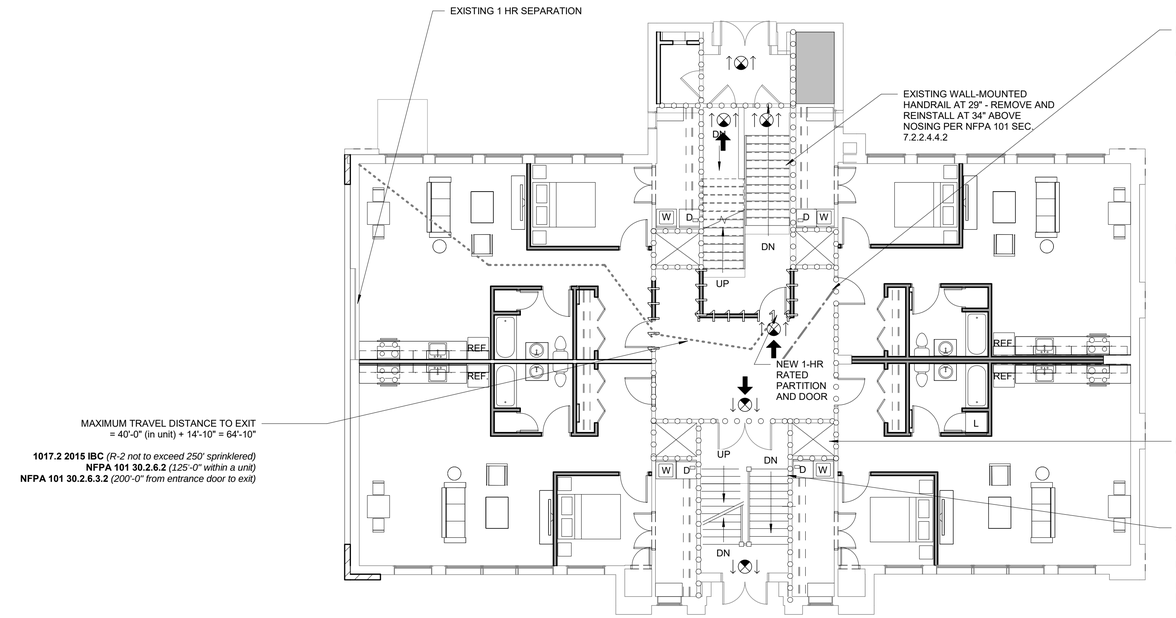
Scale:

CODE SUMMARY
SPECIAL NOTES ON ACCESSIBILITY

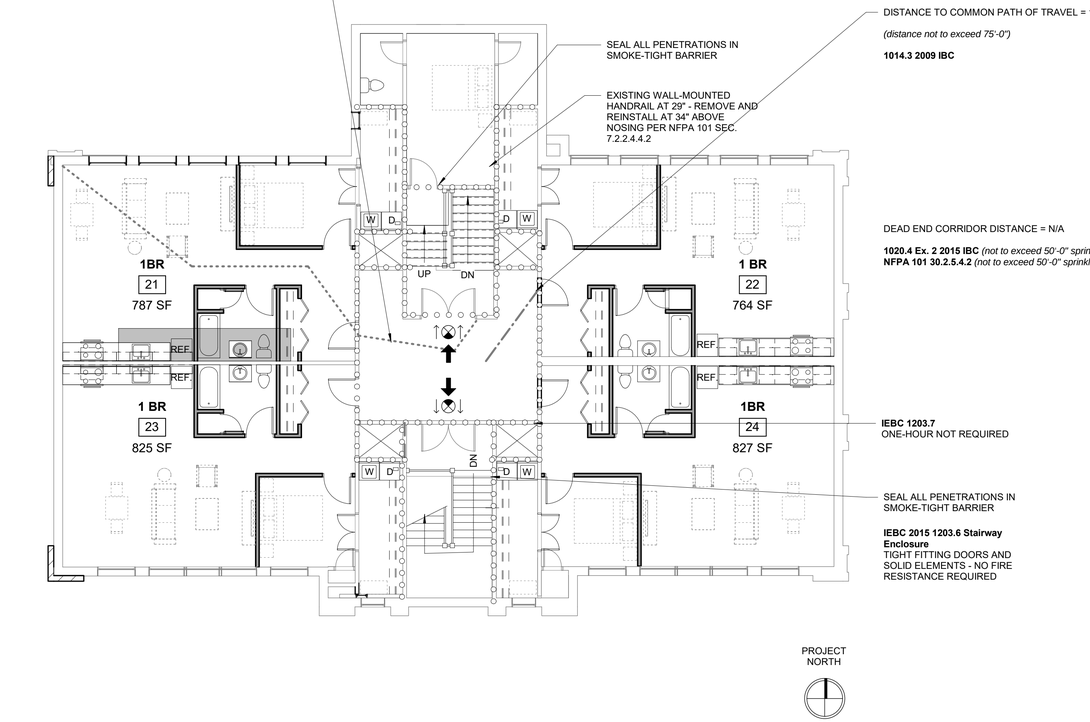
AC0.2

SMOKE-TIGHT PARTITION		
NEW WALL - 1 HOUR		
DEAD END CORR. TRAVEL LENGTH		
COMMON PATH OF TRAVEL LENGTH		
EXIT ENTRANCE		
EXIT ENTRANCE		

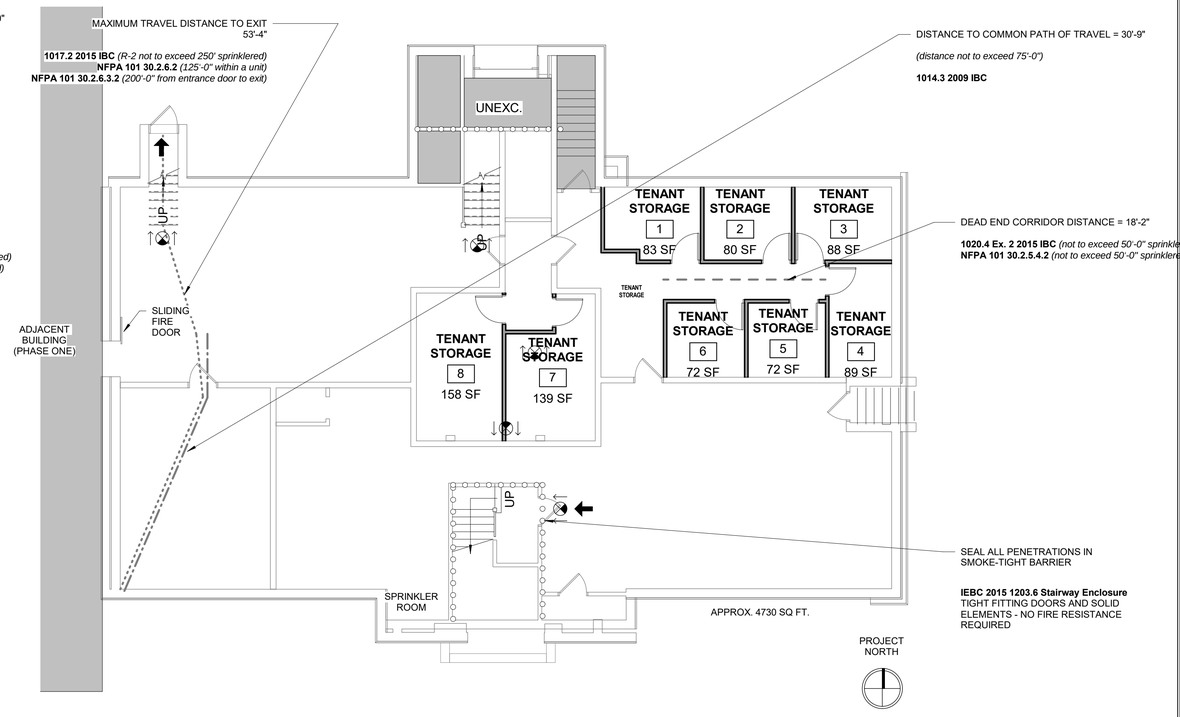
LIFE SAFETY LEGEND
1/8" = 1'-0"



2 | 1ST FLOOR LIFE SAFETY PLAN
1/8" = 1'-0"



3 | SECOND FLOOR LIFE SAFETY PLAN
1/8" = 1'-0"



1 | BASEMENT LIFE SAFETY PLAN
1/8" = 1'-0"

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LIFE SAFETY

LS1.1

PLANNING BOARD REPORT
PORTLAND, MAINE

Portland Transportation Center Parking Expansion
100 Sewall Street (Thompson Point connector)

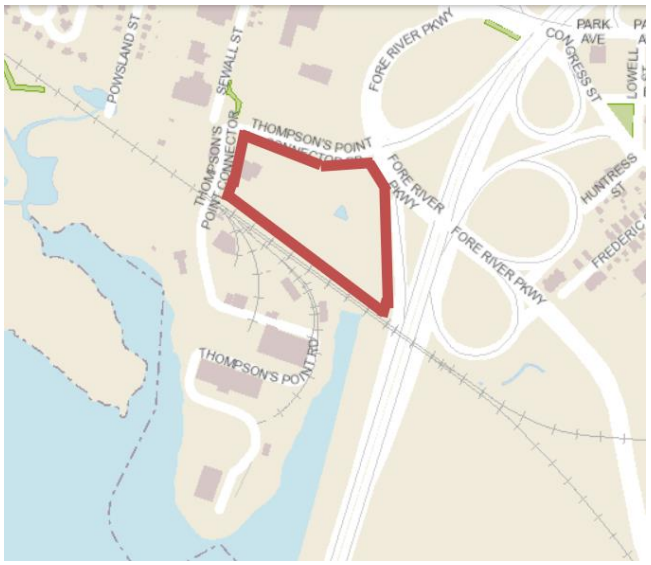
Level III Site Plan. TMP and Site Location of Development (SLODA)
Project (UI) 2018-0002 CBL: 77-A-1
Langdon Street Real Estate (dba as Concord Coach Lines), Applicant

Submitted to Portland Planning Board Public Hearing Date: September 25th, 2018	Prepared by: Jean Fraser Date: September 21st, 2018

I. INTRODUCTION

Sebago Technics Inc, on behalf of Langdon Street Real Estate, requests final approval to a Level III Site Plan, Traffic Movement Permit and Site Location of Development (SLODA) application for a proposed expansion of the surface parking associated with the Portland Transportation Center (PTC) near Thompsons Point. The project was considered at a Workshop on July 17, 2018, and since then the applicant has completed the TMP process and submitted additional information to address the questions and concerns raised by the Board.

The proposed 8.8 acre site currently has 3.46 acres of impervious surface, and the proposal is to expand the parking lot by 2.8 acres to the south-west to create approximately 300 additional vehicle parking spaces. The site is located in the B-5 zone and the Resource Protection Zone. The project is subject to review under Portland's site plan ordinance, under the City's delegated review for Site Location Development, an under the City's delegated review for a Traffic Movement Permit.



The applicant has submitted the following additional information (WS T1-8) to address the Board's concerns at the PB Workshop, which will be discussed in detail in this Report:

- **Wetlands:**
  - Vernal Pool Report (Att WS T- 3)
  - MDEP NRPA Permit which includes justification information (Att WS T 1 and 7)
  - Information on how mitigation monies are allocated (WS T- 2)
- **Long Term Planning and Future Traffic/Parking Demand**
  - PTC Parking Garage Scoping Analysis (WS T- 5)
  - TMP Sections 1-6 (WS T- 4)
  - Site Traffic Analysis (WS T- 6)

At the Planning Board meeting the applicant will present information that amplifies on these issues.

II. BACKGROUND

The background material (WS E Project Description) describes the development of the PTC as the result of public / private partnerships, beginning in 1991 as the small terminal facility for Concord Coach Lines (approximately 200 parking spaces), and then adding just under 500 spaces when the Downeaster Amtrak Service was added in 2001. It outlines the recent growth in use of the facility and associated demand for low cost parking that supports the use of the train and bus transit.

It is understood that the question of increasing PTC parking supply to accommodate future growth in the use of this facility has been under discussion for some years, and the recently submitted MDOT Garage Analysis (WS T-5) provides an insight into the issues and costs involved.

Currently up to 300 additional spaces are leased from Thompson's Point to augment the existing supply, but that lease will be terminated next year. Therefore the proposed surface expansion will provide an increased parking supply in the short term and then would offset the loss of the leased spaces.

The expansion would be carried out in two parts:

- Preload phase of 1-2 years to stabilize the filled wetland area, during which a reclaimed asphalt surface will be placed to allow parking over the entire area , with jersey barriers to control parking and temporary site lighting;
- Final completion, during which the revised layout for the area around the terminal will be implemented, and in the preload area the interim drainage etc will be removed and replaced with the permanent stormwater infrastructure and parking lot landscaping/lighting and pedestrian facilities to meet all the review standards.

Applicant: Langdon Street Real Estate (dba as Concord Coach Lines)
Consultants: Sebago Technics, Steve Sawyer (Traffic) and Will Conway (Site)

III. REQUIRED REVIEWS

The parking expansion proposals were originally submitted for review in the context of the City Site Plan ordinance and the State Site Location of Development Act (SLODA) regulations. The MDEP determined that the SLODA review would be delegated to the Planning Authority, although as per the regulations the MDEP staff have provided technical assistance, particularly regarding the way the Chapter 500 requirements would be applied on a site of this scale with a substantial preload period during which the site would also be in used for public parking. The applicant was requested to provide further stormwater treatment during the preload and an amended SLOD application and supporting documentation was received in May, 2018 to address that issue.

It was determined that the PTC needed a Traffic Movement Permit for the current levels of trip generation and impacts on the associated intersection operation. The city has delegated authority from the MDOT to review the TMP, and staff have consulted the MDOT regarding this somewhat unique project. A TMP Scoping meeting was held on 8.2.2018 where the focus was on understanding how people get to the PTC, scope for minimizing traffic impacts on the Thompson Point connector and encouraging alternative modes. The applicant undertook further survey work and staff recommend that the Permit be granted.

Review	***Applicable Standards***
Site Plan	Section 14-526 City's land Use Code
Traffic Movement Permit (delegated from State)	State Regulations
Site Location of Development (delegated from State)	Section 14-Technical Manual and State Regulations

IV. PROJECT DATA

Existing Zoning	B5, with the "toe' of the site also in the Stream Protection Zone		
Existing Use	Vacant, with vegetation and stormwater treatment basin for the existing parking area		
Proposed Use	Surface parking, with associated stormwater management & treatment devices		
Parcel Size	8.74 acres including 1.92 acres of MDOT land along the south edge		
	Existing	*Proposed*	*Net Change*
Wetlands	2.03	0	(2.03 acres)
Impervious Surface Area	8.74 acres	11.6 acres	2.86
Parking Spaces (on site)	Approx 700 Incl Park & Ride)	300+/-	Approx 1000 (incl Park & ride)
Bicycle Parking Spaces	25	36	11
Estimated Cost of Project	tbc		

V. PLANNING BOARD WORKSHOP DISCUSSION July 17, 2018

The main focus of the Planning Board comments were:

- That the filling of a large wetlands, with associated impacts on the natural environment, was not justified in order to provide surface parking and meet only the current parking needs;
- There appears to be an absence of long term planning, without the development of a regional solution that improves access by all modes - needs to reflect comprehensive plan objectives;
- That if the project is approved, the large financial mitigation payment to the State should be directed in or near/be beneficial to Portland;
- What leverage is there to ensure the final project meeting all site plan standards will be completed;
- What interim management during preload, given possibility for uneven settlement and ongoing public access.

VI. PUBLIC COMMENT

A total of 44 notices were sent to property owners within 500 feet of the site and a legal ad ran in the September 14th and 17th, 2018 editions of the *Portland Press Herald*. In addition, the applicant has held two required Neighborhood meetings, one associated with the SLODA application and one for the site plan application. It is understood that one person attended. There were no public comments at the Planning Board workshop in July 2018.

VII. SUMMARY OF KEY ISSUES

ISSUE	***REGULATORY CONTEXT***	***REVIEW CONCERNS***	***HOW ADDRESSED***	***POTENTIAL CONDITIONS OF APPROVAL***
Loss of 2 acres of wetland of special significance	*SLODA:* No adverse effect on the natural environment *SITE PLAN:* Preservation of Significant natural features	That there may be adverse impacts on the environment that are not justified in full.	The submitted analysis documents consider the wetlands value, and NRPA "Findings of Fact" confirms there are no vernal pools nor species/habitats of wildlife importance; main function is stormwater treatment	None suggested
Mitigation	As above	That this should benefit the Portland area.	Further information was submitted (Att WS T 2) clarifying that the funds go to a conservation grant program managed by the Maine Natural Resources Conservation Program, and will be directed towards projects that are proposed in the biophysical area around Portland (Southern Maine Region)	None suggested.
Why not a parking garage	*SLODA*: Infrastructure *TMP*: Impact on surrounding streets *SITE PLAN:* Transportation Standards	Workshop packet did not include any evidence of long term planning with a view to constructing a parking garage.	There is commitment to construction of garage but the funding and final plans not yet resolved (update on this anticipated at the meeting). Applicant notes that Wetlands would need to be filled in now to allow for a garage anywhere on the site, in order to provide adequate parking during the construction of the garage.	Suggested: *That the applicant shall continue to work with all other relevant parties to achieve a PTC master plan that helps achieve the wider community benefits of an attractive and convenient integrated transportation center.*
Data on how people get to the terminal	TMP required this information	Need to consider long term and support alternative modes	The applicant revised the layout of the area in the vicinity of the terminal to better address the access pressures, but the question of supporting alternative modes not fully addressed.	Suggested Conditions: • Contribution to the citys *Bicycle and Pedestrian Wayfinding* project. • Revisions to the plans for the immediate terminal area

ISSUE	REGULATORY CONTEXT	REVIEW CONCERNS	HOW ADDRESSED	POTENTIAL CONDITIONS OF APPROVAL
Public use of the preload area without permanent infrastructure and potential uneven settlement (interim management)	*SITE PLAN*: Public Infrastructure and Community Safety Standards	Potential uneven subsidence and CPTED issues	Applicant added a plan showing interim parking layout and it includes interim lighting.	Suggested: *That the applicant shall continue to work with all other relevant parties to achieve a PTC master plan that helps achieve the wider community benefits of an attractive and convenient integrated transportation center.*
Ensuring that the final parking lot layout and features are implemented in accordance with the overall site plan	*SITE PLAN*	That the preload area (reclaimed asphalt, jersy barriers and temporary lighting) will continue to be used for parking without the approved improvements to meet site plan standards.		Suggested: *That the applicant shall post a Performance Guarantee for the final site plan project construction elements, to be posted prior to the commencement of the pre-load contract; reductions to the Performance Guarantee may only be processed in relation to the completion of the final project construction elements.*

VIII. RIGHT, TITLE & INTEREST AND FINANCIAL AND TECHNICAL CAPACITY

The applicant has submitted a copy of the applicant's ownership deed and a letter dated 2.6.18 from People's United Bank confirming financial capacity. The submissions were prepared by professional consultants.

IX. EXISTING CONDITIONS

The 3 acre site for the parking expansion is the triangle of land in the foreground of the aerial photograph below, looking north (courtesy of GOOGLE), with the 2 acres of "brown" wetlands in the southwest corner. As illustrated on the Plan 2 Existing Conditions, there are two stormwater structures on the site:

- A detension basin that was installed some years ago to provide detension and treatment for the adjacent existing parking lot near the terminal; it does not meet current Chapter 500 standards;
- Steel culverts at the southwest corner and under the railway tracks that discharge into the Fore River.

Within the site there are about 2 acres of wetlands that were surveyed in detail by Normandeau Associates, and the report is inlcuded at page 89 of the SLOD Application in Attachment WS LC – 1.

The consultants concluded that this is an emergent wetland and dominated by common reed and broad-leaved cattail with a lack of vegetation diveristy. They did not make any observations of wildlife

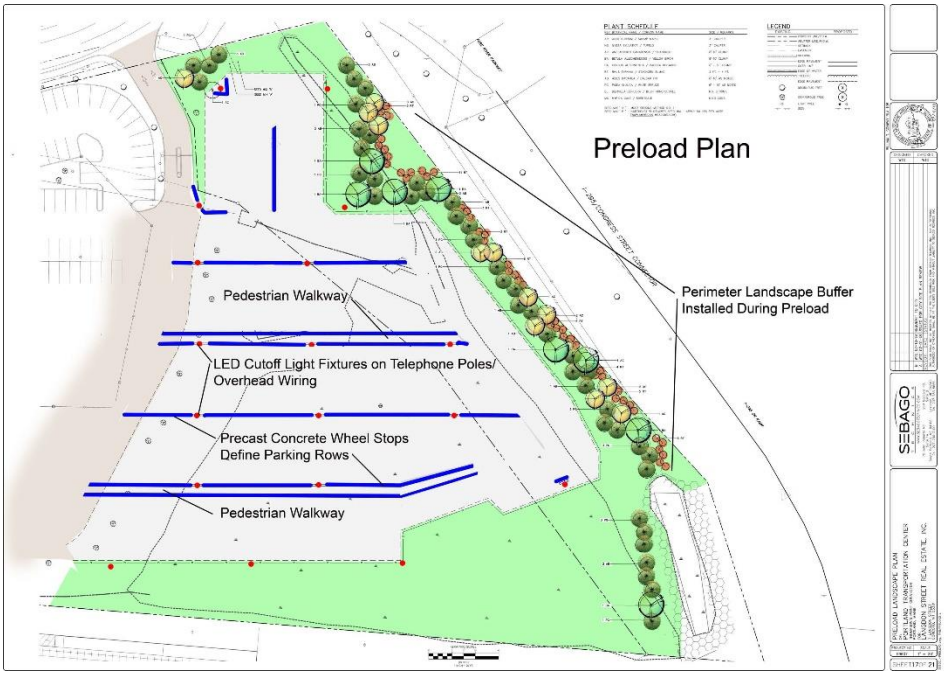
but noted it could provide nesting habitat. They conlcuded that its dominant function was that of sediment and toxicant retention. The same consultants conducted a vernal pool study in April/May 2018 (attachment WS T – 3) but did not find evidence of any vernal pools.

X. PROPOSED DEVELOPMENT

A. *Preload Phase*

This phase is necessary to stabilize the 60,000 sq yards of fill that would be brought in to fill the wetland area. The fill will settle and the applicants Soils Report (Attachment WS S-2) recommends a period of 12-18 months for this process, during which time there could not be any utilities within the fill soils nor any final site work.

The applicant proposes to remove the existing detention basin and introduce interim stormwater management structures within the fill level. A reclaimed asphalt surface, jersey barrier controls and temporary lighting (see Plan 4 and the diagrammatic plan to right) would allow public parking on this area during the preload phase.



Peripheral landscaping is proposed as part of this phase, but work to modify the circulation and parking in the vicinity of the terminal would not be undertaken until the preload is complete for logistical reasons.

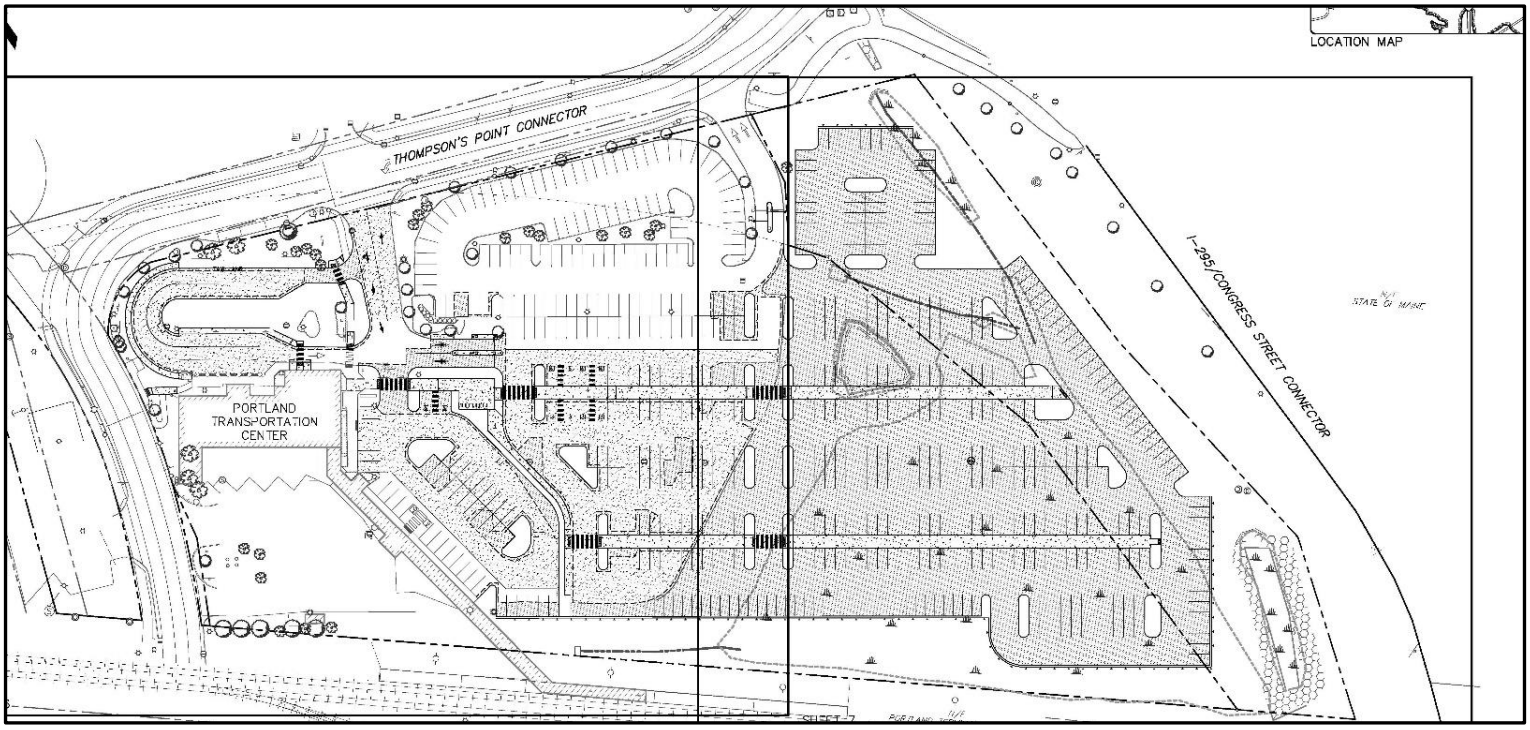
B. *Permanent completion of the project*

When the preload is complete, the parking use will be interrupted for several months to allow for the removal of the reclaimed asphalt and the interim stormwater management structures, and the new construction of the permanent parking area, including (see Plan Set) :

- New stormwater system that fully meets Chapter 500 requirements to treat the run-off from both the existing and new parking areas
- Resurfacing and striping
- Revised access to better integrate the existing and new areas of parking
- Modifications to the area in front and side of the terminal currently used for drop offs, short term parking, taxis etc to better manage the different access needs in this area and prevent queuing out onto the Connector
- Parking lot landscaping, along with islands and pedestrian walkways
- Lighting

The Overall Site Plan is included below.

Proposed Overall Site Plan (see Plan 5):



XI. STAFF REVIEW

A. ZONING ANALYSIS

The proposed parking area is located in the B5 zone and the PTC, as an "intermodal transportation facility", is a permitted use in this zone; the expanded parking is an ancillary use to the PTC although off street parking lots are also allowed as a permitted use in this location. The project complies with the zoning requirements of this zone.

A small part of the site in the southwest corner is also located in the Stream Protection Zone as it is within 75 feet of the Fore River. This zone seeks to conserve stream channel capacity and minimize siltation and stream bank erosion. The ordinance allows filling of material within the zone subject to a site plan review, but requires parking to be set back from the normal high water line of the stream unless the Planning Board approves a reduced setback where it is shown to be the "least extent necessary". A reduced setback is not necessary for the project.

B. SITE LOCATION OF DEVELOPMENT ACT (SLODA) REVIEW (Technical Manual Section 14.3. Standards)

Financial and technical capacity.

The applicant has provided a letter from TD Bank (January 2018) as evidence of financial capacity (Attachment WS G) and noted the technical capacity involved in developing the PTC to date. The standards require that developer has the financial capacity and technical ability to develop the project in a manner consistent with state environmental standards and with the provisions of Portland's Code of Ordinances. The Planning Board may issue a permit that conditions any site alterations upon a developer providing the Planning Board with evidence that the developer has been granted a line of credit or a loan by a financial institution authorized to do business in this State or with evidence of any other form of financial assurance the Planning Board determines to be adequate. The Planning Board shall also assess any such application in accordance with the standards set forth in Chapter 373 of the Maine Department of Environmental Protection Site Law Regulations, as may be amended from time to time.

Traffic movement. – The staff review determined that a Traffic Movement Permit was necessary for the PTC facility, although the proposed parking lot expansion did not independently trigger the requirement (Attachment 1). The applicant has completed the TMP review and an associated motion with conditions of approval are included in the report.

No adverse effect on the natural environment - The standard requires that the developer has made adequate provision for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 375 of the Maine Department of Environmental Protection Site Law Regulations, as may be amended from time to time.

The proposal includes the filling of about 2 acres of wetland and the loss of 17 existing trees that surround the southern edge of the existing parking between the access and the railway. As noted above, the SLOD application contains an analysis of the wetland and this indicates that its function is largely related to stormwater quality, and the applicant has incorporated extensive stormwater quality measures into the proposals to replace that function. The applicant has drawn attention to the supporting analysis in the MDEP NRPA Tier 3 Wetland Fill Permit and associated "Findings of Fact" (included at page 26 in Attachment WS T -1).

The proposals include both peripheral and parking lot landscaping; staff consider this addresses the requirement to fit the project harmoniously into the existing natural environment.

Soil types – The standard requires the applicant to provide a map and analysis indicating the location of various soil types on-site, and suitability of such soils and ledge to support the proposed site improvements. The PTC application includes a Soil Report (Attachment WS S-2).

Ground Water - In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules as may be amended from time to time. See g. below.

Infrastructure. This standard requires that the developer has made adequate provision of utilities, including water supplies, sewerage facilities, solid waste disposal and roadways required for the development and the development will not have an unreasonable adverse effect on the existing or proposed utilities and roadways in the municipality or area served by those services. This standard largely does not apply, except regarding impacts on roadways which has been addressed by the TMP process. Infrastructure to address the increasing traffic and parking demand associated with the PTC eg a parking garage is addressed by a suggested condition of approval reqiring continued efferts to develop and implement a master plan for meeting these needs.

Flooding and Storm water management, erosion, and sedimentation control. The SLOD standards are:
The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules as may be amended from time to time. The proposed development meets the standards for storm water management in 38 MRSA §420-D as amended from time to time (See Exhibit 1) and the standard for erosion and sedimentation control in 38 MRSA §420-C as amended from time to time. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules, as may be amended from time to time.

During the review, the question was raised as to whether the *Preload* phase was required to meet the stormwater standards in full, and guidance sought from the MDEP Regional Licensing and Compliance Manager (Bureau of Land Resources). Staff were advised that the Preload phase needed to include stormwater detention and treatment to meet Chapter 500 as far as possible. The applicant submitted additional *Preload* proposals in late May 2018, which are considered broadly acceptable to both the MDEP and the City in terms of the overall approach to stormwater management and treatment although a number of minor items remained outstanding. The applicant has addressed those residual issues in a recent response letter (WS T- 9) and revised Stormwater Report (WS T - 8), and the City's Peer Engineer Reviewer is completing a final review which will be available at the PB Hearing.

The Maine Historic Preservation Commission (MHPC) has identified the existence of a former canal (Cumberland and Oxford) generally across the southern part of the site. A walkover did not find any remains of the canal, but the Commission has stated that if the proposal requires excavation of the wetland soils, then archaeological monitoring is recommended prior to construction of the parking lot (Attachment WS LC1).

The applicant has confirmed that the Preload proposals would not disturb anything below the current surface (see Sections in Plan 4). The final stormwater details were submitted recently and after the earlier MHPC review, and staff recommend that these final plans be sent to the Commission so the Commission can confirm, prior to the commencement of construction, that they have reviewed the final "completion" plans and are satisfied that they do not require archaeological monitoring.

C. TRAFFIC MOVEMENT PERMIT discuss timing

The city has delegated authority from the MDOT to review the TMP and the city's Traffic Engineering Reviewer Tom Errico takes the lead on this review. A TMP Scoping meeting was held on 8.2.2018 where the focus was on understanding how people get to the PTC, scope for minimizing traffic impacts on the Thompson Point Connector and encouraging alternative modes. In that context mention was made of the scope for supporting/contributing to the *Bicycle and Pedestrian Wayfinding* Plan that is part of the City's wider wayfinding initiative to encourage alternative modes (see Attachment 3 for background on this).

The applicant undertook further survey work over the summer, during which peak levels of use were observed and analysed with a report submitted in late August (WS T 6) along with a revised Site Plan and Landscape Plan for the areas nearest to the terminal (Plans 4 and 7). Staff considered that the study and associated revised plans addressed the TMP-related concerns, though some details still need to be fleshed out as noted in the comments from the Traffic Engineer (Attachment 1) and the Transportation Program Manager (Attachment 2). The comments were partially addressed in the final plans, and staff recommend that the Permit be granted subject to a condition that requires a contribution to implementation of the *Bicycle and Pedestrian Wayfinding* Plan, along with revisions to the details of the site an landscape plans.

The city's Traffic Engineering Reviewer Tom Errico has noted (Attachment 1):

- A Traffic Movement Permit Application was submitted on July 16, 2018 and a Scoping meeting was held on August 2, 2018. In response to the scoping meeting, the Applicant conducted a detailed traffic evaluation of the Terminal pick-up/drop-off area to ensure safe and efficient traffic conditions. The Site Plan was developed based upon the traffic evaluation and improvements are proposed, which I generally find to be acceptable. I find the project meets TMP requirements with the conditions noted separately.

- The Traffic Movement Permit is based upon a peak hour trip generation estimate of 426 trips, 205 entering vehicles and 221 exiting vehicles. It should be noted that these trips are currently being generated by the Transportation Center and are not "new" trips to the area. The TMP is being required due to the incremental increase in traffic over the last 10-years, a MaineDOT TMP rule requirement. This effort brings the site into MaineDOT compliance.

D. SITE PLAN REVIEW

The proposed parking lot expansion was reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff comments below focus on the standards that apply to this project, given that there are no buildings or structures proposed.

1. Transportation Standards

Impact on Surrounding Street Systems - This has been addressed by the TMP review as noted above. Both under this standard and the SLOD the question of ensuring the infrastructure proposals meet anticipated future demands has been raised as an issue, particularly the need for parking garage. The applicant has explained that the surface parking project is needed not only to meet current parking demand, but also to facilitate the development of a parking garage

as part of a long term plan. TA potential condition of approval requires the applicant to continue to work with others towards that objective.

Access and Circulation

PRELOAD PHASE: During the *Preload* the parking lot layout is a an extension of the existing parking pattern, and the applicant has now confirmed (In Plan 4) and in the diagrammatic above) that the parking spaces will not be striped but that jerey barriers and traffic/directional signage will be provided. Staff have recommended a short term waiver of the technical standards that would apply to a final parking lot layout.

PERMANENT COMPLETION: The final layout has been revised to narrow the parking drive aisles and this allows for raised and planted pedestrian walkways leading towards the terminal. The City's consultant Traffic Engineer had suggested this was an option, and supports the associated waiver (Attachment 1).

Bicycle access and parking

The applicant was previously encouraged to increase in the number of parking spaces, together with their placement and design, in order to encourage bicycle access and use. The suggested condition of approval requests further clarification and review of this site plan requirement.

Construction Management Plan

The applicant has submitted a construction management Plan (WS I) which is updated in the supporting information in WS-T 2. The Traffic engineering reviewer has commented (Attachment 1):

> *The Applicant has provided a Construction Management Plan, which I generally find to be acceptable. I would note that greater detail is required during Phase 2/3 activities, when construction activity in the Terminal area will occur. It will be critically important that safe pedestrian and bicycle conditions be provided. Additionally, it appears that access and egress movements will be permitted at the existing egress driveway. I would suggest that greater detail be provided as a condition of approval.*

A suggested condition of approval is included to reflect these comments.

2. Environmental Quality Standards

Preservation of Significant Natural Features *- covered by the SLODA review above. The city's standard defines significant natural features as:*

> *(i) Populations of trees and plants listed on the Official List of Endangered and Threatened Plants in Maine, published by the Maine Natural Areas Program.*
> *(ii) Habitat for species appearing on the official state of federal list of endangered or threatened animal species;*
> *(iii)High and moderate value waterfowl and wading bird habitat including nesting and feeding areas, as defined by the Department of Inland Fisheries and Wildlife;*
> *(iv) Aquifers on islands in Casco Bay, as identified in the City of Portland Island Groundwater Management Study and/or by the Maine Geological Survey;*
> *(v) Waterbodies including wetlands, watercourses, significant vernal pools and floodplains. These features may also be regulated by Division 26, Shoreland Regulations, Division 26.5, Flood Plain Management Regulations and Division 26.7, Stream Protection Ordinance of the City Code, along with Sections 5 and 8 of the Technical Manual or other State regulations.*

Landscaping and Parking Lot Landscaping
The proposed final landscaping within the parking area has been significantly enhanced in association with the addition of the pedestrian walkways- it is shown diagrammatically at right and in Plan 7.

Staff have noted that the pattern of tree placement along the pedestrian walkways would impede passage and have recommended that the trees and the lights all be on one side of the walkway (Attachment 2).

Staff also note that the landscape plans do not include much planting in the very southern part of the parking area or around the edge, and would like that to be enhanced. A potential condition of approval includes these items along with the other site plan details mentioned above.

Water Quality/Storm Water Management/Erosion Control – covered by SLODA review above.

3. Public Infrastructure and Community Safety Standards
These standards are generally me or do not apply, except that during the Preload phase there needs to be interim inspections and management to ensure that public safety is maintained at all times. A suggested condition addresses this objective.

4. *Site Design Standards*

Historic Resources- see SLODA review above.

Exterior Lighting and Signage and Wayfinding
The proposals have incorporated lighting fixtures suggested signage, but the details have not been submitted. A suggested condition of approval requests the submission of details so that these can be documented as meeting the ordinance and technical standards.

XII. STAFF RECOMMENDATION
Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed parking lot extension at the Portland Transportation center at 100 Sewall Street.

Please note that the conditions include the requirement for a Performance Guarantee for the final construction features to be posted prior to the commencement of the preload work. This is recommended to clarify that the project is not phased but includes a period of preloading and associated interim measures. The single Performance Guarantee is intended to ensure implementation of the final approved site plan project, and the amount would be based on the final construction costs of the proposals as shown in the submitted and approved site plans, excluding the preload plans. The condition includes an extension to three years (from the usual 2) to allow time for the final completion work to commence. Please see supporting reference in the e-mail from the Associate Corporation Counsel (Attachment 4).

XIII. PROPOSED MOTIONS

A. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on September 25, 2018 for (UI) 2018-0002 (Portland Transportation Center) (relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing:

1. The Planning Board [**finds/does not find]**, based on the restrictions associated with the need to preload the site for 1-1.5 years, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Sections relating to parking lot design, planting and lighting. The Planning Board [**waives/does not waive]** the relevant *Technical Manual* standards for a period of up to 2 years to allow the preload phase to be completed, subject to ongoing monitoring to ensure that the preload area is safe for public access at all times. It should be noted that the overall final site plan meets the Technical Standards except regarding the parking aisles noted below.

2. The Planning Board [**finds/does not find**], based upon the consulting traffic engineer's review *(*Attachment 1*),* that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Section 1.14 *Parking Lot and Parking Space Design.* The Planning Board [**waives/does not waive]** the *Technical Manual* standard (Technical Manual Section 1.14) to allow the parking lot aisle widths as shown on the approved site plan, as supported by the Traffic Engineering reviewer.

B. SITE LOCATION OF DEVELOPMENT

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on September 25, 2018 for application for (UI) 2018-0002 (Portland Transportation Center) relevant to the Site Location of Development Act regulations; and the testimony presented at the Planning Board Hearing:

The Planning Board finds that the plan **[is/is not]** in conformance with the Site Location of Development Act regulations, subject to all of the waivers and conditions of the site plan approval for this application and in addition subject to the following conditions:

1. That the applicant shall inform the MDEP and the Portland Planning Authority when the pre-load phase has been completed, and confirm the timing for completion of final plan as approved.

2. That if, assuming the preload phase is implemented, the entirety of the final proposals subject of this approval have not been substantially commenced and ongoing within 3 years from the date of this approval, then the site would be in violation of SLOD law and a SLOD amendment would be required to bring the site into compliance.

3. That all stormwater installation shall be supervised by an independent "third party" engineer and reports submitted as required under Chapter 500.

4. That a contract for maintenance of the soil filter in the preload phase shall be in place prior to the start of construction for the preload, and that a separate contract shall be in place prior to the start of construction of the final stormwater system.

5. That prior to the commencement of the final site plan construction in the vicinity of the wetlands, the applicant shall submit an updated letter from the Maine Historic Preservation Commission (MHPC) that confirms the Commission has reviewed the final project plans, and the applicant shall comply with the MHPC recommendations for archaeological monitoring as required.

C. TRAFFIC MOVEMENT PERMIT

Based upon the City of Portland's Delegated Review Authority, the Planning Board **approves/does not approve** the Traffic Movement Permit application, as submitted, subject to the following conditions:

1. That the applicant shall contribute to the City's *Bicycle and Pedestrian Wayfinding* project (between Portland Downton and PTC), in order to increase the number of bicycling and walking trips to and from the downtown by Portland resident users of the PTC, and also for visitors that may choose to travel to Portland by inter-city bus or passenger rail rather than drive. [*The suggested amount is being determined and a revised Motion will be available for the public hearing*]

2. That the applicant shall revise the plans for the immediate terminal area, including signage details and design of the bicycle storage, to address the comments of Tom Errico, Traffic Engineering Reviewer dated 9.20.19 in order to encourage alternative modes, manage access, and minimize impacts on the wider highway network.

D. SITE PLAN

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in Planning Board report for the public hearing on September 25, 2018 for (UI) 2018-0002 (Portland Transportation Center)relevant to the Site Plan Ordinance and other regulations and the testimony presented at the Planning Board hearing:

The Planning Board finds that the plan **is / is not** in conformance with the site plan standards of the land use code, subject to the following conditions:

Prior to the start of construction (no building permit would be required)

1. That the applicant shall post a Performance Guarantee for the final site plan project construction elements, to be posted prior to the commencement of the pre-load contract; reductions to the Performance Guarantee may only be processed in relation to the completion of the final project construction elements.

2. That the applicant shall revise the plans to address the outstanding detailed stormwater, engineering, bicycle parking number and design, and planting review comments, and address the questions of bicycle parking and peripheral/parking lot planting, for final review and approval by the Planning Authority.

3. That the applicant shall revise the Construction Management Plan for review and approval by the Planning authority and Department of Public Works.

Ongoing

4. That the applicant shall arrange for the preload areas used by the public be inspected weekly during the preload phase, with any identified safety issues resulting from settlement or interim infrastructure to be addressed immediately.

5. That the applicant shall continue to work with all other relevant parties to achieve a PTC master plan that helps achieve the wider community benefits of an attractive and convenient integrated transportation center.

ATTACHMENTS:

PB REPORT ATTACHMENTS

1. Traffic Engineer TMP
2. Associate Corporation counsel re
3. Peer Engineer SLODA comments

PUBLIC COMMENT (none)

APPLICANT'S SUBMITTAL

WS A Application Form
WS B Right Title and Interest
WS D Zoning Assessment
WS E Project Description
WS F Waivers
WS G Financial and Technical Capability
WS I Construction Management Plan
WS J - 2 Traffic Study Update
WS J 1-4 Traffic Studies & Parking information
WS K Natural Features
WS L 2 June Stormwater Report incl Preload
WS LC - 1 Site Location Application
WS LC-1 MDEP SLODA Application 6.22.18
WS S-2 Soils Report
WS S-3 Preload Narrative 6.22.18
WS S-4 June Stormwater responses
WS T - 1 Federal and State Permits
WS T - 2 Add'l Wetland Info for Hearing
WS T - 3 PTC - Vernal Pool Memo
WS T - 4 TMP Sections1-6
WS T - 5 PTC Parking Garage Scoping Analysis
WS T - 6 Site Traffic Analysis 08-30-18
WS T - 7 Cover e-mails explaining new info for PB Hearing
WS T - 8 Sept Stormwater Report incl Preload
WS T - 9 Sept Stormwater responses

PLANS

Plan 1 COVER SHEET
Plan 2 EXISTING CONDITIONS
Plan 3 DEMO PLANS
Plan 4 All PRELOAD PLANS
Plan 5 SITE PLANS (3 sheets) (after preload)
Plan 6 GRADING & UTILITY PLANS (after preload)
Plan 7 LANDSCAPE PLANS (after preload)
Plan 8 DETAILS
Plan P7 DRAINAGE PLANS

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Portland Transportation Center - Final Traffic Comments

1 message

Tom Errico <thomas.errico@tylin.com> Thu, Sep 20, 2018 at 9:13 AM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

Hi Jean – I have reviewed the application materials and offer the following final traffic comments.

- A Traffic Movement Permit Application was submitted on July 16, 2018 and a Scoping meeting was held on August 2, 2018. In response to the scoping meeting, the Applicant conducted a detailed traffic evaluation of the Terminal pick-up/drop-off area to ensure safe and efficient traffic conditions. The Site Plan was developed based upon the traffic evaluation and improvements are proposed, which I generally find to be acceptable. I find the project meets TMP requirements with the conditions noted separately.

- The Traffic Movement Permit is based upon a peak hour trip generation estimate of 426 trips, 205 entering vehicles and 221 exiting vehicles. It should be noted that these trips are currently being generated by the Transportation Center and are not “new” trips to the area. The TMP is being required due to the incremental increase in traffic over the last 10-years, a MaineDOT TMP rule requirement. This effort brings the site into MaineDOT compliance.

- The parking lot has aisle widths that do not meet City Technical standards. I support a waiver from standards given long duration parking and that space within the lot will be allocated to provision of safe pedestrian facilities.

- The site plan maintains a detectible warning panel/ramp but removes the painted access area. The applicant should provide an explanation for this change and consider removing this feature. In this same area, a parking space of 8-feet wide is proposed. This is a similar to compact size parking spaces in the main lot. I find the space to be acceptable.

- Wayfinding sign layout details (size, lettering, etc.) shall be provided for review and approval to ensure readability standards are met.

- The Applicant has provided a Construction Management Plan, which I generally find to be acceptable. I would note that greater detail is required during Phase 2/3 activities, when construction activity in the Terminal area will occur. It will be critically important that safe pedestrian and bicycle conditions be provided. Additionally, it appears that access and egress movements will be permitted at the existing egress driveway. I would suggest that greater detail be provided as a condition of approval.

If you have any questions, please contact me.

Best regards,

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

PTC Parking Lot/Site Circulation Changes Comments (Rev.): #2018-002

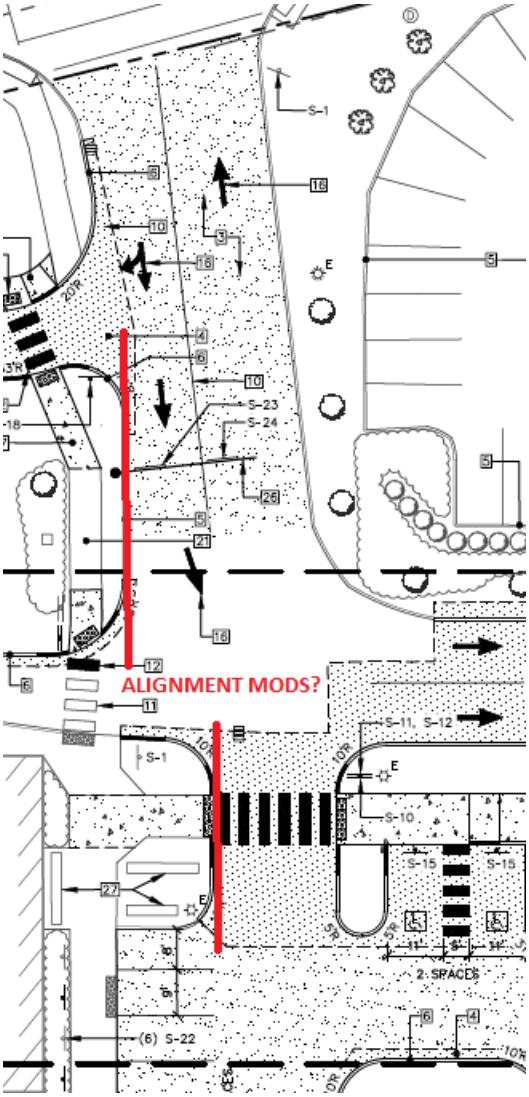
1 message

Bruce Hyman <bhyman@portlandmaine.gov> Wed, Sep 12, 2018 at 4:24 PM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Tom Errico <thomas.errico@tylin.com>, Jeremiah Bartlett <jbartlett@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>, Barbara Barhydt <bab@portlandmaine.gov>

Good afternoon, Jean,

The following are my comments on the latest submittals by Sebago Technics following our most recent meeting:

- I find the site circulation in front of the PTC terminal much improved over the previous concept - one potential additional modification that should be considered is to provide a sidewalk extension for some length along the outside perimeter of the Drop-off lane - I anticipate that some riders who are running late for departures will exit vehicles while in the queue with baggage and would otherwise have to walk within the queueing lane area
- the pavement markings within the handicapped parking spaces is not correct and is to be corrected (it is not to be striped as/similar to the crosswalks)
- the spacing of the new bicycle racks is to be adjusted to show no less than 3' on center (o.c) between the bike racks to allow for proper usage - labels should be added to the drawing to indicate this spacing to ensure proper installation
- during the TMP scoping meeting and subsequent meetings discussing transportation/traffic strategies to reduce parking demand, the topic of wayfinding signage was raised to highlight bicycling and walking opportunities to the PTC to/from the Downtown - a commitment by the applicant to produce or contribute to a wayfinding program is recommended
- I find the tree wells, as placed in a staggered configuration within the pedestrian walkways with the parking lot, intrusive to pedestrian circulation as shown - their intrusiveness should be minimized - I could not find a detail to indicate whether tree grates or open tree wells were proposed
- consideration should be given to providing better alignment between the entry driveway and the entrance to the Short-Term Parking lot - currently these are off-set considerably - the driveway curb line/width and/or the curb extension extent could be modified to provide better alignment



- any detectable warning panels, if used at corners with public streets/row, are to be cast iron, not composite as shown in the detail sheet

Please do not hesitate to contact me if you or the applicant have any questions on the above items.

Bruce

--
Bruce Hyman
Transportation Program Manager
Transportation Division

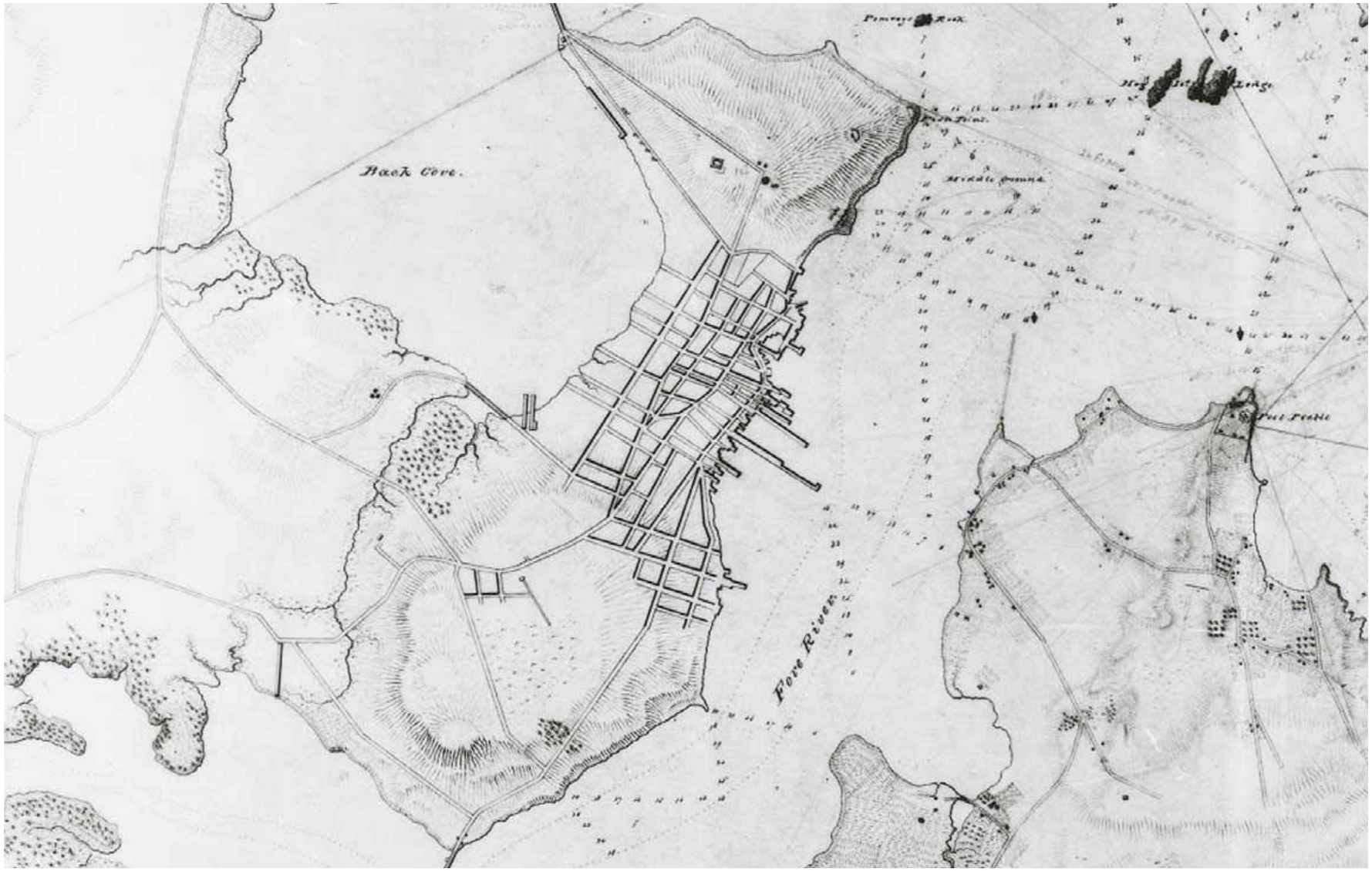
Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

FINAL DRAFT 7.8.13

Portland Peninsula Vehicular Wayfinding Plan

Bicycle Wayfinding System Excerpt



Portland Vehicular Wayfinding Plan

July 8, 2013

Designed and Submitted by:

Woodworth Associates
Graphic Design and Communications

Richardson & Associates
Landscape Architects

TY Lin International
Transportation Consultants

Wright Pierce
Civil & Environmental Engineers

Richard Renner Architects

Destination Tomorrow
Linking Our Communities • Advancing Our Region

PACTS
Portland Area Comprehensive Transportation System

Bicycle Wayfinding Criteria and Policy

Users

All visiting and neighborhood travelers (cyclists).

Location

Throughout the Portland Peninsula as defined by the Portland Wayfinding Study, with extensions to University of Southern Maine in the Deering area and to the Portland Transportation Center on Thompson's Point. *(Note: Does not extend to the Jetport.)*

Definition

The Bikeway will work in combination with the Neighborhood Byway program to expand options on the Peninsula for cyclists of all abilities.

Portland's Bikeway uses a combination of local streets with on-road bicycle facilities (may include designated bike lanes, shared lanes, and cycle tracks) and off-road bicycle facilities (shared use paths) to create a cross-Peninsula system of bicycle infrastructure for cyclists who are more comfortable riding on a designated facility. The cross-Peninsula network is intended to allow riders to navigate between the City's zones and downtown districts and to accept visitors arriving to the major bicycle gateways to the Peninsula (the Portland Transportation Center, Veterans' Memorial Bridge, the Casco Bay Bridge, the Ferry Terminal, Tukey's Bridge, Preble Street as it crosses Rt. 295, and Deering Avenue as it crosses Rt. 295). The Bikeway does not presume to constrain riders to the system, merely to provide an option for cyclists who may need encouragement to navigate the City and to make vehicular drivers more aware of cyclists in those areas. It will identify routes to shared use paths (bicycle routes that are off-limit to vehicles), thus adding a layer of bicycle-specific information to the directional content on the vehicular wayfinding signs, and will supplement the signage programs of existing regional routes. The Bikeway will work in combination with the Neighborhood Byway program to expand options on the Peninsula for cyclists of all abilities.

The Bikeway should not be confused with Portland's Neighborhood Byway program or the East Coast Greenway/US Bike Route 1. The Neighborhood Byway program identifies particular routes between neighborhood centers, parks and schools, and stresses neighborhood travelers and trips by children. The East Coast Greenway and US Bike Route 1 are regional routes that connect multiple communities. The Bikeway intersects with the Neighborhood Byway system in several locations. Where the East Coast Greenway and US Bike Route 1 cross the Peninsula on existing roadways, the Bikeway intentionally follows the official regional route. As new shared use paths and on-road bicycle facilities are developed within the City, the Bikeway system will be modified to reflect new or altered routes. Not every new shared use path or on-road bicycle facility will necessarily be incorporated into the Bikeway wayfinding system. As new facilities are developed, they should be evaluated for incorporation on the basis of whether they provide enhanced connectivity to a bicycle gateway or between zones and districts and/or whether they should replace an inferior facility in the current Bikeway system.

Note:
The Bicycle Wayfinding Criteria and Policy shown on pages 51-54, the Wayfinding System Map shown on Page 55, and the Sign Types shown on Page 56 should serve as the departure points for additional planning, coordination, discussion, and refinement of the Bicycle Wayfinding System.

Intent (follows Neighborhood Byway Language): The intent of the criteria below is to create a consistent and repetitive information path along the designated Bikeway routes. Bikeway wayfinding components shall:

- Identify the route as a component of the system;
- Direct users to and mark specific destinations (destinations that are off-limit to vehicular drivers);
- Identify terminations (limits) of the system so that users know when they have entered or left the system. In some cases, the limits of Bikeway routes will be known by the presence or absence of a bicycle facility (shared use path, cycle track, or pavement markings) until a Bikeway identifier is reached. It is not the intent of the Bikeway program to sign every intersection with a designated Bikeway facility;

- Employ consistent design and information conventions appropriate for bicyclists;
- Be located and installed to avoid visual clutter and confusion with other signage systems; and,
- Neither dissuade nor attract automobile travelers to the Bikeway route.

In the Event of Geographic Overlap

- *Portland's Vehicular Wayfinding System:* The Bikeway will be addressed within a dedicated zone at the bottom of proposed vehicular directional signs. Bikeway information will only be included on vehicular wayfinding signs where the vehicular wayfinding sign will be installed in a location on a designated Bikeway route. Where no vehicular wayfinding sign is present and bicycle-specific wayfinding information is needed, Bikeway wayfinding will be addressed with pavement markings (bike lanes and sharrows) in combination with Bikeway-specific signs. At shared gateways (bicycles and vehicles), it may be desirable to have distinct Bikeway directional signs in order to be able to list several destinations with approximate travel times and distances, even where vehicular directional signs will be present.

- *Portland Trails:* The shared use paths designated as portions of the Bikeway are locally managed by Portland Trails. Where the Bikeway meets a Portland Trails trail, a Bikeway destination sign will be used. The Bikeway destination sign will use the Portland Trails name for the trail and incorporate all pertinent sponsorship branding (i.e. East Coast Greenway, Sebago to the Sea, U.S. Bike Route 1), with local sponsorship branding appearing toward the left, and national trail sponsorship branding appearing toward the right. On the Portland Trails trails, Portland Trails signage will provide a wayfinding function, but it is recommended that the Portland Trails signage incorporate all pertinent sponsorship branding, including Bikeway identification, to reduce sign clutter. Where a significant Bikeway decision point occurs on a Portland Trails trail (for example, at the confluence of routes occurring at the south end of Tukey's Bridge, or where Frederic Street intersects the Fore River Parkway Trail), Bikeway wayfinding signage will be used.

- *Neighborhood Byway:* The Bikeway will not address neighborhood Byways as destinations within the system. Where a Bikeway and Neighborhood Byway intersect, the Neighborhood Byway signage will serve to identify the Byway. It may be desirable for the Neighborhood Byway signs to include the Bikeway as an included destination for wayfinding purposes.

- *Regional or National Sponsored Route:* The Bikeway encompasses several regional routes. Where the Bikeway route overlaps with a sponsored regional or national route, regional or national route markers will be used in conjunction with the Bikeway signage.

Sign Types

- *Pavement Markings* are an integral part of the bicycle wayfinding system on the Peninsula. They can take the place of route markers in many instances, reducing sign clutter.

- *Directional/Decision Signs* are primarily to be used where travelers are entering or leaving the Bikeway system at the major bicycle gateways to the Peninsula, and at the junction of two or more Bikeway routes. At shared gateways (bicycles and vehicles), it may be desirable to have Bikeway directional signs that are separate from the vehicular wayfinding signs in order to be able to list several destinations with approximate travel times and distances.

- *Trail Blazer/Confirmation signs* are smaller signs located periodically along the Bikeway route to reinforce the presence of the corridor between directional signage. These may be incorporated into vehicular directional signs, where vehicular directional signs will be present on a Bikeway route.

- *Trail Blazer/Turn Signs* are similar to trail blazer/confirmation signs, but with an arrow to indicate that the Bikeway route is turning from one street onto another street. These may be incorporated into vehicular directional signs, where vehicular directional signs will be present on a Bikeway route.

- *Destination Marker signs* indicate arrival at specific destinations along the Bikeway, in particular, shared use paths. Destination marker signs should employ the same or identifiably similar graphic conventions as the bikeway directional signs to cue the user that they have found their destination. The markers shall be installed in the public right of way, shall be readily visible from the Bikeway Route, and shall be orientated to clearly indicate the subject destination.

- *Kiosks* will not be installed as part of the Bikeway system, but inclusion of schematic Bikeway maps into existing or planned kiosks on Bikeway routes is encouraged

  Graphic Criteria: See examples on pages 56 and 71.
  Installation Criteria (TBD by City of Portland)

Information Criteria

The Bikeway system is comprised of a connected system of local streets with on-road bicycle facilities (may include designated bike lanes, shared lanes, and cycle tracks) and off-road bicycle facilities (shared use paths) to create a cross-Peninsula system of bicycle infrastructure for cyclists who are more comfortable riding on a designated facility. Bikeways are selected by virtue of more bikeable grades; low(er) traffic volumes; access to bicycle gateways, wayfinding zones, and wayfinding districts; and existence of formal bicycle facilities/likelihood of receiving formal bicycle facilities in the next year to year-and-a-half. Destinations will be included on signs providing that they meet the criteria for inclusion (see below) and/or are not specifically excluded from the signs (b, below.) Limited sign size, information clarity, and limited ability to change sign information dictate that no more than 4 destinations are permitted on any one sign. Where more than 4 destinations warrant inclusion on the sign, but room is not available, "categories" of like uses can be combined (i.e., "Schools", or "Parks") and "destination markers" naming specific destinations can be employed on route at the destination. It is recommended that distances in miles and average time to destinations be included where space permits, with distances receiving priority over time to destinations.

a. Criteria for Inclusion on Bikeway Wayfinding Signs

- Wayfinding districts or neighborhood centers on the Bikeway
- Bridges that are reached by the Bikeway
- Municipalities adjacent to the major bicycle gateways to the Peninsula

- University of Southern Maine
- The Portland Transportation Center
- Casco Bay Ferry Terminal
- Ocean Gateway Terminal
- Metro Hub
- Public parks with capacity to accommodate 200 or more visitors on the Bikeway
- Intersections with public or publically accessible shared use paths that are part of the Bikeway system
- Sponsored regional or national bike routes

b. Criteria for Exclusion on Bikeway Wayfinding Signs

- Places of business
- Seasonal activities
- Non-ADA accessible destinations

Recommended Bicycle Wayfinding System

- Bike Entry Portal/Gateway
- Bike Decision Point
- Bike Trail Blazer- Confirmation/Turn Sign
- Existing Shared Use Path
- On Road Bike Facilities - Completed as 1st Priority
- Regional Bike Route
- Shared Decision Point - (Automobiles & Bicycles)
- East Coast Greenway/ US Bike Route 1
- Sebago to Sea Route

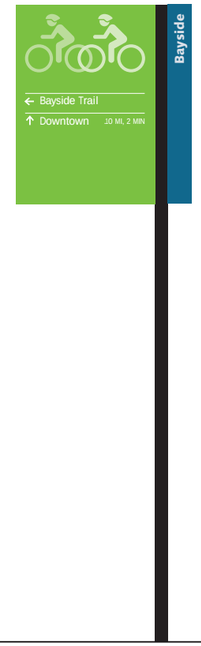
Sign Types

Bicycle Directional
Bicycle Facility

Elevation

Bike Gateway -
Directional Sign
@ Preble Street &
Marginal Way

Message panel size:
2′- 4″x 3′- 4″

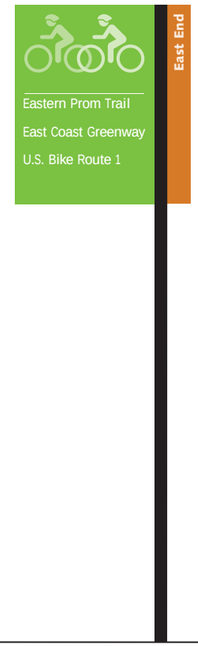


Bike Decision Point -
Directional Sign
@ Preble Street &
Bayside Trail

Message panel size:
2′- 4″x 3′- 4″

Bike Trail Blazer -
Turn Sign
@ Marginal Way

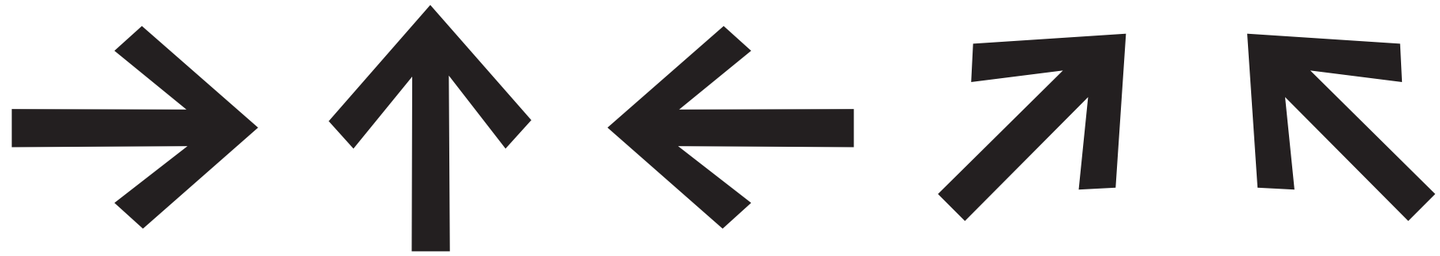
Message panel size:
1′- 5.25″x 2′- 4″



Bike Facility -
Identification/
Destination Signs

Message panel size:
2′- 4″x 3′- 4″

Arrows



Symbols

Ferry Terminal

Visitor Information

Public Parking Facility

Train Station - Amtrak

Bus Station - Concord

Jetport

Bike Facility

City Golf Course Facility

Cross Country Skiing

Snowshoeing

Note: The recreational symbols, shown above, are for use only on off-Peninsula vehicular directional signs at the City of Portland's discretion.

Clearview Highway 3W

(Vehicular Directional Messages)

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Clearview Highway 2W

(Parking and Bicycle Messages)

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Font Design and Description ©Terminal Design and Meeker Associates

Clearview, also known as Clearview Hwy, is the name of a humanist sans-serif typeface family for guide signs on roads in the United States. It was developed by independent researchers with the help of the Texas Transportation Institute and the Pennsylvania Transportation Institute, under the supervision of the Federal Highway Administration (FHWA). It is expected to gradually replace the FHWA typefaces over the next few decades in many applications.

The standard FHWA typefaces, developed in the 1940s, were designed to work with a system of highway signs in which almost all words are capitalized. The designers of Clearview sought to create a typeface adapted for mixed-case signage, initially expecting it would be based on an existing European sans-serif typeface. Instead, using a similar weight to the FHWA fonts, a new font was created from scratch. Two key differences are much larger counter spaces, the enclosed spaces in letters like the lower case “e” or “a,” and a higher x-height, the relative height of the lower case “x” to the upper case “X.” Smaller counter spaces in the FHWA fonts reduced legibility, particularly when the letters glowed from headlight illumination at night.

Clearview was granted interim approval by the FHWA for use on positive contrast road signs (light legend on dark background, such as white on green, blue, or brown) on September 2, 2004.

Font Highlights:

- Federally approved alternative to Standard Alphabets for Traffic Control Devices
- Faster recognition at increased distances
- Improved legibility in a similar footprint
- Reduced halation (or overglow) for older drivers

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Performance guarantees

1 message

Jennifer Thompson <jlt@portlandmaine.gov> Fri, Sep 21, 2018 at 4:04 PM
To: Jean Fraser <jf@portlandmaine.gov>

Hi Jean - I understand that as part of the review of the Transportation Center project there have been questions around the site plan ordinance's requirement for a performance guarantee and what the guarantee covers. Below are what I think are the relevant sections of the Code that I hope will help answer those questions.

Section 14-530 provides, in relevant part:

Performance Guarantee and Defect Guarantee:

> a. Performance Guarantee Required. Following approval of Level I, II and III site plan applications and prior to the issuance of a building permit, the developer shall post with the City a performance guarantee in the form and amount specified in section 14-501 specifying the completion of the required site plan improvements within two (2) years from the origination date of such guarantee. In no case shall the term of such guarantee be for a period of less than one (1) year, nor shall any performance guarantee expire between October 30 and April 15 of the following year.
>
> b. Required site improvements. Development improvements include, but are not limited to, sanitary sewers, storm drains, drainage systems, erosion control, catch basins, manholes, other improvements constructed chiefly below grade, slope stabilization, curbing, paving, sidewalks, lighting, landscaping and buffers.

With respect to drawing down performance guarantees, the Code provides, in relevant part:

> (d) Performance guarantees may be reduced periodically by the public works authority and the planning authority in the manner provided herein. Upon request, but in no event more than three (3) times in any calendar year, the developer shall be eligible to receive reductions in the performance guarantee equal to the estimated cost of the completed improvements. In no case, however, shall any performance guarantee be reduced (1) by less than one hundred thousand dollars ($100,000.00) or fifty (50) percent of the initial amount of the performance guarantee, whichever is less, at any one (1) time; or (2) in any line item where improvements remain to be completed: or (3) to a value which is less than the estimated cost of completing all remaining prescribed improvements for which a performance guarantee is required by section 14-530 as determined by the public works authority. Notwithstanding any other provision of this section, no performance guarantee shall be reduced to less than the amount of the defect guarantee to be posted upon completion of the improvements.

I hope this helps. If, however, you or the Board have any additional questions, please just let me know.

Best,
Jen

Jennifer L. Thompson
Associate Corporation Counsel
City of Portland
207.874.8915

Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), Design Manual and Technical Manual.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719
planning@portlandmaine.gov

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	Portland Transportation Center Parking Expansion
Proposed Development Address:	Thompson's Point Connector
Project Description:	Surface Parking Expansion
Chart/Block/Lot:	077 A 001
Preliminary Plan	No
Final Plan	Yes

II. Contact Information (Please enter n/a on those fields that are not applicable)

APPLICANT

Name:	Langdon Street Real Estate
Business Name:	
Address:	7 Langdon Street
City/State:	Concord, New Hampshire
Zip Code:	03301
Work #:	603-228-3535
Home #:	
Cell #:	
Fax #:	603-8-3524
E-mail:	BBlunt@ConcordCoachLines.com

OWNER

Name:	Same as Applicant
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

AGENT/REPRESENTATIVE

Name:	Stephen S. Sawyer, PE
Address:	Sebago Technics Inc. / 75 John Roberts Road
City/State:	South Portland, Maine
Zip Code:	04106
Work #:	207-200-2082
Home #:	
Cell #:	
Fax #:	
E-mail:	ssawyer@sebagotechnics.com

BILLING (to whom invoices will be forwarded to)

Name:	Same as Applicant
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ENGINEER

Name:	Sebago Technics, Inc.
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

SURVEYOR

Name:	Sebago Technics, Inc.
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ARCHITECT

Name:	N/A
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ATTORNEY

Name:	N/A
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	William Conway
E-mail:	wconway@sebagotechnics.com
Name:	
E-mail:	
Name:	
E-mail:	

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☐	Less than 50,000 sq. ft.	$750.00
☐	50,000 – 100,000 sq. ft.	$1,000.00
☐	100,000 – 200,000 sq. ft.	$2,000.00
☐	200,000 – 300,000 sq. ft.	$3,000.00
☐	Over 300,000 sq. ft.	$5,000.00
☑	Parking lots over 100 spaces	$1,000.00
☐	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

☐	Planning Staff Review	$250.00
☑	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

☐	Traffic Movement	$1,500.00
☑	Stormwater Quality	$250.00
☐	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [ ] x $25.00 each	$
☑	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [1] x $200.00 each	$ 3700.00
☐	Change of Use	
☐	Flood Plain	
☑	Shoreland	
☐	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ ~~4,500.00~~ 4,200.00

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE	296,535	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	296,535	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
IMPERVIOUS SURFACE AREA		
Impervious Area (Total Existing)	157,616	sq. ft.
Impervious Area (Total Proposed)	274,066	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	14,189	sq. ft.
Building Footprint (Total Proposed)	14,189	sq. ft.
Building Floor Area (Total Existing)	14,189	sq. ft.
Building Floor Area (Total Proposed)	14,189	sq. ft.
ZONING		
Existing	B5	
Proposed, if applicable		
LAND USE		
Existing	Transportation Center	
Proposed	Transportation Center	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)		
# of Residential Units (Total Proposed)		
# of Lots (Total Proposed)		
# of Affordable Housing Units (Total Proposed)		
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)		
# of One-Bedroom Units (Total Proposed)		
# of Two-Bedroom Units (Total Proposed)		
# of Three-Bedroom Units (Total Proposed)		
PARKING SPACES		
# of Parking Spaces (Total Existing)	322	
# of Parking Spaces (Total Proposed)	612	
# of Handicapped Spaces (Total Proposed)	14	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	25	
# of Bicycle Spaces (Total Proposed)	36	
ESTIMATED COST OF THE PROJECT	$TBD	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a *legal signature* per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	Benjamin Blunt, VP
Date:	12/29/17

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Completed Application form
X		1	* Application fees
X		1	* Written description of project
X		1	* Evidence of right, title and interest
X		1	* Evidence of state and/or federal permits
X		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
N/A		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
X		1	* Evidence of financial and technical capacity
X		1	Construction Management Plan
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
N/A		1	Written summary of project's consistency with related city master plans
N/A		1	Evidence of utility capacity to serve
N/A		1	Written summary of solid waste generation and proposed management of solid waste
N/A		1	A code summary referencing NFPA 1 and all Fire Department technical standards
N/A		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
N/A		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST** **(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	**Final Site Plans including the following:**
X			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
X			Existing and proposed structures on parcels abutting site;
X			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
X			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
X			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
N/A			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
X			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
X			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
X			Location of all snow storage areas and/or a snow removal plan;
N/A			A traffic control plan as detailed in Section 1 of the Technical Manual;
N/A			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
N/A			Location and proposed alteration to any watercourse;
X			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
N/A			Proposed buffers and preservation measures for wetlands;
X			Existing soil conditions and location of test pits and test borings;
X			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
X			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
X			Grading plan;
N/A			Ground water protection measures;
N/A			Existing and proposed sewer mains and connections;

- Continued on next page -

X		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
N/A		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
N/A		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
N/A		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
N/A		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
N/A		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
N/A		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
N/A		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
X		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
X		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
N/A		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION B RIGHT TITLE AND INTEREST

THE LOCUS DEED FOR PROPERTY CURRENTLTY OWNED BY THE APPLICANT IS ATTACHED.

IN ORDER TO ACCOMPLISH THE PARKING EXPANSION, THE APPLICANT PROPOSES TO AQUIRE APPROXIMATELY 1.92 ACRES OF ADJACENT PROPERTY FROM THE MAINE DEPARTMENT OF TRANSPORTATION, IN ACCORDANCE WITH THE ATTACHED OPTION AGREEMENT.

BK12719PG277

54320

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

MAINE REAL ESTATE TAX PAID

PETERSEN CORP., a Massachusetts corporation, of Andover, Massachusetts, grants to LANGDON STREET REAL ESTATE, INC., a New Hampshire corporation with a place of business and mailing address at 7 Langdon Street, Concord, New Hampshire 03301, with quitclaim covenants, the land situated in Portland, County of Cumberland and State of Maine, with all buildings and improvements thereon, if any, being more fully described on the attached Exhibit A.

Meaning and intending to convey and hereby conveying the same premises conveyed to Petersen Corp. by deed of Glen G. Grant dated September 25, 1995 and recorded in the Cumberland County Registry of Deeds in Book 12302, Page 130.

In Witness Whereof, Petersen Corp. has caused this instrument to be executed by Glen G. Grant, its President, thereunto duly authorized, this 12th day of September, 1996.

WITNESS

PETERSEN CORP.

By: _____
Glen G. Grant
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. September 12, 1996

Personally appeared the above-named Glen G. Grant, President of Petersen Corp., and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of Petersen Corp.

Before me

_____
Notary Public/Attorney at Law

Print Name RICHARD A. SHINAY

78487.1

EXHIBIT A

Two certain lots or parcels of land, with all buildings and improvements thereon, situated in the City of Portland, Cumberland County, State of Maine, bounded and described as follows:

Parcel 1

Beginning on the east side of Sewall Street at a point on the northerly sideline and right-of-way now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.12± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04104, of Portland Terminal Company;

Thence southeasterly in said northerly sideline and right of way of Portland Terminal Company a distance of nine hundred five (905) feet, more or less, to a point;

Thence northerly in a line, along a fence, a distance of three hundred (300) feet, more or less, to a concrete monument, set in the ground;

Thence north-northwesterly in a line, along a fence, a distance of two hundred twenty (220) feet, more or less, to a concrete monument, set in the ground;

Thence northwesterly in a line, along a fence, a distance of one hundred twenty (120) feet, more or less, to a concrete monument, set in the ground;

Thence continuing northwesterly on an arc as shown on Valuation Section 1-A, Sheet 1A to the point of intersection with the southerly sideline of Hooper Street, so-called, at a point on a line perpendicular to and projected from Valuation Station 42.03±, as shown on said Valuation Plan;

Thence westerly in the southerly sideline of said Hooper Street, two hundred fifty-five (255) feet, more or less, to the point on intersection with the easterly sideline of Sewall Street;

Thence southerly in the easterly sideline of said Sewall Street to the point of beginning, said parcel containing 281,000 square feet, more or less.

Parcel 2

Beginning on the west side of Sewall Street at a point on the northerly sideline and right-of-way, now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.62± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04101, of Portland Terminal Company;

Thence northwesterly in the northerly sideline and right-of-way of Portland Terminal Company a distance of forty (40) feet, more or less, to a point;

Thence northerly in a line a distance of two hundred ninety (290) feet, more or less, to the point of intersection with the westerly sideline of said Sewall Street;

Thence southerly in the westerly sideline of said Sewall Street to the point of beginning, said parcel containing 8,900 square feet, more or less.

Further reference is made to a plan entitled "Subdivision Plan - Preliminary of Thompson's Point Subdivision, Sewall Street, Portland, Maine" made by Sebago Technics, 12 Westbrook Common, Westbrook, Maine, dated September 29, 1992, revised October 1, 1992, Project No. 92091.

Also hereby conveying all of the Grantor's right, title and interest, if any, in and to Sewall Street as it is located between Parcel 1 and Parcel 2, Sewall Street as it is located northwest of Parcel 2, and Hooper Street as it is adjacent to Parcel 1, the current location of Sewall Street and Parcel 2, but without any covenants of title with respect thereto.

78487.1

RECEIVED
RECORDED REGISTRY OF DEEDS
95 SEP 12 PM 2:43
CUMBERLAND COUNTY
John B O'Brien

OPTION AGREEMENT

This **OPTION AGREEMENT** (the "Agreement") is entered into this 29 day of January, 20 18, by and between the STATE OF MAINE, acting by and through its DEPARTMENT OF TRANSPORTATION,, an agency of the State of Maine, with headquarters at 16 State House Station, Augusta, Maine ("MaineDOT" or "Seller"), and LANGDON STREET REAL ESTATE, INC. with an address of 7 Langdon Street, Concord, New Hampshire (the "Buyer"),

RECITALS

A. Seller is the owner of a certain parcel of land located adjacent to Interstate 295 ("I-295") in Portland, County of Cumberland, State of Maine, acquired in connection with MaineDOT's construction of the Exit 6A southbound on-ramp accessing I-295.

B. Buyer is the owner of adjacent land improved with a facility commonly known as the Portland Transportation Center, having an address of 100 Thompson's Point, Portland, Maine (the "PTC"). Buyer is seeking to expand its property to allow for the development of additional parking areas to serve the PTC (the "Extended Parking Area").

C. Under the terms and conditions set out below, Seller is willing to grant to Buyer an exclusive option to purchase a portion of the Seller's property consisting of approximately 1.92± acres, as more particularly described in **Exhibit A** attached hereto and generally depicted as the orange shaded area on the plan attached hereto as **Exhibit B** (the "Premises).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants, agreements, and undertakings set out herein, the parties agree as follows:

1. **Option.** Subject to the terms and conditions set forth herein, the Seller hereby grants to the Buyer the exclusive option to purchase the Premises (the "Option") for anticipated uses associated with the development of the Extended Parking Area serving the PTC.

2. **Term.** This Option will remain in effect until five o'clock (5:00) p.m. on December 31, 2018, unless extended in writing by mutual agreement of the parties (the "Option Term") or unless previously terminated as set forth in this Agreement.

3. **Conditions.** During the Option Term, the parties shall proceed with satisfying each of the following conditions (the "Option Conditions"), which must all be completed to the satisfaction of MaineDOT prior to the parties entering into a formal Purchase and Sale Agreement and proceeding to a sale of the Premises:

    a. Buyer shall have completed, at its sole expense and to the satisfaction of the Seller, a full boundary survey and legal property description of the Premises, upon which a conveyance will be based.

b. Buyer shall have sought and secured, at its sole expense, all necessary permits and permissions from the United States Army Corps of Engineers, the Maine Department of Environmental Protection, and any applicable local entities approving the Buyer's development proposal to construct the Extended Parking Area.

c. Buyer shall have submitted to the Seller, at its sole expense, all necessary information required to support the Seller's request that the Federal Highway Administration ("FHWA") review and approve the Seller's proposal to convey the Premises to the Buyer. Required submissions shall include, but may not be limited to, the following:

   i. Identification of the party who will be responsible for developing and operating the development of the Premises;

   ii. A general statement of the proposed use;

   iii. The proposed design for the development of the Premises, including any facilities to be constructed thereon;

   iv. Maps, plans and/or sketches adequately demonstrating the relationship of the proposed use of the Premises to the adjacent I-295 highway improvements;

   v. An acceptable metes and bounds description of the Premises, as well as appropriate plans and/or cross sections clearly defining the vertical use limits of the proposed development.

d. MaineDOT shall have obtained all necessary approvals from FHWA to proceed with conveying the Premises to the Buyer;

e. Buyer shall have developed, at its sole expense and to the satisfaction of MaineDOT, a drainage design that adequately protects the adjacent I-295 highway corridor, and preserves the ability for MaineDOT to maintain, repair and replace its drainage installations serving the adjacent I-295 highway corridor. To this effect, the sale of the Premises shall be subject to the Seller's retention of any drainage easements necessary to support MaineDOT's highway maintenance needs.

f. MaineDOT shall have completed an appraisal determining the fair market value (the "FMV") of the Premises and, therefore, establishing the purchase price in accordance with FHWA's requirement that MaineDOT receive FMV for the sale of the Premises.

4. **Option Price.** Seller will waive establishing and collecting any cash Option Price for the Option Term, instead receiving consideration in the form of the engineering work

referenced herein; provided, however, that if the Option Term is extended beyond December 31, 2018, as set forth above, Seller retains the right to establish and collect an appropriate Option Price in consideration for extending Buyer's exclusive Option on the Premises.

5. **Exercise of Option and Purchase Price.** Upon satisfaction of all Option Conditions, Buyer's exercise of the Option shall be satisfied through delivery to Seller of Buyer's written intent to proceed with purchasing the Premises at the FMV determined by the Seller. Delivery of Buyer's written intent shall be made no later than the expiration of the Option Term via first class mail or hand delivery.

6. **Termination.** If Buyer does not exercise the Option by the end of the Option Term, the Option and this Agreement shall automatically terminate. Seller retains the right to terminate this Option at any time in the unlikely event that the Premises is required for transportation purposes.

7. **Purchase Agreement and Due Diligence.** Upon exercise of the Option, the parties shall promptly enter into a formal Purchase and Sale Agreement that provides for a closing to occur at a time and place mutually agreeable to the parties (the "Closing"). The Purchase and Sale Agreement shall set out the terms of Closing, including but not limited to the following: form of deed; proration of fees, if any; form of payment; appropriate due diligence periods; and conditions of Closing.

8. **Condition of and Access to Premises during Option Term.** Buyer acknowledges that Seller has made no representations or warranties of any kind whatsoever with respect to the condition of the Premises or the compliance of the Premises with any laws, rules, regulations, or ordinances, including (without limitation) any relating to zoning, the environment, or hazardous materials. During the Option Term, Seller will allow Buyer or its representatives access to the Premises upon reasonable advanced notice to MaineDOT, and Buyer or its representatives shall have the right to perform water, soil, septic system and engineering tests (including, without limitation, tests for hazardous wastes, toxic substances and for the existence of any underground tanks) on the Premises and to conduct boundary, resource and topographical surveys; provided, however, that (i) such access does not interfere with Seller's uses of the Premises; (ii) such persons enter on to the Premises at their own risk of loss or harm; and (iii) Buyer or its representatives will restore the Premises to the condition it was in prior to their inspection(s) to the extent reasonably practicable. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible. In the event Buyer is not satisfied with the results of its tests, including water quality, hazardous wastes, underground tanks, or toxic substances, Buyer may terminate and release this Option. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible.

9. **Conditions to Closing.** Buyer acknowledges that conveyance of the Premises will be conditioned on MaineDOT's retention of any drainage easements determined necessary to support MaineDOT's highway maintenance needs.

10. **No Assignment by Buyer.** Buyer may not assign the Option or this Agreement, and Buyer may not convey to any third party any rights under the Option or under this Agreement. Any such purported assignment or conveyance shall be void and of no effect.

11. **Capacity.** Each party represents to the other (a) that such party has full power and authority to perform its obligations hereunder; (b) that any person or entity executing this Agreement by or on behalf of the represented party has the authority to act on the behalf of and bind the represented party; (c) that any person or entity executing any closing documents by or on behalf of the represented party has been and will be duly authorized to act on behalf of the represented party; and, (d) that the performance of this Agreement will not be in violation of any law, ordinance, rule, regulation, order, or agreements to which the represented party is a party or by the terms of which it is bound.

12. **Governing Law.** This Agreement is made pursuant to and shall be governed in accordance with the laws of the State of Maine.

13. **Entire Agreement.** This Agreement contains the entire and only agreement between the parties, and no oral statements or representations or prior written matter not contained in this Agreement shall have any force or effect.

14. **Modification.** No provision of this Agreement may be waived, changed, or modified orally, but only by an agreement in writing signed by the parties.

15. **Notices.** Any communications, requests or notices required or appropriate to be given under this Agreement shall be in writing and mailed via U.S. Mail, Certified or Registered, Return Receipt Requested or sent via a recognized commercial carrier, such as but not limited to Federal Express, that requires a return receipt delivered to the sending party. Alternatively, communication may be sent via email and shall satisfy the delivery requirements of this section through express acknowledgement of receipt by the receiving party. Said communications, requests or notices shall be sent to the other party as follows:

Seller:	Buyer:
Maine Department of Transportation	Langdon Street Real Estate, Inc.
Toni L. Kemmerle, Chief Counsel	Attn: Ben Blunt
16 State House Station	7 Langdon St
Augusta Maine 04333-0016	Concord, NH 03301
E-mail: toni.kemmerle@maine.gov	Email: bblunt@concordcoachlines.com

IN WITNESS WHEREOF, the parties have set their hands and seals on the day and year first written above.

STATE OF MAINE
Department of Transportation

By: _____
David Bernhardt, Commissioner
Duly authorized

LANGDON STREET REAL ESTATE, INC

By: _____
Print Name: Benjamin Blunt
Its: Vice President
Duly authorized

Exhibit A
Proposed Acquisition from the State of Maine

A certain lot or parcel of land situated on the westerly side of Fore River Parkway and the southerly side of Thompson Point Connector, in the City of Portland, County of Cumberland, State of Maine, as depicted on a plan entitled "Exhibit B – Land Acquisition Sketch of Portland Transportation Center, Thompson's Point Connector, Portland, Maine For Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301" dated January 12, 2018, and revised January 23, 2018, by Sebago Technics, Inc. (project number 99607), D.O.T. File No. 3-185D, on file at the Property Office of the Maine Department of Transportation, and being more particularly bounded and described as follows:

Beginning at an existing 6-inch square concrete highway monument, being the southerly corner of land now or formerly of Langdon Street Real Estate, Inc., as described in a deed recorded at the Cumberland County Registry of Deeds (CCRD) in Book 12719, Page 277;

Thence N 05°25'20" W, along land of Langdon Street Real Estate, Inc., a distance of 303.20 feet to an existing 6-inch square concrete highway monument;

Thence N 19°32'38" W, along land of Langdon Street Real Estate, Inc., a distance of 222.25 feet to a 6-inch square concrete highway monument at a point of curvature;

Thence along a non-tangent curve concave to the southwest and land of Langdon Street Real Estate, Inc. as defined by the following curve elements: having a radius of 854.53 feet, an arc length of 35.90 feet and a chord which bears N 41°08'09" W, a distance of 35.89 feet to a point;

Thence N 27°24'28" E, along land of Langdon Street Real Estate, Inc., a distance of 53.92 feet to a point;

Thence N 04°37'26" E, along land of Langdon Street Real Estate, Inc., a distance of 64.77 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set on the southerly sideline of the Thompson's Point Connector;

Thence S 72°56'09" E, along Thompson's Point Connector and through land of the State of Maine, as described in deeds recorded at the CCRD in Book 3079, Page 336; Book 3153, Page 761 and Book 3367, Page 171, a distance of 143.69 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at the Fore River Parkway;

Thence S 06°38'37" E, along Fore River Parkway and through land of the State of Maine, a distance of 288.62 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 11°42'34" E, along Fore River Parkway and through land of the State of Maine, a distance of 226.50 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 13°20'40" W, along Fore River Parkway and through land of the State of Maine, a distance of 163.34 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at

land now or formerly of the Portland Terminal Company, as described in a deed recorded at the CCRD in Book 881, Page 318;

Thence N 54°30'09" W, along the land of the Portland Terminal Company, a distance of 101.27 feet to the Point of Beginning.

The herein described parcel contains approximately 83,608 square feet, more or less

Bearings herein are based on Grid North, Maine State Plane Coordinate System, West Zone 1802, NAD83.

Meaning and intending to convey a portion of the right of way of State Highway "295" as was acquired from the Portland Terminal Company by condemnation by the State of Maine, as described in a Notice of Layout and Taking recorded in Book 3217, Page 141.

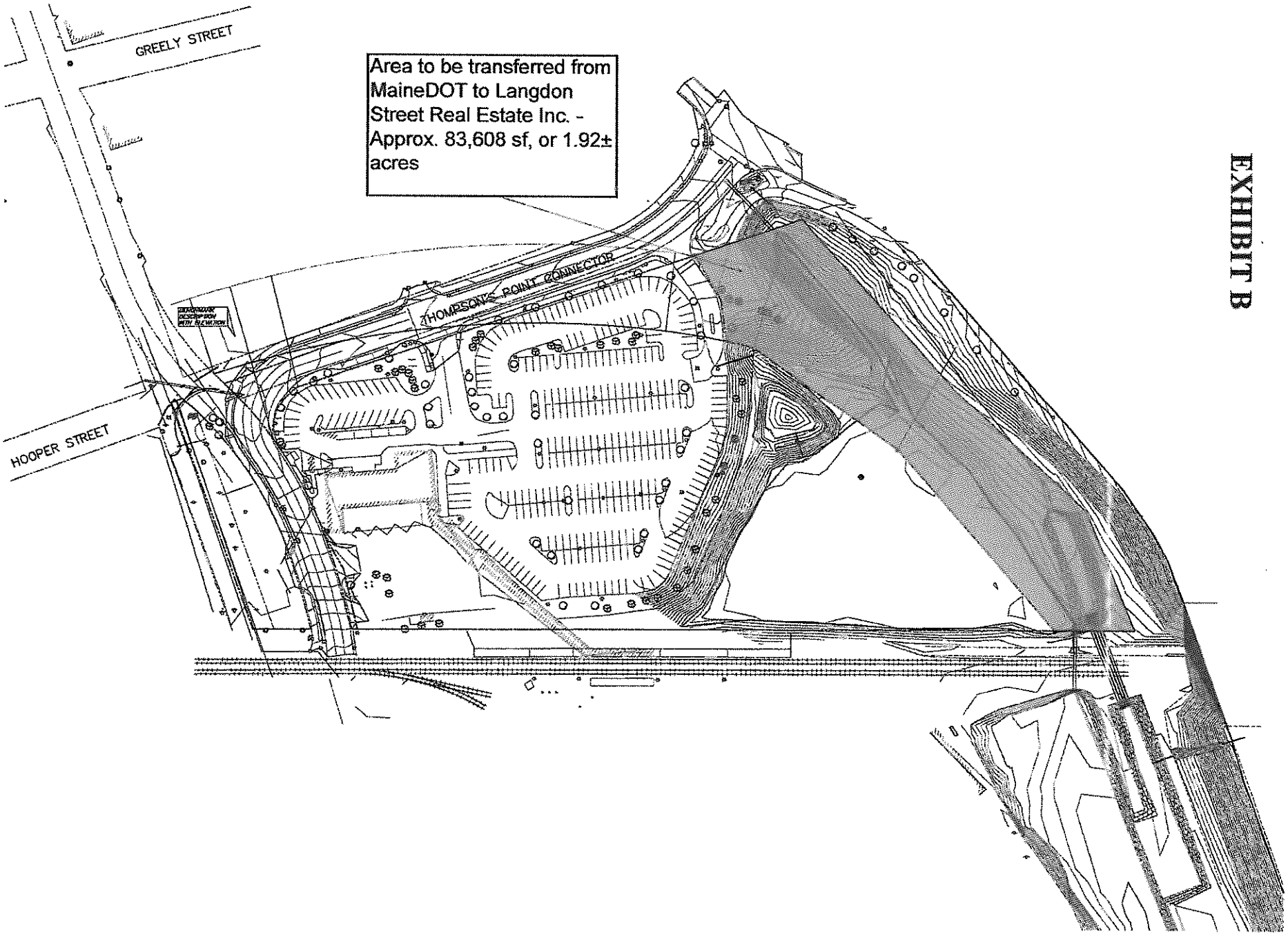

GREELY STREET
Area to be transferred from MaineDOT to Langdon Street Real Estate Inc. - Approx. 83,608 sf, or 1.92± acres
THOMPSONS POINT CONNECTOR
HOOPER STREET

EXHIBIT B

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION D ZONING ASSESSMENT

THE PROJECT IS LOCATED IN THE B5 ZONING DISTRICT.

OFF STREET PARKING LOTS ARE PERMITTED USES IN THE B5 DISTRICT.

100% LOT COVERAGE IS ALLOWED, THE PROPOSED SITE PLAN HAS LANDSCAPE AREAS AND THE PROPOSED LOT COVERAGE IS LESS THAN 100%.

DESIGN OF PARKING SPACE LAYOUT, LANDSCAPING AND SITE LIGHTING CONFORMS TO THE CITY TECHNICAL STANDARDS.

PROPOSED STORMWATER MANAGEMENT MEETS THE CITY TECHNICAL STANDARD REQUIREMENTS.

THE PROJECT WILL NOT GENERATE EROSION, FUMES, DUST, NOISE OR OTHER NUISANCES.

99607

Portland Transportation Center

Parking Lot Expansion and Internal Circulation Improvements

Justification Narrative
(Purpose, Need, and Alternatives Analysis)

1.30.18

Purpose and Need Statement

Langdon Street Real Estate, dba as Concord Coach Lines (CCL), the owner and facility manager of the Portland Transportation Center (PTC), seeks to address existing parking and traffic flow constraints in a manner which is economically feasible for the ongoing operations of this public transportation hub. Additionally, this solution must continue to offer convenient, accessible, and price conscious parking options that will maintain the viability of the transit services (bus and train) offered at the PTC as alternatives to the usage of private automobiles for local and regional trip making.

As such, the purpose of this project is to:

- address current and future parking and circulation deficiencies at the site for the next 5-10 years by adding 300+ parking spaces and modifying vehicle access to the terminal entrance in a manner that meets the engineering design criteria as described below (including the provision of convenient, accessible, and affordable parking).

Project History

The PTC was originally constructed on Sewall Street in 1996 as a new terminal facility for CCL. At this time the facility contained 205 long-term parking spaces and 20 short-term spaces. In 2001, the site was redesigned and expanded to serve the new Downeaster Amtrak service operated by the Northern New England Passenger Rail Authority (NNEPRA). This expansion was the result of a partnership between the Maine Department of Transportation (MaineDOT), Langdon Street Real Estate (LSRE, a real estate holding company belonging to the same ownership group as CCL), CCL, and NNEPRA. The construction included:

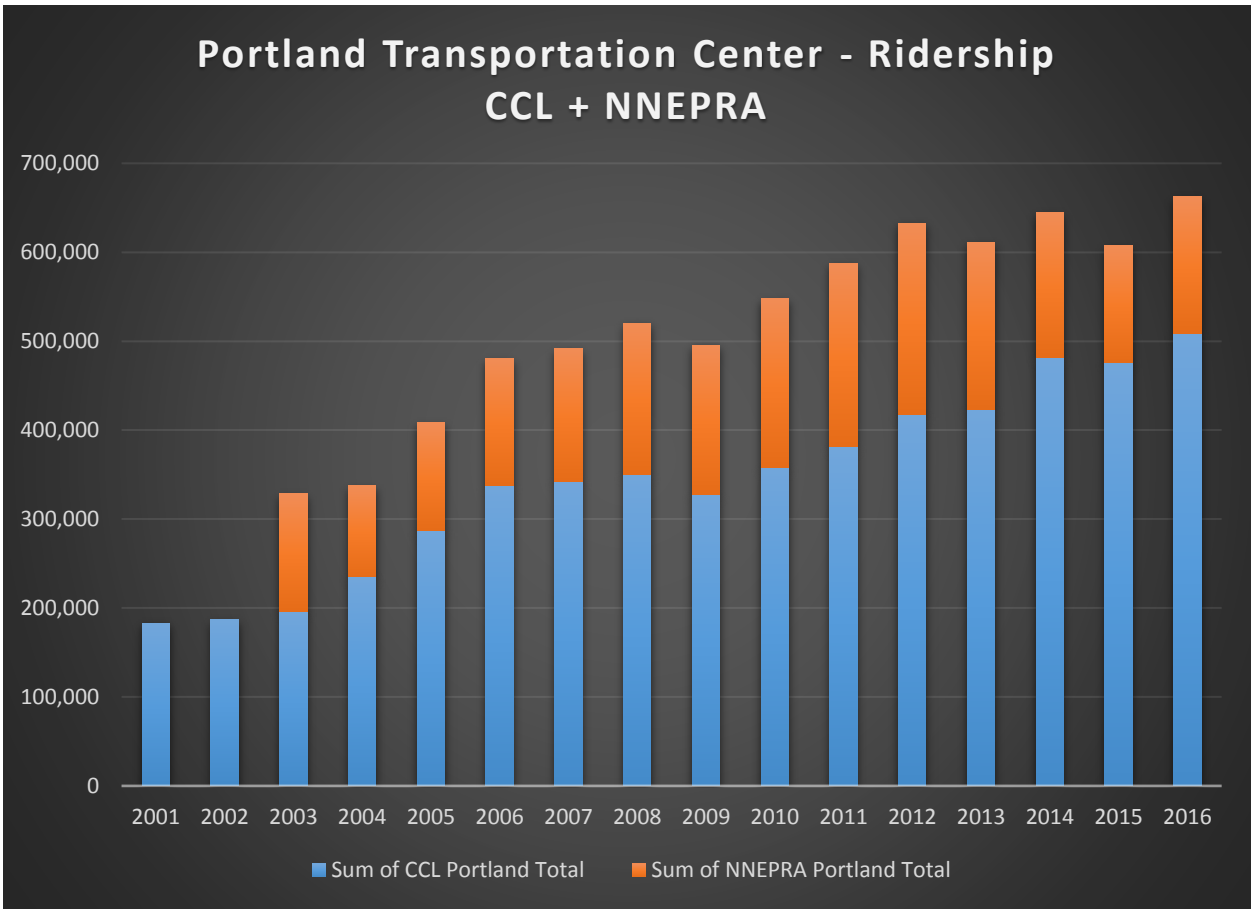
- A new 450-foot long train platform along the Pan Am Mountain Division rail line
- A trainway extending from the terminal building to the platform
- Expanded terminal facilities, including ticketing and waiting space for the train
- An additional 89 parking spaces adjacent to the terminal
- A new 375-space Park & Ride Lot across the Thompson's Point Connector Road on land owned by MaineDOT, which brought the total parking capacity of the PTC to roughly 689 spaces

Since 2001, the PTC has been a model of success. The partnerships that were made between Public and Private entities at the time have created one of the most successful transportation P3 projects in the country. The facility is financially self-sufficient, taking no operating subsidy from the City and instead generating $55,000 in property taxes, and no operating subsidy from MaineDOT or NNEPRA, while generating roughly $190,000 in surplus cash to support other costs of the Downeaster.

The capital costs of constructing the terminal facility were made entirely by the private sector, and while MaineDOT did participate in constructing improvements to their Park and Ride lot and the train platform, their upfront investment was minimal compared to the costs of a new terminal facility.

This model has worked due to the comparatively cheap operating and capital costs of surface parking as opposed to decked parking. The cheaper costs have allowed CCL to keep parking fees reasonable for public transit users (who otherwise would not use transit), while still generating enough revenue to support the ongoing operating costs of a modest terminal facility and large parking lot. The financial model of the facility is one that prioritizes cost efficiency and user experience. As a result, ridership for both services has grown substantially from the early days, making the PTC the busiest ground transportation hub north of Massachusetts. See the chart on the following page.

CCL and NNEPRA Ridership To/From the Portland Terminal



As the above chart shows, the combined patronage for both CCL and NNEPRA services has seen significant growth over the past 15 years. From the initial year's ridership of just under 200,000 passengers to last year's figure of more than 675,000 – this represents an increase of over 330 percent. It's important to remember that CCL and Downeaster ridership numbers are <u>additive</u> in terms of parking needs.

In 2016, Greater Portland Metro Bus added the *Breez* Service from the PTC to downtown Portland and points north, which now makes the PTC a true "pulse point" for travel between all of northern Maine, Coastal Maine, downtown Portland, northern Massachusetts and the rest of the world through connections in Boston. Recent data from Portland Metro indicates that during the first 9 months of 2017 the *Breez* Service picked up and dropped off a total of 2,742 passengers at the PTC, or put another way on 75% of their stops at the PTC they either picked up or dropped off someone. In Metro's view, this data confirms the Breez's viability for their operation. These figures also further document the interest and support the PTC has from area residents, including the recognition by some of the lack of on-site parking today.

This growth in PTC activity has been a boon for the region on a number of fronts. First, it is evident that residents statewide and in particular within the Greater Portland Area have wholeheartedly embraced the notion of choosing public transportation to access Boston and points south for both commuting and recreational purposes. In addition to Greater Portland, the Downeaster service runs to Freeport and Brunswick and CCL connects to hub terminals in Augusta, Auburn, Bangor and the coastal communities of Searsport, Belfast, Lincolnville, Camden, Rockport, Rockland, Waldoboro, Damariscotta, Wiscasset, Bath, and Brunswick. As a result, the I-95 corridor is less congested and the Vehicle Miles Traveled (VMT) within the corridor are reduced. Second, and equally important, is the fact that reductions in private automobiles on I-95 are having a positive impact on our air quality. A 2014 American Bus Association Study[1] indicates that highway motorcoaches and intercity rail use much less fuel and contribute far fewer harmful air emissions than do private automobiles. Data extracted from this Study are shown in the following table.

Mode	Average Passenger-Mile/Gallon	Average Btu/Passenger-Mile	Average CO_2 g/Passenger-Mile
Highway Motorcoach	239.8	575	43
Intercity Rail	85.2	1,619	147
Car Pool – 2 Person	55.9	2,470	184
Car – Average Trip	38.8	3,555	265
Car – 1 Person	27.9	4,939	368

The Applicant

CCL was founded in 1967, has over 50 years of experience, and understands the public transit market in Northern New England very well. Based in Concord, NH, the Company operates intercity bus service from 34 communities in Maine and New Hampshire with service to Boston's South Station and Logan Airport, as well as New York City. In 2016, CCL carried over 750,000 passengers throughout their system, and over 1.5 million if their affiliated companies Dartmouth Coach and Boston Express that operate in New Hampshire are included.

The Economics of Public Ground Transportation

Studies show, and CCL's experience supports, that the viability of public surface transportation is far more susceptible to the cost and convenience of parking and accessibility than that of air transportation. According to TCRP Report 95, "If transit service is to be an effective substitute for driving, it must be direct enough and frequent enough to offer convenient access and competitive travel time, as well as being attractively priced."[2] Patrons are willing to put up with more inconvenience, time delays, and higher rates when they are flying as compared to choosing a surface transportation option. Surface transportation must compete with the private automobile on convenience when the journey is less than a few hundred miles. As such, the time and convenience of the whole trip is taken into account. How

[1] Updated Comparison Energy Use & CO_2 Emissions From Different Transportation Modes, for the ABA Foundation, April 2014 by MJ Bradley and Associates.

[2] Transit Cooperative Research Program (TCRP) Report 95, Traveler Response to Transportation System Changes – Chapter 13 Parking Pricing and Fees, p.13-27.

long will it take the patron to travel from their origin to the departing station, how readily available is parking, how early do they need to be there, if they miss the departure how soon will there be another, how many stops will the schedule make; these are all convenience questions that a traveler will either consciously or subconsciously consider when they decide on whether or not to use a ground transportation alternative to their personal automobile. It is also worth mentioning that these factors along with ticket and parking price are especially critical to commuters, who are invested in making the trip as efficient and cost effective as possible.

Beyond convenience, the cost of parking and ancillary charges is considerably less elastic in the minds of a ground transportation user. The Portland Jetport is able to charge $12/day, and Boston Logan Airport charges $35/day for their regular garage. In downtown Boston, the daily rate is $28 and up. Often, people resort to public transit services like those offered at the PTC as a means of avoiding the inconvenience and expense of parking their vehicle at their destination. The PTC has remained viable because the cost of parking is modest, with a maximum of $5/day. Travelers considering a week-long trip will factor in the $35 charge of parking at the PTC as a major part of their decision to use or not use transit. If these rates were to increase to $12/day (like the JetPort), the additional $49 charge will prompt them to consider other options. The decision process would be similar for commuters, balancing the bus or train ticket price, parking, and convenience with driving and parking in Boston.

Current Parking Conditions at the PTC

In 2016, the PTC accommodated 246,501 "car days" meaning a single instance of a car remaining in a spot for a single day. This equates to a 97.7% utilization rate of the available 252,174 available car days (689 spaces x 366 days). This is obviously an unsustainable number, since typically off-street parking lots with an occupancy rate of 90% or more are considered functionally at capacity.[3]

To combat this situation, CCL has leased 100 spaces a day from the developers on Thompson's Point that adjusts to 300 during the peak travel season of February through April. This overflow lot is relatively inconvenient to the facility, has not been designed for heavy use, and is expensive for the facility operators to lease, staff and maintain. At peak demand, even with the additional 300 spaces, the lots at the PTC are over capacity. The lease from the developers on Thompson's Point for the overflow lot could be terminated at any time and for any reason with 12 months' notice. Given the challenges of many of our potential alternatives, 12 months is a concerning deadline.

The 2011 Portland Station Evaluation Study, conducted for NNEPRA, identified the existing parking at the terminal as deficient. "Both parking lots frequently reach capacity and consequently some people park along Thompson's Point Road."[4] A number of alternative sites were explored elsewhere in the City as part of this Study, but in the end NNEPRA concluded that "on balance, the existing location at the Transportation Center is the preferred location" for the Downeaster terminal.[5] This Study went on to say that it is important for the existing traffic and parking issues to be resolved at this location, but that the advantages of being co-located with CCL, and having close proximity to I-295 with increased opportunities for transit connections are significant.

[3] Parking Supply and Demand Analysis, City of Portsmouth, NH, by Nelson/Nygaard Consulting Associates Inc., January 2012, page 15.
[4] Portland Station Location Evaluation, NNEPRA, October 2011.
[5] Portland Station Location Evaluation, NNEPRA, October 2011

Aside from parking capacity, the original design of the front entrance to the terminal included 22 "short-term" parking spaces. These spaces are intended for 15-minute parking only, and are mainly utilized by patrons that are being picked up or dropped off by a friend or family member, hotel shuttles, cabs, or ridesharing services like Uber and Lyft. The flow through this narrow, saw-toothed lot allows stacking of roughly 10-15 vehicles before the traffic begins to back up onto the Thompson's Point Connector Road, and ultimately out to the Fore River Parkway. This circulation design no longer has sufficient capacity given the success of the PTC. Trains often arrive or depart with up to 100 people, and CCL often has multiple buses carrying up to 50 people each at the same time. As a result, the existing terminal circulation is overtaxed with 50-150 patrons trying to either exit the parking lots or get picked up or dropped off in the short term area. Stacking often occurs at the exit gates of the parking lots, but even more acutely within the short term traffic area, resulting in queue spillback and unsafe congestion on the Thompson's Point Connector Road and sometimes the Fore River Parkway.

As part of this project, CCL is proposing to expand and redesign the traffic flow pattern with added short term parking spaces that allow for additional pickup and drop off capacity and additional, safe stacking.

Design Criteria

To be viable in the minds of CCL, the proposed short term parking expansion and internal circulation improvements need to meet all of the following criteria:

- Provide a minimum of 300-325 spaces.
- Result in a total project development not to exceed $16,000 per parking space, which would require in excess of a $5/day parking price to finance the project. Anything greater would ultimately dissuade transit users from park and riding.
- Provide expansion and redesign of the short term parking lot to meet current demand and avoid unsafe stacking onto adjacent roadways.
- Provide additional parking for patrons so that the facility is in a better position to construct a new terminal on site or a parking garage on the MaineDOT Park-and-Ride Lot across the street from a space and economic standpoint.

Alternatives

The following 8 Alternatives have been explored by CCL as part of their due diligence in preparation of this alternatives analysis:

<u>Alternative 1- No parking expansion or internal circulation improvements.</u> *This No Action Alternative does not address the stated Purpose and Need and thus is unavailable and therefore has been discarded.*

<u>Alternative 2 – Expand upon leased parking space on Thompson's Point or purchase land on Thompson's Point.</u> This alternative has been explored with Parallax Partners, the owners and developers of Thompson's Point. They see the piece of property that abuts the rail line as an integral part of their long-term development plan and therefore have no desire to enter into a long-term lease agreement or sale for the land currently being used by CCL or any additional land on this parcel. Given the uncertainty

of their timeline for development, and the fact that CCL's lease can be terminated at any point within 12 months, it would not be prudent to make substantial lease hold improvements to this property, which is currently used by CCL as overflow parking. *This Alternative is therefore unavailable and thus has been discarded.*

Alternative 3 – Work with MaineDOT to construct a parking garage on their Park & Ride Lot across Thompson's Point Road from the terminal. CCL, NNEPRA, and MaineDOT have been conducting a Feasibility Study with consultants from AECOM on the financial model and potential funding sources for such a project. This Study is still ongoing, but our understanding from MaineDOT is that it has determined that a project of this magnitude is cost prohibitive for them at this time. Furthermore, the Department would need to use all the garage revenues to pay back their initial investment, which would alter the current financial model for funding operations at the PTC. CCL and NNEPRA both depend on the parking revenues that are generated from within their long term lots at the PTC. The revenue from the MaineDOT Park & Ride lot is used to cover NNEPRA's share of operating and capital expenses in the facility, including their lease payments. Beyond covering NNEPRA's cost of being in the facility, this parking revenue nets the Downeaster roughly $50,000/yr. to help offset other expenses. The parking revenue that CCL generates in its existing parking lot helps to support the cost of operating the PTC, albeit not completely. If this parking revenue was used to make bond payments or service debt on the capital cost of a 1,000 space parking garage, CCL and NNEPRA would no longer be able to have the funds to support the ongoing operating costs of the facility without substantially increasing the cost of parking or requiring public subsidies.

Even if the concerns with the parking garage project are sufficiently addressed, it is years away from becoming a reality and nearly 400 parking spaces would be lost during its construction. In addition, this project would do nothing to address the traffic and circulation issues that arise at the PTC as the added capacity would be contained entirely to the other side of the Thompson's Point Connector Road from the terminal facility.

This alternative is available and still being examined as a possible long term strategy. However, it will not address all of the present needs of the PTC and is financially out of reach for the MaineDOT, CCL, and NNEPRA at this time. For these reasons, *it is deemed impracticable and thus has been discarded.*

Alternative 4 – Construct a parking garage on the existing terminal site over the current parking lot without expanding the current footprint. This would be problematic from a construction standpoint, because during the construction of the garage, the existing spaces in this lot would have to be eliminated, which would exacerbate the current parking situation. Furthermore, at a cost of $28,000 per space, the parking revenue generated by the garage spaces could not pay off the capital investment at $5 per day. Rates would have to be raised to $10-$12 per day, which is not feasible for the surface transportation market. Therefore, while this alternative is available it is not practicable for financial and constructability reasons, and thus *this alternative has been discarded.*

Alternative 5 – Institute Valet Parking. This concept involves patrons giving up their keys to a terminal employee who double stacks their car in an aisle somewhere on the property until the patron returns

from their trip. This strategy has been employed at other CCL terminals and on occasion at the Portland site on the Thompson's Point overflow site. There are increased operational costs associated with this concept and the volume of additional parking spaces is not adequate to meet current and future needs. It is our experience that customers are very anxious about leaving their vehicle in the hands of valet for an extended period of time. What seems like a convenience is actually a concern, and is a barrier to passengers that would otherwise use public transit. Furthermore, continued development at Thompsons Point will further reduce available space. CCL views this more as a short-term solution to minimize peaks, but not a long-term strategy for addressing their current baseline parking space deficiencies. *Therefore, this alternative, while seemly available, does not meet the project purpose and thus has been deemed impracticable and thus has been discarded.*

Alternative 6 – Develop a satellite parking lot and shuttle people to the terminal. Satellite lots with shuttle service work well at congested airports, where time is somewhat less of an issue for travelers. As has been mentioned previously, convenience is critical to motorist decision making in the surface transportation business. If patrons have to go to a parking lot away from the terminal and then transfer to a shuttle to get to the terminal, this may add too much extra time to their trip, which will cause them to make a different choice in travel mode.

Despite this assessment, we did undertake some research into the possibility of creating such a lot off-site. We first looked to see if other operations in the area have successfully done this that we could replicate. We found that the Chebeague Transportation Company (CTC) operates a satellite parking lot off Route 1 in Yarmouth, ME, due to the lack of parking available on Cousins Island where the Chebeague Island Ferry docks. While this is not exactly similar to the PTC service, we thought the logistics of this operation were worth reviewing. The CTC runs buses to and from Route 1 to Cousins Island - a distance of about 7 miles. Their website indicates that the bus leaves the satellite lot 30 minutes before the Ferry departs Cousins Island. This allows for the 15 minute drive and a 15 minute buffer to insure patrons arrive in time for their Ferry. The operation also suggests that patrons arrive at the satellite lot 10 minutes in advance of their bus departure time. By example then, if you wanted to catch the 12:15 Ferry to Chebeague Island, you would need to arrive at the satellite lot 30-40 minutes in advance to be able to make the appropriate shuttle bus schedule. This arrangement works for the CTC because local patrons have no other choice to get to the island on public transportation. This fact supersedes the issue of being at the satellite lot 30-40 minutes before the ferry departure time. In the case of the PTC, though, this extra time added to the trip length on both ends would likely have an effect on current ridership.

Nevertheless, though, we did conduct a search of potential properties within a 5-10 minute drive radius of the PTC that were 5 acres or more and could be developed into a satellite parking lot. We chose a 5-10 minute drive radius because a patron would have to go to the terminal first to find out that the on-site lots were full and then drive to the satellite lot, drop off their car, and ride a shuttle back to the terminal. Given that patrons often are last minute arrivals (not like air travelers) anything more than a 10-20 minute round trip would be too great. Hence we felt that a 10-minute drive radius was the practical maximum. We selected 5 acres in size because that is what would accommodate between 300-325 spaces, which would make this venture viable from a parking perspective. The parcel shown on the next page off Congress Street illustrates the sole location we were able to find meeting this criteria

within a 5-minute drive. This site is owned by the State of Maine Department of Transportation, currently undeveloped, and is roughly 6 acres in size, with a large wetland in the center. However, upon further investigation, we learned that this parcel was acquired by the DOT to allow the construction of a "wye" track configuration to facilitate Downeaster trains traveling to and from the north out of the PTC. As such, this site is not an available alternative for our consideration.

We did not conclude our search there, though. Figure 1 on the next page shows several other vacant parcels that we identified within a 10-minute drive (or 2-mile radius) of the PTC. All of these would necessitate purchasing land and developing a parking area of suitable size. Therefore, the alternative to create a feasible satellite parking lot to serve the PTC is available, but we weren't sure it would be practicable due to cost.

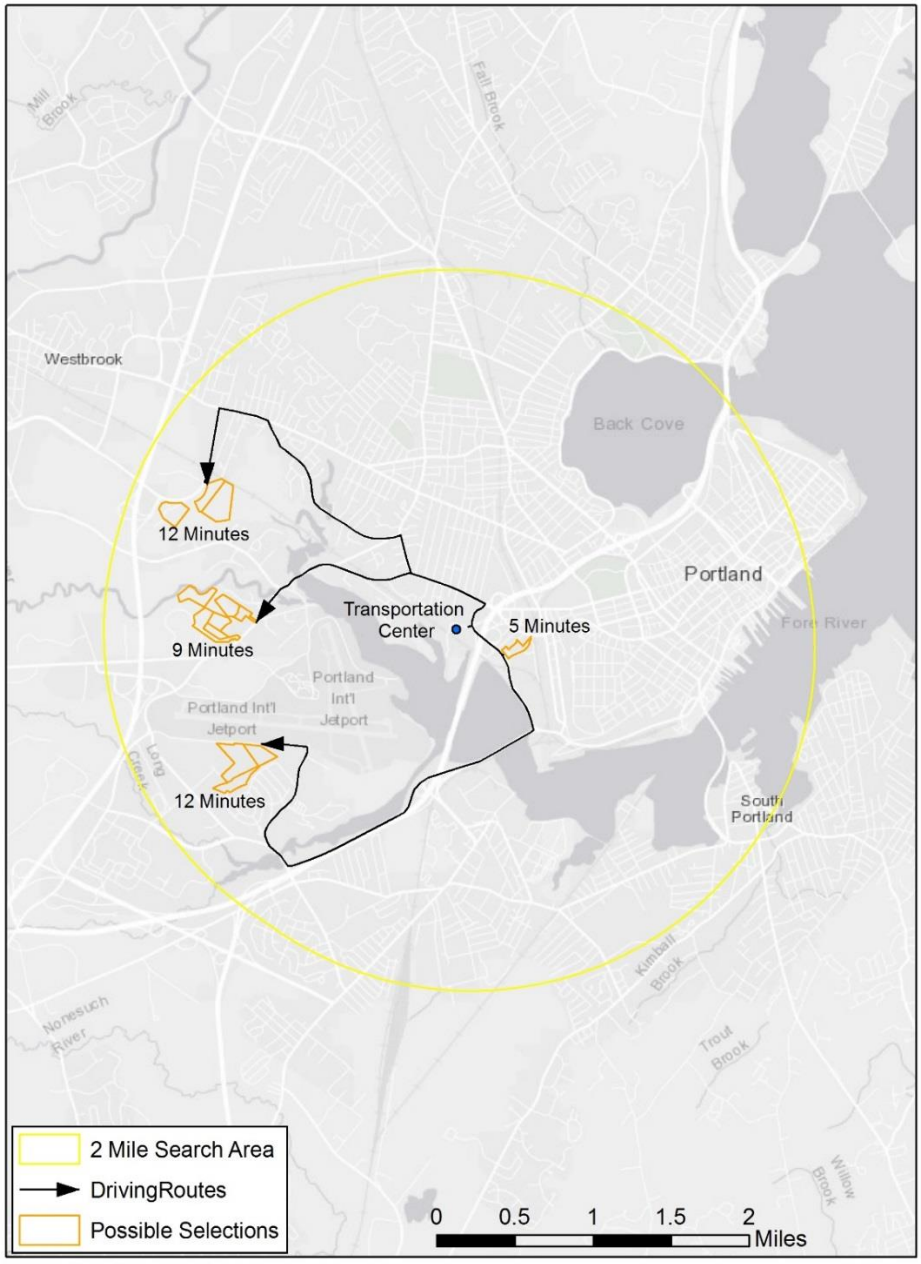
According to published data we could find on the subject, satellite parking lots must be significantly cheaper than parking at a consumer's destination or else they won't be used.[6]

This fact led us to undertake a comparative cost comparison among several alternatives under consideration to determine their relative costs per space, which would provide an indication what the charge rate would need to be to cover these costs. For this exercise, we examined three scenarios:

1. A surface parking lot at the terminal site
2. A parking garage at the terminal site
3. An off-site satellite lot

[6] Parking Management, Strategies, Evaluation and Planning, September 12, 2016, Victoria Transport Policy Institute.

FIGURE 1



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Scenario 1 – Expand the existing surface parking at the existing terminal site by 325 spaces

Assumptions:	Construction Cost	=	$4,000,000
	Additional Land Cost	=	$ 250,000
	In Lieu Fee (DEP)	=	$ 765,000
	Engineering	=	$ 300,000
	Total Initial Cost	=	$5,315,000
20 year Loan on $5,315,000 at 5% interest			
	Annual Payments	=	$ 412,489
	Daily Cost (Annual/365)	=	$ 1,130
Cost per space (Daily Cost/325 spaces)		**=**	**$ 3.48/day/space**

Note: For simplicity sake, this analysis does not include the cost of regular maintenance.

Scenario 2 – Build 1,000 space parking garage at the existing terminal site

Assumptions:	Construction Cost	=	$28,000,000
	Engineering	=	$ 750,000
	Total Cost	=	$28,750,000
20 year Loan on $28,750,000 at 5% interest			
	Annual Payments	=	$2,306,975
	Daily Cost (Annual/365)	=	$ 6,320
Cost per space (Daily Cost/1,000)		**=**	**$ 6.32/day/space**

Note: For simplicity sake, this analysis does not include the cost of regular maintenance.

Scenario 3 – Off-Site Satellite Lot operation with 400 spaces

Assumptions:	20-hour per day operation to match bus and train schedules		
	2 new vehicles at $75,000 each		
	operational cost/hour = $92 (includes driver and vehicle maintenance)		
3 year loan $150,000 for 2 vehicles at 5% interest			
	Annual Payments	=	$ 55,081
	Daily Cost (Annual/365)	=	$ 151
Operational Cost per Day (Cost/Hour x 20 x2)			$ 3,680
Total Daily Cost			$ 3,831
Cost per space (Total Daily Cost/400)			**$ 9.58/day/space**

Note: For simplicity sake, this analysis does not include the cost of regular maintenance.

It is apparent from the above figures presented that Scenarios 2 and 3 would cost more than could be reasonably paid for by the current parking charge of $5/day per space. Interestingly, the off-site satellite operation is the most expensive by far and this doesn't even include the initial capital expense of buying the land and constructing the parking lot – the analysis presented only deals with the operational costs once the lot is available. For these reasons, *Alternative 6 is available but not practicable, and thus has been discarded.*

Alternative 7 – Relocate the CCL Terminal to a new site. In 2011 NNEPRA conducted a site search in Portland for a new terminal[7]. Only two Alternative sites were deemed potentially feasible at the time and included:

- A site on West Commercial Street on an underutilized rail yard west of the Casco Bay Bridge. This site has since been developed by MaineDOT as an expansion to the Port of Portland.
- The Union Station site on St. John Street where the original railroad station existed. This site would take the place of an existing shopping center.

The Study evaluated each of these sites in comparison to the existing PTC on the basis of 5 criteria. These were:

- Operational Compatibility – Was the site suited to meet the future needs of NNEPRA?
- Connectivity – How did the site meet the overall multi-modal needs of the Region?
- Economic Development Potential – How does the site compliment the future development initiatives of the City/Region?
- Financial Impacts – How do the operating and capital costs compare with the existing facility?
- Ease of Implementation – What were the challenges associated with developing a new facility at each location?

The Study concluded that the existing PTC site was NNEPRA's optimum location. However, there were caveats, which included the need for additional parking, which is the focus of this project.

In addition to NNEPRA, CCL has considered relocating their operations to another site in the region that has similar access to the interstate. However, the site on Thompson's Point is ideal in that it is on the southern edge of the city, and is easily accessible to the broader travelshed with its proximity to I-295. The most common destinations for travel through the PTC are to the south, that being the case, having the terminal on the southern side of the city is beneficial as people are reluctant to travel north in order to reach a destination to the south. Separating the two modes (rail and bus), apart from the obvious public transportation drawbacks, would impact the operating efficiencies of both services. Even if these drawbacks were put aside, CCL's searches have found no viable options north of Saco. In addition, from the beginning the PTC has been viewed as a multi-modal hub for inter- and intra-city ground

[7] Portland Station Location Evaluation, by Gannett Fleming Inc., 2011.

transportation. If CCL were to relocate their bus service, this vision would no longer be viable. *As such, this alternative is not available and thus has been discarded.*

Alternative 8 – Construct additional parking on the undeveloped area adjacent to the existing terminal building. Given the above alternatives, it appears that the only available and practicable alternative for the present time is to create additional parking supply at the existing terminal site by converting the undeveloped land, which includes wetlands into surface parking. This 3-4 acre area can provide an additional 300-325 spaces, bringing the total adjacent to the terminal to between 600-625 spaces. These added spaces will address the PTC's current parking shortfall. Furthermore, this additional developed area adjacent to the terminal will provide an opportunity to redesign the site's circulation in order to better manage the increased traffic demand at peak travel times, and to better accommodate parking space losses should a new terminal or parking structure be constructed in the future.

Environmental Impacts

Alternatives 1, 2, 3, 4, and 5 all do not have any wetland impacts. However, as has been mentioned these alternatives are either unavailable or not feasible for logistical, operational and cost reasons.

Alternative 6, the satellite lot option has been deemed impracticable for cost reasons.

Alternative 7 was explored by both CCL and NNEPRA and the existing terminal site was found to be optimal given all their considerations, so moving to another site is not an available alternative.

This leaves Alternative 8, which will impact a total of 2.03 acres of wetland and a stream. If the applicant tried to minimize this resource impact by constructing fewer parking spaces, the project purpose would not be met. Instead, the applicant will be doing its best through responsible engineering design to provide on-site, underground stormwater storage and water quality treatment, as well as compensatory mitigation to replicate the current functions and values of the lost wetland area.

Preferred and Only Feasible Alternative

After careful consideration of the alternatives presented above, CCL has concluded that to address current parking space and site circulation deficiencies that are being experienced presently, their only available and practicable alternative is to construct 300-325 additional parking spaces on land adjacent to the existing terminal (Alternative 8). Although this alternative has environmental impacts, it is clearly the only practicable alternative, therefore it is the least environmentally damaging practicable alternative. The PTC is strongly committed to offsetting the unavoidable wetland impacts due to the parking lot expansion by construction of on-site stormwater abatement to replace the water quality improvement function and compensatory mitigation for the wetland impacts through the State of Maine's In-Lieu-Fee process.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION F WAIVERS

THE APPLICANT IS REQUESTING A WAIVER OF THE REQUIRED NUMBER OF BICYCLE RACKS. THE TOTAL NUMBER OF PROPOSED PARKING SPACES IS 603 SPACES . PER LAND USE CODE SECTION 14 – 526 (a) 4 (B) , 45 BICYCLE RACKS ARE REQUIRED. THERE ARE CURRENTLY 25 BICYCLE RACKS ON THE SITE, WHICH ARE UNDERUTILIZED. THE APPLICANT IS PROPOSING TO INSTALL 12 ADDITIONAL BICYCLE RACKS, BRINGING THE TOTAL NUMBER TO 37 RACKS.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION G FINANCIAL AND TECHNICAL CAPACITY

THE APPLICANT HAS A BANKING RELATIONSHIP WITH TD BANK, A LETTER OF COMMITMENT IS ATTACHED. THE APPLICANT HAS THE TECHNICAL CAPACITY TO MANAGE THE PLANNING AND DESIGN OF THIS PROJECT, HAVING DONE SO TO CREAT THE EXISTING FACILKITY, AND OTHER TRANSPORTATION CENTERS IN NEW ENGLAND. SW COLE HAS BEEN RETAINED TO PROVIDE GEOTECHNICAL CONSULTING, AND SEBAG TECHNICS HAS BEEN RETAINED TO PROVIDE LAND SURVEY, LANSDCAPE ARCHITECTURE AND CIVIL ENGINEERING DESIGN.

.

TD Bank
America's Most Convenient Bank®
143 North Main Street
Concord, NH 03301

City of Portland

January 23, 2018

To Whom it May Concern:

Per the request Langdon Street Real Estate, Inc. (LSRE) of Concord, NH, please accept this letter as confirmation that LSRE and Concord Coach Lines, Inc. (CCL) of Concord, NH have a banking relationship with TD Bank. They have multiple financings with the Bank including lines of credit with aggregate availability in the medium seven (7) figure range. Additionally, the companies maintain a depository relationship with the Bank with current available balances in the moderate seven (7) figure range.

It is my understanding is that LSRE is contemplating funding an expansion of their Portland, ME terminal facility utilizing their current resources, to include the above referenced lines of credit and deposits and without the need for additional financing. In the event that project did require additional funding TD Bank would be more than willing to review the request, subject to our normal underwriting guidelines.

TD has enjoyed a long time relationship with the companies and their obligations have always been handled in an exemplary manner. Should you require additional information I would be pleased to provide upon the request of LSRE.

Sincerely,

Thomas Potter | Vice President | Commercial Lending
TD Bank, America's Most Convenient Bank
NH1-080-000 | 143 North Main Street, Concord, NH 03301
T: 603 229 5911| F: 603 229 5949
E Mail: Thomas.Potter@td.com

Confidential

Construction Management Plan

Project Location :
Portland Transportation Center
Thompson's Point Connector

Project Description :
The proposed project consists of an expansion of surface parking spaces at the Portland Transportation Center (PTC). Due to the nature of existing unstable wetland soils, the project will be constructed in 3 phases –

- **Phase 1 – import fill materials in the expansion area and install an asphalt reclaim surface. This area will be in a preload condition for approximately one year, and will be used for parking during that time. The perimeter landscaping buffer will be installed during Phase 1.**
- **Phase 2 – in the expansion area, remove reclaim surface, install stormwater infrastructure, new pavement, curbing, sidewalk, landscape islands and site lighting.**
- **Phase 3 – in the existing parking areas, reconfigure vehicular and pedestrian circulation to match with the expansion area.**

Project Team Summary :
Owner – Langdon Street Real Estate
Contractor – Shaw Brothers Construction , Inc.
Civil Engineer – Sebago Technics, Inc.

The owner and contractor will remain responsible for enforcement of and compliance with 1) all Contract plans and specifications and 2) all site working conditions and safety requirements, day and night, for both persons and and property, in each case for the duration of their work. These include all OSHA, NIOSH, US EPA , local ordinance and any applicable governmental regulations.

The contractor shall review all permits and conditions of approval for the project, and will visit the site prior to the start of work to confirm site conditions. The contractor will comply with all of the visual representations of the measure to be taken , in accordance with the approved Construction Management Plan.

The following outline has been developed in accordance with the City of Portland Construction Management Plan General Template and shall be referenced by the contractor during construction.

A. Construction Management Principles

The control of noise, vibrations, ground movement, truck traffic, and other construction related factors will be of the utmost importance. Care shall be taken to minimize these affects in the best interest of neighbors and the general public.

B. Development Review of Construction Management Plan

Logistics and safety program shall be submitted at or prior to the preconstruction meeting with Phil DiPierro by the contractor, with all pertinent information required by the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, The Owner shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Blasting:** Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

D. Construction Administration and Communication

The contractor will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust . Contact information for the project personnel is :

Owner :
Benjamin Blunt
Langdon Street Real Estate
(603) 228-3524

Contractor :
To be determined
Shaw Brothers Construction, Inc.
(207) 839-2552

Civil Engineer :
Will Conway
Sebago Technics, Inc.
(207) 200-2055

E.**Construction Schedule**

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing.
2. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit and Section 25-129.

Noise, dust and debris . It is anticipated that the hours of construction will be 7:00 am to 5:00 pm Monday through Friday. Night and weekend work is not anticipated.

3. Extended Hours or Night Work: Extended hours, including nights and weekends are not anticipated. Should the need arise the contractor will give notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority.
4. Material Deliveries: The site will be able to accommodate storing of items as well as space for delivery vehicles. Deliveries will be scheduled between the hours of 7am to 5:00pm .

E. Security & Public Safety

1. The Construction Management Plan will depict all proposed fencing or other barriers and access gates (with knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. Fire Safety Program. Demolition fire protection and building fire protection is not applicable to this project
3. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
4. Any proposed temporary security lighting shall be shown on CMP and all fixtures shall be full cutoffs. The need for temporary lighting is not foreseen at this time.

F. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual.

3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. The contractor shall submit a satisfactory 'maintenance of traffic" (MOT) plan prior to any street opening permit approval. This document shall contain all pertinent information from the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3 and will be consistent with plans submitted by Shaw Brothers in the past.

All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works.

- Traffic control of bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

G. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris shall be managed appropriately and its removal shall comply with all local, state, and federal regulations.
2. Street cleaning Street cleaning and sweeping shall be followed as outlined in the erosion and sedimentation control notes and report. Damage to the street shall be avoided and shall be the responsibility of the contractor.
3. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris .
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris .
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
   1) Snow/ice removal shall commence automatically from (1" of snow and up) or Ice
   2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or sight lines with the piles of snow.
   3) Clear all walks & ramps with the work zone
   4) Sand or Salt as needed
   5) Clear all basin or drainage to help snow melt
   6) This would include Monday-Friday Sat/Sunday/Holidays

H. Erosion Control and Preservation of Trees

1. The contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The contractor shall regularly inspect the control measures,

no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order. The contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.

2. The contractor shall maintain all tree and landscaping preservation measures as depicted on the landscaping plan within the area of construction.
3. The storage of materials shall be identified and avoid being located under/near trees. The contractor will store materials (pipe, catch basins etc) within the new parking area boundaries.

I. Construction Staging Area

1. The contractor shall submit a plan with locations depicted for the location of material staging areas, the location of on-site temporary construction trailers, the location of on-site truck delivery holding areas, the location of on-site truck washing stations, the general location of the construction security fence if required and the general location of temporary construction dumpsters. This plan shall be submitted at or prior to the preconstruction meeting with Phil DiPierro. Any open storage areas shall be shown on the plan..
2. Delivery Truck Holding Areas On-Site: The contractor does not anticipate requiring holding areas for delivery trucks. Materials delivered to the site will be scheduled such that they are able to be offloaded immediately. If multiple truck deliveries are required for the site contractor they will be staggered so that there is only 1 truck on site at a time. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of trucks until they can be unloaded. Once at the site all vehicles will be brought within the project boundaries and will make every attempt to avoid queuing on public streets. If on-site holding of the trucks is not feasible, an off-site location will be designated and shown on the submitted plan referenced above in J.1.
3. Delivery Truck Holding Areas Off-Site: It is not anticipated that an off site holding area will be required.

J. Parking During Construction

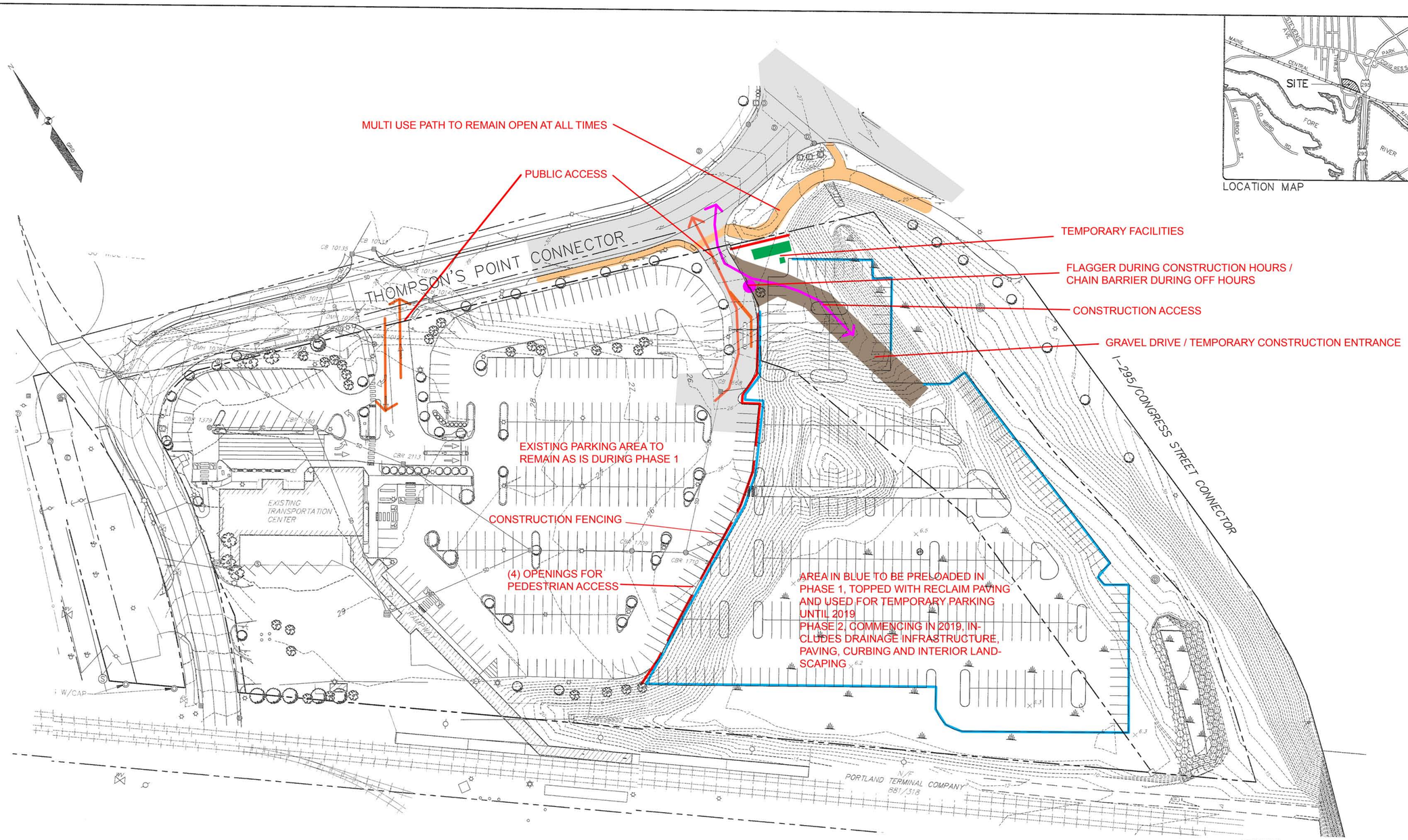
1. Construction Parking: Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided. The parking arrangements shall be included in the construction management plan. On site parking for the contractor will be
2. Parking: Where existing facilities are remaining in operation during construction, the construction management plan shall identify how the parking for employees and others shall be managed.
3. Truck Routes and Volumes: The Construction Management Plan shall address the designated truck routes and expected truck volumes.
   - Granular Borrow – 9,300 cy. Shaw Brothers S-pit to project. (Brighton Ave, Stevens Ave, Congress St, Fore River Pkway)

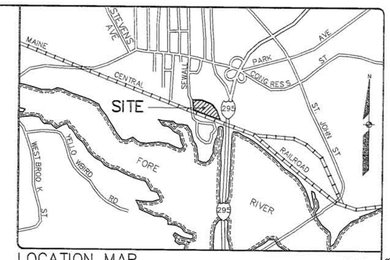
     * Granular Borrow – 53,700 cy. Shaw Brothers S-pit to project (Brighton Ave, Stevens Ave, Congress St, Fore River Pkway

K. Special Measures as Necessary

A pre-construction survey of the adjacent building interior subgrade and above grade accessible walls, ceilings, floors, and visible exterior as viewed from the grade level shall be conducted at a minimum. A pre-construction survey and regular monitoring during construction of the adjacent rail tracks will be conducted to determine if there is any settlement due to the placement of fill. Photographs shall also be taken to further assess any potential damage that may occur as a result of construction activities.

Blasting, major demolition, deep excavation, piling and other special construction techniques are not part of this project





LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
   EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
   PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD, UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
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18. ALL PARKING SPACES SHALL BE DEFINED WITH 4" WHITE PAINTED LINES. VERIFY THAT PROPOSED PAINT MATCHES EXISTING PAINTED LINES
19. PARKING SUMMARY: EXISTING PARKING SPACES= 324
    PROPOSED PARKING SPACES= 556

Construction Management Plan - Phase 1and 2

GRAPHIC SCALE
0 20 40 80
(IN FEET)
1 INCH = 40 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

WILLIAM T. CONWAY RLA 108
REGISTERED LANDSCAPE ARCHITECT
STATE OF MAINE

DESIGNED	CHECKED
WTC	WTC

REV. BY:	DATE:	STATUS:
REV. BY:	DATE:	FOR REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

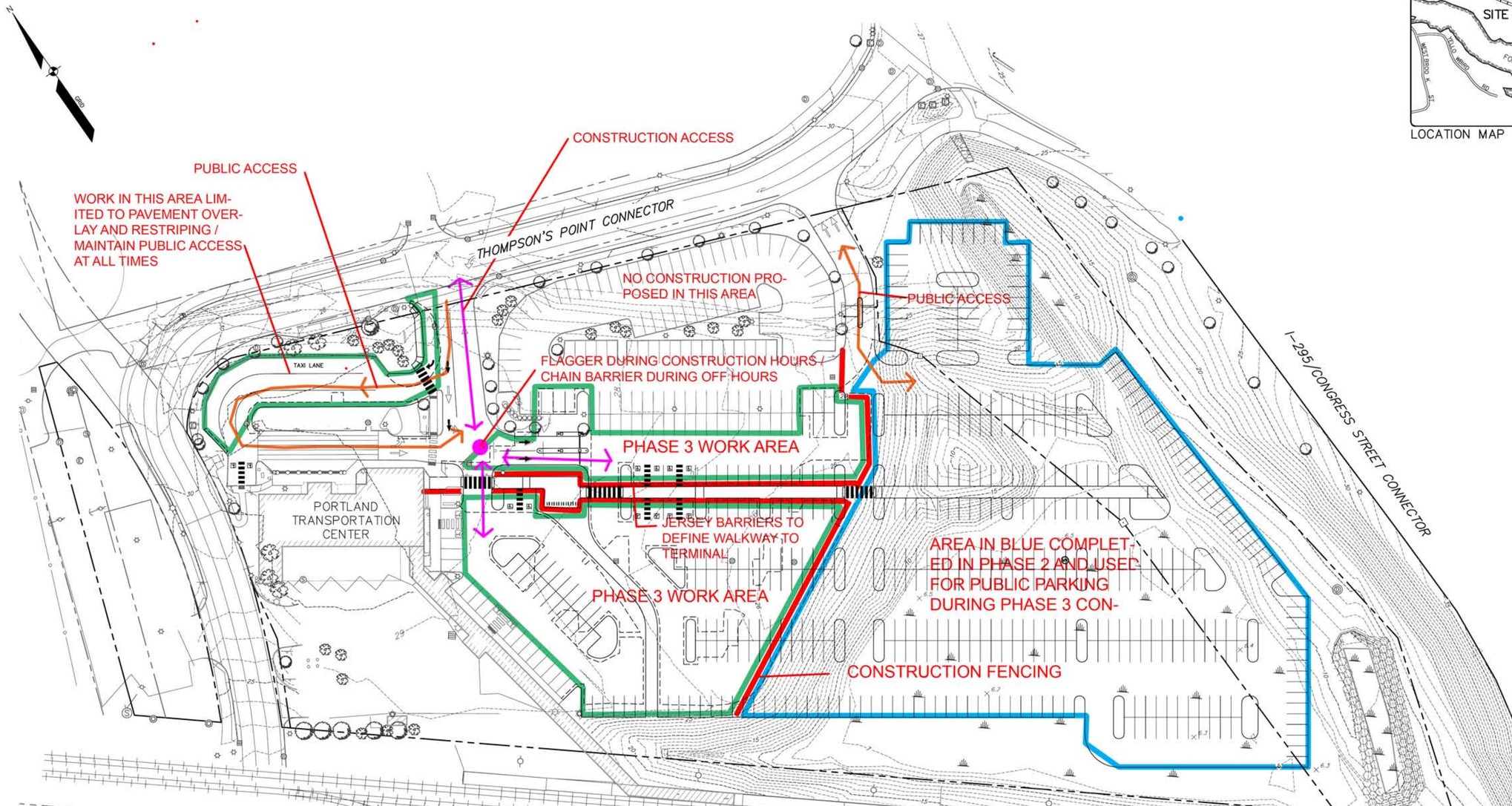
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1 South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-9566

OVERALL SITE PLAN
OF:
PORTLAND TRANSPORTION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

SHEET 5 OF 16

99607-OVERALL.dwg, TAB:S (2)



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Construction Management Plan - Phase 3

GRAPHIC SCALE
0 15 30 45 60
(IN FEET)
1 INCH = 40 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

WILLIAM T. CONWAY RLA 108

DESIGNED	CHECKED
WTC	WTC

REV. BY	DATE	STATUS
REV. BY:	DATE:	STATUS:

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75 John Roberts Rd. Suite 1, ME 04106 South Portland, ME
250 Goddard Rd. Suite 1, ME 04240 Lewiston, ME
Tel. 207-783-5656
Tel. 207-200-2100

OVERALL SITE PLAN
OF:
PORTLAND TRANSPORTION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

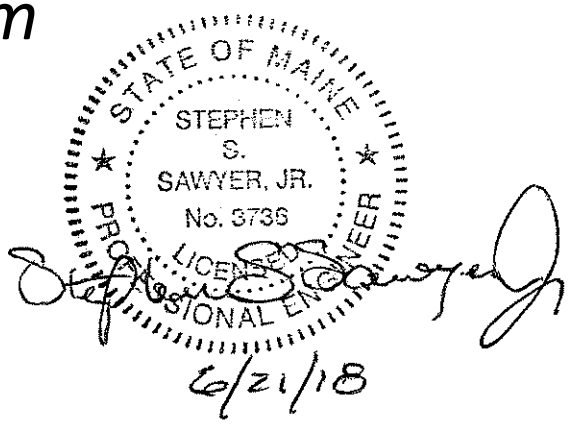
SHEET 5 OF 16

99607S-OVERALL.dwg, 11x17 (2)

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum



99607

To: **Thomas Errico, P.E.**

From: **Steve Sawyer, P.E.**

Nikki Scott, EI

Date: **June 21, 2018**

Subject: **Updated Traffic Analysis for Portland Transportation Center, Thompsons Point, Portland**

This memorandum is to summarize the results of updated traffic analysis completed for the Portland Transportation Center (PTC) on Thompsons Point Connector Road in Portland, Maine. Based on preliminary information submitted to the City, the facility requires a Traffic Movement Permit (TMP) from the City of Portland, as they have delegated review authority. Initial turning movement counts for trip generation, safety analysis, and capacity analysis were completed to obtain City comments for clarity on what will be required during the TMP process. Those results are summarized as follows.

Existing Traffic Volumes

In order to quantify existing trip generation, turning movement counts were conducted for the PTC during the Friday mid-day peak hour, as this was recommended by PTC as the time period representative of peak activity. Generally, the summer provides a higher volume of peak hour traffic given more passengers are not locals and therefore are being picked up, dropped off, and using ridesharing applications more exclusively. The higher percentage of pick-ups and drop-offs results in a higher peak hour trip generation due to one trip in and one trip out of the facility during the peak hour. During the winter, more of the passengers reside in Maine and are utilizing PTC to travel to other locations via Boston Logan International Airport for longer-term trips. Because the percentage of people parking long-term is likely higher, this reduces the peak hour impact as anyone parking would only generate one trip, versus two, during said peak hour. However, these winter months with more long-term parkers results in the need for more parking spaces, which as you know is the main impetus for this project.

Based on a review of the current bus and train schedule starting at 3:15 AM and concluding at 1:25 AM the following day, the peak number of buses and trains arriving and departing within any one-hour period occurs from 11:30 AM to 12:30 PM, thus coinciding with PTC's recommendation to count the mid-day period. During this hour, four buses and one train drop passengers off and four buses and one train pick passengers up, for a total of 10 possible services.

Given this current schedule, turning movement counts were conducted on Friday, June 8, 2018 during the mid-day period from 10:30 AM to 3:30 PM at the following PTC access points along Thompsons Point Connector Road:

- The exit-only driveway from LOT "B"
- The intersection of the Main Access Drive and LOT "A"
- The LOT "C" access point

In addition, a count was completed at the intersection of Fore River Parkway, the 295 Ramp and the Thompsons Point Connector Road as it provides signalized access to Thompsons Point and ultimately the PTC. The access points for the facility and surrounding roadway network are shown in Figure 1. The volumes at that intersection during the peak of the PTC were factored to 30th highest hour volumes, or peak summer conditions, utilizing MaineDOT's group I urban factor of 1.023 (0.86/0.84 = 1.023). Only the non-Thompson's Point related trips on Fore River Parkway and the I-295 Ramp were factored. The existing 2018 June traffic volumes are shown in Figure 2.

The peak hour for the PTC occurred from 11:15 AM to 12:15 PM, which was expected given the higher volume of incoming and outgoing trains and buses. During that peak hour, 333 trips were generated to and from the three access points, 160 entering and 173 exiting. Given this level of counted traffic, the PTC requires a Traffic Movement Permit (TMP) from the City of Portland.

In order to compare the counted trip generation to ridership, the following information about services and ridership was provided from PTC:

<u>CCL</u>	11:30 AM	30 passengers got off the two arriving buses 29 passengers got on to the two buses for departure
	11:45 AM	32 passengers got off the arriving bus 8 moved to the departing 11:55 bus as a continuation
	11:55 AM	34 passengers got off the arriving bus 16 got on the bus for a continuation (8 from 11:45 bus)
	12:00 PM	29 passengers got on departing bus
<u>Downeaster</u>	11:35 AM	49 passengers got off the train
	11:55 AM	42 passengers got on the train

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Based on this data, 245 passengers were serviced during this peak hour. This does not include the eight passengers that did not exit the PTC and stayed for a continuation. The counts produced a trip distribution as expected by PTC. Given the time of year, a high percentage of drop-offs were expected. By examining the traffic counts, an estimated pick-up/drop-off rate of 85% during the peak hour was determined. This is on the basis that parking lot "B" does not have availability to exit at the main access, meaning the 145 counted right-turns would all be pick-up/drop-off in nature. Taking a reduction from that number for the buses leaving the facility and then doubling that number to account for the entering vehicles equates to 282 trips or 85%. In addition, the mid-day peak also provided an entering and exiting distribution of 48% entering and 52% exiting.

Based on information from the PTC, generally June provides lower ridership than August. This ridership was compared to the previously submitted ridership data for Friday, August 12, 2016 during the same peak hour period:

CCL	11:30 AM	22 passengers got off the two arriving buses 65 passengers got on to the two buses for departure
	11:45 AM	56 passengers got off the arriving bus 12 moved to the departing 11:55 bus as a continuation
	11:55 AM	40 passengers got off the arriving bus 28 got on the bus for a continuation (12 from 11:45 bus)
Downeaster	11:35 AM	60 passengers got off the arriving train
	11:55 AM	30 passengers got on the departing train

In August, ridership during the same peak hour period equated to 277 passengers serviced, again not including the 12 passengers that moved to a through bus continuing on. It should be noted, that the 2016 bus schedule did not include the newly added 12:00 PM bus to New York that was counted in 2018. If this 12:00 PM bus is removed, this would reduce the June 2018 ridership to 216 passengers, thus a 28% approximate difference between June and August ridership.

To be overly conservative, the counted June trips were projected to August conditions by 28% resulting in an estimated peak hour trip generation of 426 trips, 205 entering and 221 exiting, as shown in Figure 3. It is unlikely the facility truly increasing trip generation by this much in this period of time especially given the assumption that the passenger to trip ratio is entirely linear. Predicting an exact trip generation for this facility is difficult as on any given day passenger occupancy of vehicles can differ as well as pick-up and drop-off ratios, and even timing of service arrivals and departures. In addition, human nature is hard to predict and changes through time which makes it incredibly difficult with any certainty to project backwards to the number of trips the PTC may have been generating 10 years ago.

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Additionally, it is important to note that generally traffic analysis is completed for the design hourly volume (DHV). Therefore, the counted trip generation during the first week of June is very close to the actual DHV for the adjacent roadway system (0.86 versus 0.84 for group I). As such, the counted trip generation should not need to be factored up, but was to provide a conservative analysis.

Capacity Analysis

Capacity analysis was performed utilizing Synchro/SimTraffic 10 to calculate the control delay, or the average amount of delay that a vehicle experiences as it travels through an intersection or section of roadway. This is defined by level of service (LOS), in terms of A through F, with A being optimal and F being unacceptable. The LOS and control delay for unsignalized and signalized intersections is depicted in the 2010 Highway Capacity Manual and is shown in Table 1, below:

Table 1 – Level of Service from Control Delay

Level of Service (LOS)	Unsignalized Control Delay (Sec./Vehicle)	Signalized Control Delay (Sec./Vehicle)
A	≤10	≤10
B	>10-≤15	>10-≤20
C	>15-≤25	>20-≤35
D	>25-≤35	>35-≤55
E	>35-≤50	>55-≤80
F	>50	>80

Source: Highway Capacity Manual 2010

Signalized Intersection Analysis

Capacity analysis was completed for the signalized intersection of Fore River Parkway, the I-295 Off-Ramp and Thompsons Point Connector Road utilizing Synchro/SimTraffic 10. Analysis was completed during the peak hour for the PTC to determine existing operations when the PTC is generating the most traffic. Existing traffic signal timings were obtained from the traffic signal controller to assure current operations were being accurately represented. Both the raw counted trips for the June trip generation and the inflated trips to possible August conditions were analyzed. The results are attached to this report and are summarized in the following table:

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Table 2
Traffic Operations (Delay in Seconds)
Intersection of Fore River Parkway, I-295 Off-Ramp, and Thompsons Point Connector Road

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Lefts	26.8 (C)	29.72 (C)
EB Thompsons Point Rights	19.3 (B)	19.7 (B)
EB Thompsons Point Overall	21.2 (C)	22.4(C)
WB I-295 Lefts	31.0 (C)	32.5 (C)
WB I-295 Throughs	30.9 (C)	31.4 (C)
WB I-295 Rights	2.7 (A)	2.7 (A)
WB I-295 Overall	19.5 (B)	20.8 (C)
NB Fore River Parkway Lefts	36.3 (D)	36.3 (D)
NB Fore River Parkway Throughs	10.9 (B)	12.3 (B)
NB Fore River Parkway Overall	15.4 (B)	17.2 (B)
SB Fore River Parkway Throughs	20.2 (C)	22.4 (C)
SB Fore River Parkway Rights	9.5 (A)	10.3 (B)
SB Fore River Parkway Overall	18.3 (B)	20.0 (B)
Overall Intersection	**18.1 (B)**	**19.8 (B)**

As demonstrated above, the signalized intersection of Fore River Parkway, the I-295 Off-Ramp, and Thompsons Point Connector Road is operating at a good LOS "B" overall under both the counted June volumes (with peak summer conditions for Fore River Parkway and the ramp) and under the inflated volumes for PTC. No capacity constraints were identified for the peak of the existing facility on Thompsons Point Road. Additionally, neither Fore River Parkway nor the ramp are experiencing any operational deficiencies under existing conditions with the current signal timings.

Unsignalized Intersection Analysis

Capacity analysis was also completed for the intersection of Thompson's Point Connector Road, Main Access, and Lot "A" access during the peak period for the PTC utilizing Synchro/SimTraffic 10. The results are attached to this memorandum and summarized below:

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Table 3
Traffic Operations (Delay in Seconds)
Intersection of Thompsons Point Connector Road, Main Access, and Lot "A"

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Overall	0.3 (A)	0.4 (A)
WB Thompsons Point Lefts	3.1 (A)	3.2 (A)
WB Thompsons Point Overall	2.2 (A)	2.5 (A)
NB Main Access Drive Overall	3.5 (A)	3.7 (A)
SB Lot "A" Access Overall	5.7 (A)	6.3 (A)

The unsignalized intersection of Thompsons Point Connector Road, the Main Access, and lot "A" also is currently operating with all movements at LOS "A" demonstrating no existing capacity constraints.

Queue Analysis

Queue analysis was completed for both eastbound Thompson's Point Connector Road at the signal and westbound Thompson's Point Connector Road at the Main Access to determine any impacts existing queues may have on the roadway network. The results are summarized in the tables below:

Table 4
95th Percentile Queue Lengths
Intersection of Fore River Parkway, I-295 Off-Ramp, and Thompsons Point Connector Road

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Lefts	92'	107'
EB Thompsons Point Rights	120'	141'

Table
95th Percentile Queue Lengths
Intersection of Thompsons Point Connector Road, Main Access, and Lot "A"

Movement	Counted June Volumes	Inflated August Volumes
WB Thompsons Point Lefts	33'	36'

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As shown in the first table, queues at the signal from Thompsons point do not currently extend more than the 175' of storage available for both lanes and therefore do not impact the Main Access driveway. The exit driveway is approximately 130' from the stop bar at the signal, demonstrating that that drive will be blocked very minimally when the PTC is generating its peak levels of traffic. Additionally, Thompsons Point left-turns into the Main Access are shown as very minimal at one to two vehicles. However, this is deceiving given that spillback traffic from the drop-off/pick-up loop is not represented in the analysis. Long queues from this area have been observed in the past, thus creating longer queues turning left into the Main Access. As such, the PTC is proposing to redevelop the pick-up and drop-off area to remove the existing parking spaces to create for two additional drop-off lanes, one specifically for taxis and other ridesharing related vehicles.

Safety Analysis

The most recent three-year crash data (2015 to 2017) was obtained from MaineDOT for the vicinity of PTC on Thompsons Point Connector Road to determine if there are any high crash locations (HCLs) in the vicinity. An intersection or section of roadway is deemed an HCL if two criteria are met: A Critical Rate Factor (CRF) greater than 1.0 and a minimum of 8 accidents in a three-year period. The obtained data is attached to this memorandum and summarized in the following tables:

Intersections

Thompsons Point Road Intersections	Node	# Accidents	CRF	HCL
I-295 Exit 5A Off-Ramp Right-Turn Slip	59418	2	0.69	No
Fore River Parkway, I-295 Exit 5A Off-Ramp	59413	9	0.39	No

Roadway Sections

Thompsons Point Connector Road Links	Node to Node	# Accidents	CRF	HCL
From Fore River Pkway to Previous Sewell St	59423 – 59417	1	0.16	No

As shown in the tables above, there are no high crash locations in the direct vicinity of the PTC on Thompson's Point Connector Road.

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LOCATION MAP

PORTLAND TRANSPORTATION CENTER

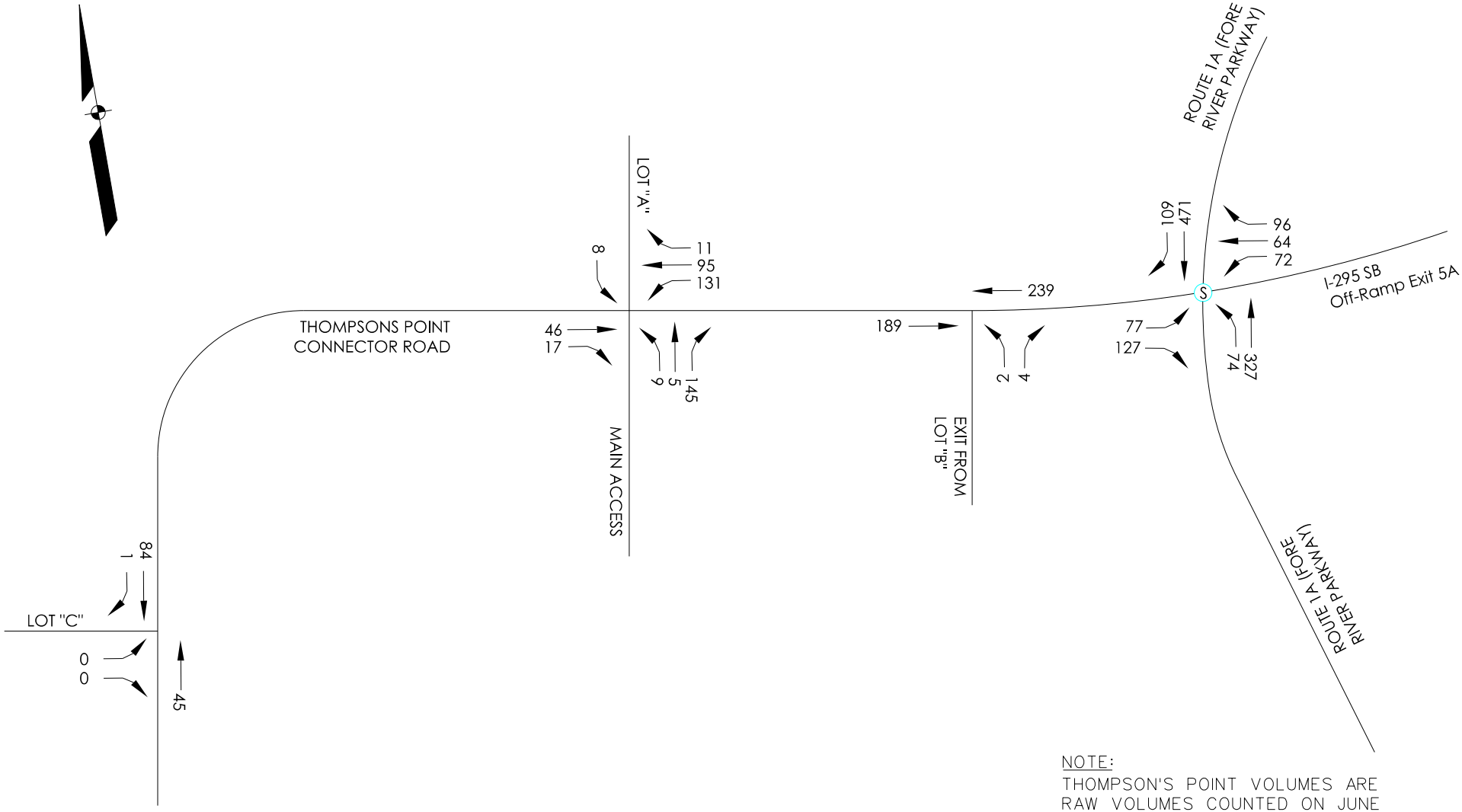
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 1- OF - 3



NOTE:
THOMPSON'S POINT VOLUMES ARE RAW VOLUMES COUNTED ON JUNE 8, 2018. NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

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2018 COUNTED PEAK HOUR VOLUMES

PORTLAND TRANSPORTATION CENTER

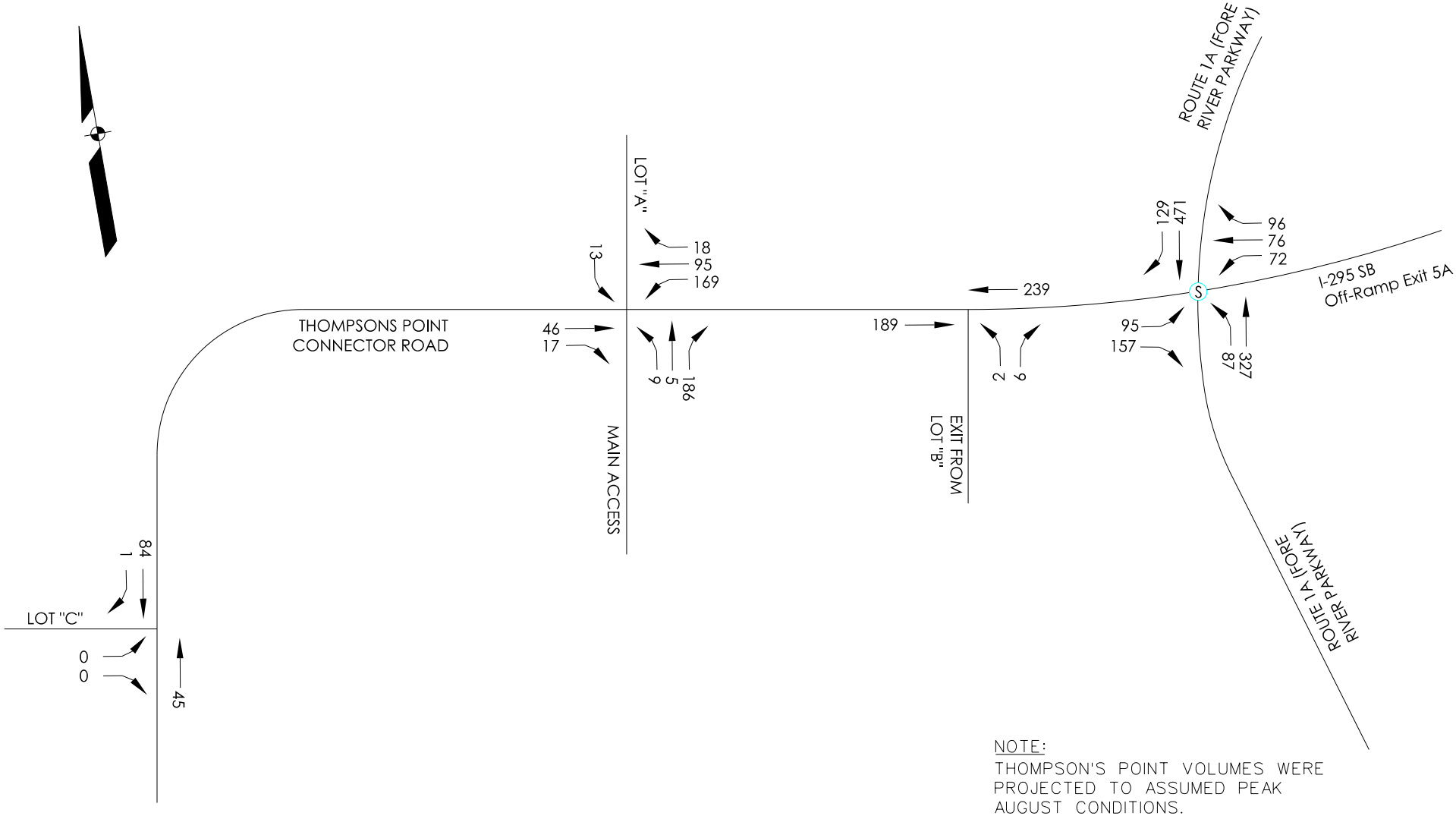
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 2-OF-3



NOTE:
THOMPSON'S POINT VOLUMES WERE PROJECTED TO ASSUMED PEAK AUGUST CONDITIONS.
NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

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Tel. 207-200-2100

2018 ESTIMATED AUGUST TRIP VOLUMES

PORTLAND TRANSPORTATION CENTER

100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 3-OF-3

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
10:30 AM	0	99	2	0	11	5	35	12	85	0	0	6	0	14	269
10:45 AM	0	104	8	0	18	10	39	8	79	0	0	6	0	11	283
Total	0	203	10	0	29	15	74	20	164	0	0	12	0	25	552
11:00 AM	0	83	15	0	16	13	33	18	79	0	2	14	0	14	287
11:15 AM	0	108	19	0	19	16	27	19	67	0	1	15	0	17	308
11:30 AM	0	115	25	0	15	21	21	18	65	0	0	19	0	28	327
11:45 AM	0	123	36	1	13	12	14	16	84	0	2	21	0	40	362
Total	0	429	95	1	63	62	95	71	295	0	5	69	0	99	1284
12:00 PM	0	114	29	0	23	15	32	21	103	0	0	22	0	41	400
12:15 PM	0	139	15	0	26	8	20	17	84	0	0	11	0	28	348
12:30 PM	0	139	18	0	22	10	21	15	97	0	2	17	0	34	375
12:45 PM	0	118	11	1	19	13	26	22	93	0	0	17	0	27	347
Total	0	510	73	1	90	46	99	75	377	0	2	67	0	130	1470
01:00 PM	0	118	14	0	14	15	20	17	93	0	1	16	0	30	338
01:15 PM	0	88	16	0	19	13	30	15	88	0	0	9	0	25	303
01:30 PM	0	111	19	0	25	20	21	16	95	0	0	13	0	31	351
01:45 PM	0	121	21	0	19	21	34	28	83	0	2	19	0	33	381
Total	0	438	70	0	77	69	105	76	359	0	3	57	0	119	1373
02:00 PM	0	86	16	0	16	21	26	26	102	0	0	17	0	43	353
02:15 PM	0	95	17	0	12	5	25	7	86	0	0	10	0	21	278
02:30 PM	0	100	12	0	19	11	21	27	91	0	0	15	0	33	329
02:45 PM	0	120	20	0	23	17	30	14	111	0	0	16	0	29	380
Total	0	401	65	0	70	54	102	74	390	0	0	58	0	126	1340

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
03:00 PM	0	114	17	0	17	19	20	27	120	0	1	18	0	50	403
03:15 PM	0	98	28	0	20	21	20	23	129	0	0	15	0	36	390
Grand Total	0	2193	358	2	366	286	515	366	1834	0	11	296	0	585	6812
Apprch %	0	85.9	14	0.1	31.4	24.5	44.1	16.6	82.9	0	0.5	33.6	0	66.4	
Total %	0	32.2	5.3	0	5.4	4.2	7.6	5.4	26.9	0	0.2	4.3	0	8.6	
Cars	0	2182	355	2	360	277	507	343	1820	0	11	283	0	564	6704
% Cars	0	99.5	99.2	100	98.4	96.9	98.4	93.7	99.2	0	100	95.6	0	96.4	98.4
Trucks	0	11	3	0	6	9	8	23	14	0	0	13	0	21	108
% Trucks	0	0.5	0.8	0	1.6	3.1	1.6	6.3	0.8	0	0	4.4	0	3.6	1.6

Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 1

Groups Printed- Cars - Trucks

	Thompsons Point From East		Exit Only From South		Thompsons Point From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
10:30 AM	0	14	0	1	17	0	32
10:45 AM	0	31	1	0	19	0	51
Total	0	45	1	1	36	0	83
11:00 AM	0	43	0	0	29	0	72
11:15 AM	0	54	0	0	32	0	86
11:30 AM	0	66	1	1	49	1	118
11:45 AM	0	62	0	2	58	0	122
Total	0	225	1	3	168	1	398
12:00 PM	0	65	1	1	58	0	125
12:15 PM	0	37	0	0	43	0	80
12:30 PM	0	42	0	2	49	0	93
12:45 PM	0	48	1	0	41	0	90
Total	0	192	2	3	191	0	388
01:00 PM	0	48	0	1	45	0	94
01:15 PM	0	40	0	0	39	0	79
01:30 PM	0	61	0	0	42	0	103
01:45 PM	0	67	0	3	53	0	123
Total	0	216	0	4	179	0	399
02:00 PM	0	60	0	1	52	0	113
02:15 PM	0	32	1	1	32	0	66
02:30 PM	0	46	0	0	49	0	95
02:45 PM	0	50	0	4	41	0	95
Total	0	188	1	6	174	0	369
03:00 PM	0	65	0	1	64	1	131
03:15 PM	0	76	0	0	53	0	129
Grand Total	0	1007	5	18	865	2	1897
Apprch %	0	100	21.7	78.3	99.8	0.2	

Accurate Counts

978-664-2565

Total %	0	53.1	0.3	0.9	45.6	0.1	
Cars	0	974	5	18	825	2	1824
% Cars	0	96.7	100	100	95.4	100	96.2
Trucks	0	33	0	0	40	0	73
% Trucks	0	3.3	0	0	4.6	0	3.8

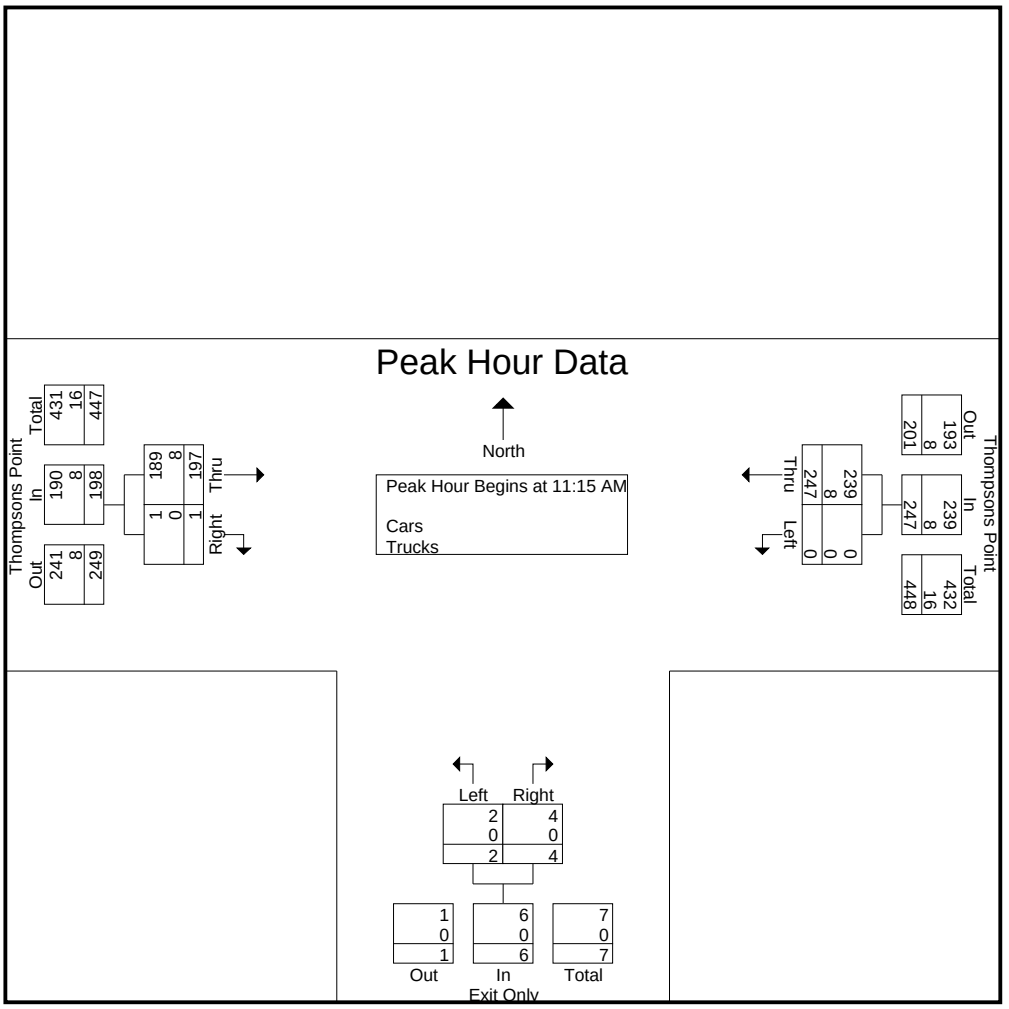
Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 3

	Thompsons Point From East			Exit Only From South			Thompsons Point From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	0	54	54	0	0	0	32	0	32	86
11:30 AM	0	**66**	**66**	**1**	1	**2**	49	**1**	50	118
11:45 AM	0	62	62	0	**2**	2	**58**	0	**58**	122
12:00 PM	0	65	65	1	1	2	58	0	58	**125**
Total Volume	0	247	247	2	4	6	197	1	198	451
% App. Total	0	100		33.3	66.7		99.5	0.5		
PHF	.000	.936	.936	.500	.500	.750	.849	.250	.853	.902
Cars	0	239	239	2	4	6	189	1	190	435
% Cars	0	96.8	96.8	100	100	100	95.9	100	96.0	96.5
Trucks	0	8	8	0	0	0	8	0	8	16
% Trucks	0	3.2	3.2	0	0	0	4.1	0	4.0	3.5



Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	0	0	11	5	0	0	0	9	0	9	0	34
10:45 AM	0	1	0	9	15	3	0	0	6	0	10	2	46
Total	0	1	0	20	20	3	0	0	15	0	19	2	80
11:00 AM	0	0	0	25	14	4	1	0	13	0	13	1	71
11:15 AM	0	0	0	25	26	2	1	1	25	0	10	4	94
11:30 AM	2	0	0	40	19	4	3	1	39	0	5	4	117
11:45 AM	3	0	0	40	27	2	3	1	46	0	13	5	140
Total	5	0	0	130	86	12	8	3	123	0	41	14	422
12:00 PM	3	0	0	26	33	3	2	2	35	0	25	4	133
12:15 PM	2	0	0	13	22	2	3	4	11	0	26	2	85
12:30 PM	2	0	1	14	28	1	2	2	14	0	33	4	101
12:45 PM	1	0	1	20	25	2	2	0	15	1	25	3	95
Total	8	0	2	73	108	8	9	8	75	1	109	13	414
01:00 PM	3	1	0	17	31	2	1	1	22	0	22	1	101
01:15 PM	1	0	0	11	31	0	0	0	10	1	23	3	80
01:30 PM	0	0	0	20	30	7	2	3	13	0	31	1	107
01:45 PM	1	1	0	28	32	5	0	7	19	2	26	5	126
Total	5	2	0	76	124	14	3	11	64	3	102	10	414
02:00 PM	0	0	0	35	26	5	1	7	33	0	22	1	130
02:15 PM	0	1	0	13	17	0	0	0	10	0	20	0	61
02:30 PM	0	0	0	18	29	0	1	1	13	0	35	2	99
02:45 PM	2	0	0	29	26	1	0	0	22	0	19	2	101
Total	2	1	0	95	98	6	2	8	78	0	96	5	391

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	3	0	0	26	26	4	0	0	36	0	24	3	122
03:15 PM	0	0	0	26	50	1	0	0	18	0	36	5	136
Grand Total	23	4	2	446	512	48	22	30	409	4	427	52	1979
Apprch %	79.3	13.8	6.9	44.3	50.9	4.8	4.8	6.5	88.7	0.8	88.4	10.8	
Total %	1.2	0.2	0.1	22.5	25.9	2.4	1.1	1.5	20.7	0.2	21.6	2.6	
Cars	23	4	2	446	476	48	22	30	409	4	392	52	1908
% Cars	100	100	100	100	93	100	100	100	100	100	91.8	100	96.4
Trucks	0	0	0	0	36	0	0	0	0	0	35	0	71
% Trucks	0	0	0	0	7	0	0	0	0	0	8.2	0	3.6

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

	Lot A From North				Thompsons Point From East				Main Access From South				Thompsons Point From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	25	26	2	53	1	1	25	27	0	10	4	14	94
11:30 AM	2	0	0	2	**40**	19	**4**	63	**3**	1	39	43	0	5	4	9	117
11:45 AM	**3**	0	0	**3**	40	27	2	**69**	3	1	**46**	**50**	0	13	**5**	18	**140**
12:00 PM	3	0	0	3	26	**33**	3	62	2	**2**	35	39	0	**25**	4	**29**	133
Total Volume	8	0	0	8	131	105	11	247	9	5	145	159	0	53	17	70	484
% App. Total	100	0	0		53	42.5	4.5		5.7	3.1	91.2		0	75.7	24.3		
PHF	.667	.000	.000	.667	.819	.795	.688	.895	.750	.625	.788	.795	.000	.530	.850	.603	.864
Cars	8	0	0	8	131	95	11	237	9	5	145	159	0	46	17	63	467
% Cars	100	0	0	100	100	90.5	100	96.0	100	100	100	100	0	86.8	100	90.0	96.5
Trucks	0	0	0	0	0	10	0	10	0	0	0	0	0	7	0	7	17
% Trucks	0	0	0	0	0	9.5	0	4.0	0	0	0	0	0	13.2	0	10.0	3.5

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	4	0	0	0	0	0	6	0	0	0	0	10
10:45 AM	0	15	0	0	0	1	0	8	0	0	0	0	24
Total	0	19	0	0	0	1	0	14	0	0	0	0	34
11:00 AM	0	12	1	0	0	1	0	13	0	1	0	0	28
11:15 AM	2	18	1	0	0	0	0	8	0	0	0	0	29
11:30 AM	0	15	0	0	0	2	0	5	0	0	0	0	22
11:45 AM	0	18	0	0	0	0	0	13	0	0	0	0	31
Total	2	63	2	0	0	3	0	39	0	1	0	0	110
12:00 PM	0	33	0	0	0	0	0	19	0	0	0	0	52
12:15 PM	1	17	2	0	0	0	0	25	0	0	0	0	45
12:30 PM	1	27	0	0	0	1	0	28	0	2	0	0	59
12:45 PM	0	20	1	0	0	1	0	23	0	0	0	0	45
Total	2	97	3	0	0	2	0	95	0	2	0	0	201
01:00 PM	0	29	0	0	0	0	0	17	0	0	0	0	46
01:15 PM	0	24	0	0	0	0	0	22	1	0	0	0	47
01:30 PM	0	25	0	0	0	1	0	27	0	0	0	0	53
01:45 PM	0	22	1	0	0	0	0	20	0	0	0	0	43
Total	0	100	1	0	0	1	0	86	1	0	0	0	189
02:00 PM	0	23	0	0	0	0	0	18	0	0	0	0	41
02:15 PM	0	13	0	0	0	1	0	17	0	0	0	0	31
02:30 PM	0	32	0	0	0	0	0	34	0	0	0	0	66
02:45 PM	0	12	0	0	0	0	0	4	0	0	0	0	16
Total	0	80	0	0	0	1	0	73	0	0	0	0	154

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	1	17	0	0	0	0	0	22	0	1	0	0	41
03:15 PM	1	38	0	0	0	2	0	27	0	0	0	0	68
Grand Total	6	414	6	0	0	10	0	356	1	4	0	0	797
Apprch %	1.4	97.2	1.4	0	0	100	0	99.7	0.3	100	0	0	
Total %	0.8	51.9	0.8	0	0	1.3	0	44.7	0.1	0.5	0	0	
Cars	6	413	6	0	0	9	0	355	1	4	0	0	794
% Cars	100	99.8	100	0	0	90	0	99.7	100	100	0	0	99.6
Trucks	0	1	0	0	0	1	0	1	0	0	0	0	3
% Trucks	0	0.2	0	0	0	10	0	0.3	0	0	0	0	0.4

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.3
Denied Del/Veh (s)	0.1	2.9	0.7	0.1	0.7
Total Delay (hr)	1.3	1.3	1.8	3.0	7.3
Total Del/Veh (s)	21.2	19.5	15.4	18.3	18.1

7: Main Access/Lot "A" & Thompsons Point Connector Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.2	0.2	0.0	0.3
Total Del/Veh (s)	0.3	2.2	3.5	5.7	2.5

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.3
Total Del/Veh (s)	20.0

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.3	0.0	0.0	3.7	0.6	3.7	3.3	0.1	0.1	0.2	0.7
Total Delay (hr)	0.6	0.0	0.7	0.7	0.5	0.1	0.7	1.0	2.7	0.3	7.3
Total Del/Veh (s)	26.8	0.3	19.3	31.0	30.9	2.7	36.3	10.9	20.2	9.5	18.1

7: Main Access/Lot "A" & Thompsons Point Connector Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Del/Veh (s)	0.3	0.0	3.1	1.3	1.1	6.6	7.3	3.2	5.7	2.5

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.3
Total Del/Veh (s)	20.0

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.3
Denied Del/Veh (s)	0.1	2.8	0.8	0.1	0.7
Total Delay (hr)	1.6	1.5	2.0	3.5	8.5
Total Del/Veh (s)	22.4	20.8	17.2	20.0	19.8

7: Main Access/Lot "A" & Thompsons Point Connector Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.2	0.2	0.0	0.4
Total Del/Veh (s)	0.4	2.5	3.7	6.3	2.8

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	21.9

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.2	0.0	0.0	3.8	0.7	3.7	3.4	0.1	0.1	0.2	0.7
Total Delay (hr)	0.7	0.0	0.9	0.7	0.6	0.1	0.9	1.1	3.1	0.4	8.5
Total Del/Veh (s)	29.2	0.7	19.7	32.5	31.4	2.7	36.3	12.3	22.4	10.3	19.8

7: Main Access/Lot "A" & Thompsons Point Connector Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.4
Total Del/Veh (s)	0.5	0.1	3.2	1.5	1.2	7.5	8.3	3.4	6.3	2.8

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	21.9

Intersection: 1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	L	T	T	T	TR
Maximum Queue (ft)	117	161	120	124	114	151	108	240	228
Average Queue (ft)	48	63	43	43	47	61	28	122	84
95th Queue (ft)	92	120	93	92	90	122	76	199	179
Link Distance (ft)		421		534		767	767	707	707
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175		400		200				
Storage Blk Time (%)		0							
Queuing Penalty (veh)		0							

Intersection: 7: Main Access/Lot "A" & Thompsons Point Connector

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	45	75	30
Average Queue (ft)	8	41	6
95th Queue (ft)	33	66	26
Link Distance (ft)		127	119
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	L	T	T	T	TR
Maximum Queue (ft)	135	168	141	131	125	153	116	217	192
Average Queue (ft)	55	79	48	48	57	66	29	136	97
95th Queue (ft)	107	141	104	100	105	125	76	204	175
Link Distance (ft)		421		534		767	767	707	707
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175		400		200				
Storage Blk Time (%)		0			0				
Queuing Penalty (veh)		1			0				

Intersection: 7: Main Access/Lot "A" & Thompsons Point Connector

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	49	77	30
Average Queue (ft)	10	46	10
95th Queue (ft)	36	72	33
Link Distance (ft)		127	119
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Thompsons Point Connector Rd in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 3200149	Start Node: 59413	Start Offset: 0	☐ Exclude First Node
	End Node: 59420	End Offset: 0	☐ Exclude Last Node
Route: 3200556	Start Node: 59413	Start Offset: 0	☑ Exclude First Node
	End Node: 59418	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
59420	3200149 - 0.21	End of THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	0.340	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
59426	3200149 - 0.14	Int of SEWELL ST THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	1.112	0.00	0.52	0.00
												Statewide Crash Rate:	0.14	
59413	3200149 - 0	Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS F	9	9	0	0	1	2	6	33.3	6.211	0.48	1.23	0.39
												Statewide Crash Rate:	0.74	
59418	3200556 - 0.09	Int of FORE RIVER PKY RINV 3200156	2	2	0	0	0	0	2	0.0	2.770	0.24	0.37	0.65
												Statewide Crash Rate:	0.12	
Study Years: 3.00		NODE TOTALS:		11	0	0	1	2	8	27.3	10.433	0.35	0.80	0.44

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
59413	59426	2029332	0 - 0.14	3200149 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00207	161.15	987.49	0.16
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59426	59420	2029333	0 - 0.07	3200149 - 0.14	0.07	2	0	0	0	0	0	0	0.0	0.00048	0.00	1433.94	0.00
Int of SEWELL ST THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59413	59418	3115322	0 - 0.04	3200556 - 0.05	0.04	2	0	0	0	0	0	0	0.0	0.00086	0.00	774.75	0.00
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200556											Statewide Crash Rate: 218.73		
Study Years: 3.00				Section Totals:	0.25		1	0	0	0	0	1	0.0	0.00341	97.87	794.52	0.12
				Grand Totals:	0.25		12	0	0	1	2	9	25.0	0.00341	1174.44	964.07	1.22

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Memorandum

99607

To: **Jeremiah Bartlett**

From: **Steve Sawyer**

Date: **January 5, 2018**

Subject: **Traffic History and Evaluation – Portland Transportation Center**

This memorandum is in response to your request for a summary of the potential traffic impacts associated with the proposed parking lot expansion for Concord Coach Lines (CCL) at the Portland Transportation Center (PTC). The PTC was originally constructed in 1996 as a CCL only terminal. It was expanded in 2001 to become what is now known as the PTC in conjunction with the introduction of Amtrak train service to Boston. This expansion was done in partnership with the City, MaineDOT and CCL. Jeff Monroe was the Transportation Director at the time and Paul Bradbury was the City's Project Manager for the expansion. We worked with the City's Planning Department, Sarah Hopkins at the time, to obtain the proper City Planning Board approvals for this construction, which included the parking adjacent to the terminal. The parking lot across the street from the terminal was built as a separate MaineDOT Park-and-Ride lot project. My recollection with this whole process was that the only traffic matter that caused any concern or discussion at the time was whether or not to close off Sewall Street from its connection with the Thompson's Point Connector Road. In the end it was decided we should and we did.

With the terminal expansion in 2001, the total parking capacity was 689 spaces, including those spaces on the MaineDOT Park-and-Ride lot. The PTC is now proposing an additional 300 to 325 spaces on an undeveloped parcel that abuts the current parking to the east of the terminal. The development of this additional parking is to alleviate current shortages experienced, but also to be pre-emptive in designing for parking needs associated with a potential future terminal expansion. The proposed project also includes modifications in front of the terminal that accommodate pick-ups, drop-offs and short-term parking. It is important to note that no building additions or increase in services are proposed in conjunction with this project at this time.

We have included a copy of a Draft justification narrative that we are providing to the MaineDEP and Army Corps that elaborates on the alternatives we investigated prior to reaching a conclusion that the construction of additional on-site parking was our best solution. It also emphasizes the need for additional parking to mitigate existing parking capacity concerns. In 2016, the PTC accommodated 246,501 "car days" or a single instance of a car remaining in a spot for a single day. This equates to a 97.7% utilization rate of the available 252,174 available car days (689 spaces x 366 days). Typically off-street parking lots with a 90% occupancy rate or greater are considered functionally at capacity. To

combat these existing deficiencies the PTC is currently leasing 100 additional spaces that increase to 300 spaces during peak travel periods from the owners of Thompson's Point. Unfortunately, this is only a temporary situation that cannot be made permanent. CCL is also utilizing valet services on occasion to double stack vehicles in order to maximize lot space. The implementation of both of these short-term strategies have demonstrated the more immediate need for a longer-term solution just to satisfy existing demand.

In theory, the additional parking may even reduce overall vehicle miles traveled in a day as a more adequate amount of parking for current conditions would result in fewer vehicles driving for more extended periods looking for parking. The lot would also be in closer proximity to the PTC, versus the more inconvenient distance to the currently leased spaces. Of additional note, one alternative for the parking lot design that was originally considered was the development of a satellite lot at an off-site location. By keeping the additional spaces on site, this also reduces the number of vehicles that would initially travel to the PTC in search of a parking spot and then have to travel off-site to a satellite lot, therefore generating new trips to the adjacent street system. As such, this proposed option would have no off-site impacts on traffic operations, as some of the other options would have.

Given that this project is a response to existing conditions, focus on traffic would generally remain on the operations and safety of the existing site. Deficiencies have been observed with the existing design of the pick-up and drop-off area at the front entrance to the PTC. The current design allows for 22 short-term parking spaces and a drive up queue for pick-ups and drop-offs of approximately 10 to 15 vehicles. Once the queue is at capacity, vehicles spillback onto Thompson's Point Connector Road and subsequently to Fore River Parkway, ultimately causing safety concerns. For this reason, CCL is proposing an expansion and redesign of this area to increase pick-up and drop-off capacity on site.

In terms of permitting, since the original facility was constructed prior to the development of state traffic permitting requirements with MaineDOT (1996 vs. 1997), and the last construction occurred over 10 years ago (2001), one could argue that the current trips are considered grandfathered to the site. Given that the facility is not proposing any changes in square footage or additional services, there are no means to quantify an increase in trip generation and therefore there is no necessity to obtain a Traffic Movement Permit. The addition of just a parking lot also does not require state permitting since an increase in parking spaces is not considered a generator of additional trips to the site and thus on the adjacent roadway system. However, when CCL does proceed with future development in which some of these parking spaces are likely to be utilized for, further permitting and traffic analysis would be warranted.

To summarize, given that the parking lot is being developed to aid in existing parking deficits and for longer range planning purposes and is not due to a current expansion of the facility, significant traffic analysis and permitting do not appear needed at this time. With the addition of a new or expanded terminal that has quantitative impacts on site trip generation, traffic analysis should be completed at that time. In addition, since the PTC has plans to improve the existing circulation and flow impacts on-site, this should be sufficient action in terms of traffic mitigation for the proposed project.

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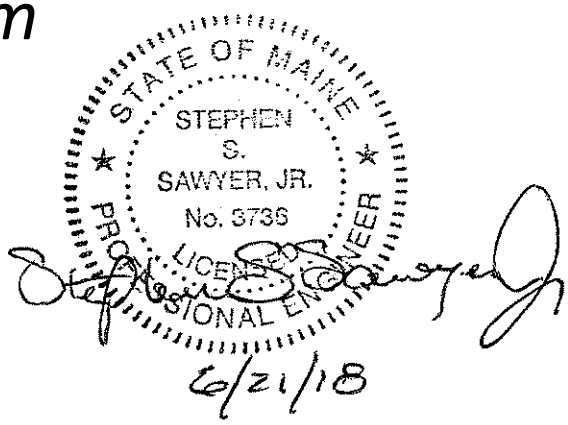
Memorandum



99607

To: **Thomas Errico, P.E.**

From: **Steve Sawyer, P.E.**

Nikki Scott, EI

Date: **June 21, 2018**

Subject: **Updated Traffic Analysis for Portland Transportation Center, Thompsons Point, Portland**

This memorandum is to summarize the results of updated traffic analysis completed for the Portland Transportation Center (PTC) on Thompsons Point Connector Road in Portland, Maine. Based on preliminary information submitted to the City, the facility requires a Traffic Movement Permit (TMP) from the City of Portland, as they have delegated review authority. Initial turning movement counts for trip generation, safety analysis, and capacity analysis were completed to obtain City comments for clarity on what will be required during the TMP process. Those results are summarized as follows.

Existing Traffic Volumes

In order to quantify existing trip generation, turning movement counts were conducted for the PTC during the Friday mid-day peak hour, as this was recommended by PTC as the time period representative of peak activity. Generally, the summer provides a higher volume of peak hour traffic given more passengers are not locals and therefore are being picked up, dropped off, and using ridesharing applications more exclusively. The higher percentage of pick-ups and drop-offs results in a higher peak hour trip generation due to one trip in and one trip out of the facility during the peak hour. During the winter, more of the passengers reside in Maine and are utilizing PTC to travel to other locations via Boston Logan International Airport for longer-term trips. Because the percentage of people parking long-term is likely higher, this reduces the peak hour impact as anyone parking would only generate one trip, versus two, during said peak hour. However, these winter months with more long-term parkers results in the need for more parking spaces, which as you know is the main impetus for this project.

Based on a review of the current bus and train schedule starting at 3:15 AM and concluding at 1:25 AM the following day, the peak number of buses and trains arriving and departing within any one-hour period occurs from 11:30 AM to 12:30 PM, thus coinciding with PTC's recommendation to count the mid-day period. During this hour, four buses and one train drop passengers off and four buses and one train pick passengers up, for a total of 10 possible services.

Given this current schedule, turning movement counts were conducted on Friday, June 8, 2018 during the mid-day period from 10:30 AM to 3:30 PM at the following PTC access points along Thompsons Point Connector Road:

- The exit-only driveway from LOT "B"
- The intersection of the Main Access Drive and LOT "A"
- The LOT "C" access point

In addition, a count was completed at the intersection of Fore River Parkway, the 295 Ramp and the Thompsons Point Connector Road as it provides signalized access to Thompsons Point and ultimately the PTC. The access points for the facility and surrounding roadway network are shown in Figure 1. The volumes at that intersection during the peak of the PTC were factored to 30th highest hour volumes, or peak summer conditions, utilizing MaineDOT's group I urban factor of 1.023 (0.86/0.84 = 1.023). Only the non-Thompson's Point related trips on Fore River Parkway and the I-295 Ramp were factored. The existing 2018 June traffic volumes are shown in Figure 2.

The peak hour for the PTC occurred from 11:15 AM to 12:15 PM, which was expected given the higher volume of incoming and outgoing trains and buses. During that peak hour, 333 trips were generated to and from the three access points, 160 entering and 173 exiting. Given this level of counted traffic, the PTC requires a Traffic Movement Permit (TMP) from the City of Portland.

In order to compare the counted trip generation to ridership, the following information about services and ridership was provided from PTC:

<u>CCL</u>	11:30 AM	30 passengers got off the two arriving buses 29 passengers got on to the two buses for departure
	11:45 AM	32 passengers got off the arriving bus 8 moved to the departing 11:55 bus as a continuation
	11:55 AM	34 passengers got off the arriving bus 16 got on the bus for a continuation (8 from 11:45 bus)
	12:00 PM	29 passengers got on departing bus
<u>Downeaster</u>	11:35 AM	49 passengers got off the train
	11:55 AM	42 passengers got on the train

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Based on this data, 245 passengers were serviced during this peak hour. This does not include the eight passengers that did not exit the PTC and stayed for a continuation. The counts produced a trip distribution as expected by PTC. Given the time of year, a high percentage of drop-offs were expected. By examining the traffic counts, an estimated pick-up/drop-off rate of 85% during the peak hour was determined. This is on the basis that parking lot "B" does not have availability to exit at the main access, meaning the 145 counted right-turns would all be pick-up/drop-off in nature. Taking a reduction from that number for the buses leaving the facility and then doubling that number to account for the entering vehicles equates to 282 trips or 85%. In addition, the mid-day peak also provided an entering and exiting distribution of 48% entering and 52% exiting.

Based on information from the PTC, generally June provides lower ridership than August. This ridership was compared to the previously submitted ridership data for Friday, August 12, 2016 during the same peak hour period:

CCL	11:30 AM	22 passengers got off the two arriving buses 65 passengers got on to the two buses for departure
	11:45 AM	56 passengers got off the arriving bus 12 moved to the departing 11:55 bus as a continuation
	11:55 AM	40 passengers got off the arriving bus 28 got on the bus for a continuation (12 from 11:45 bus)
Downeaster	11:35 AM	60 passengers got off the arriving train
	11:55 AM	30 passengers got on the departing train

In August, ridership during the same peak hour period equated to 277 passengers serviced, again not including the 12 passengers that moved to a through bus continuing on. It should be noted, that the 2016 bus schedule did not include the newly added 12:00 PM bus to New York that was counted in 2018. If this 12:00 PM bus is removed, this would reduce the June 2018 ridership to 216 passengers, thus a 28% approximate difference between June and August ridership.

To be overly conservative, the counted June trips were projected to August conditions by 28% resulting in an estimated peak hour trip generation of 426 trips, 205 entering and 221 exiting, as shown in Figure 3. It is unlikely the facility truly increasing trip generation by this much in this period of time especially given the assumption that the passenger to trip ratio is entirely linear. Predicting an exact trip generation for this facility is difficult as on any given day passenger occupancy of vehicles can differ as well as pick-up and drop-off ratios, and even timing of service arrivals and departures. In addition, human nature is hard to predict and changes through time which makes it incredibly difficult with any certainty to project backwards to the number of trips the PTC may have been generating 10 years ago.

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Additionally, it is important to note that generally traffic analysis is completed for the design hourly volume (DHV). Therefore, the counted trip generation during the first week of June is very close to the actual DHV for the adjacent roadway system (0.86 versus 0.84 for group I). As such, the counted trip generation should not need to be factored up, but was to provide a conservative analysis.

Capacity Analysis

Capacity analysis was performed utilizing Synchro/SimTraffic 10 to calculate the control delay, or the average amount of delay that a vehicle experiences as it travels through an intersection or section of roadway. This is defined by level of service (LOS), in terms of A through F, with A being optimal and F being unacceptable. The LOS and control delay for unsignalized and signalized intersections is depicted in the 2010 Highway Capacity Manual and is shown in Table 1, below:

Table 1 – Level of Service from Control Delay

Level of Service (LOS)	Unsignalized Control Delay (Sec./Vehicle)	Signalized Control Delay (Sec./Vehicle)
A	≤10	≤10
B	>10-≤15	>10-≤20
C	>15-≤25	>20-≤35
D	>25-≤35	>35-≤55
E	>35-≤50	>55-≤80
F	>50	>80

Source: Highway Capacity Manual 2010

Signalized Intersection Analysis

Capacity analysis was completed for the signalized intersection of Fore River Parkway, the I-295 Off-Ramp and Thompsons Point Connector Road utilizing Synchro/SimTraffic 10. Analysis was completed during the peak hour for the PTC to determine existing operations when the PTC is generating the most traffic. Existing traffic signal timings were obtained from the traffic signal controller to assure current operations were being accurately represented. Both the raw counted trips for the June trip generation and the inflated trips to possible August conditions were analyzed. The results are attached to this report and are summarized in the following table:

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Table 2
Traffic Operations (Delay in Seconds)
Intersection of Fore River Parkway, I-295 Off-Ramp, and Thompsons Point Connector Road

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Lefts	26.8 (C)	29.72 (C)
EB Thompsons Point Rights	19.3 (B)	19.7 (B)
EB Thompsons Point Overall	21.2 (C)	22.4(C)
WB I-295 Lefts	31.0 (C)	32.5 (C)
WB I-295 Throughs	30.9 (C)	31.4 (C)
WB I-295 Rights	2.7 (A)	2.7 (A)
WB I-295 Overall	19.5 (B)	20.8 (C)
NB Fore River Parkway Lefts	36.3 (D)	36.3 (D)
NB Fore River Parkway Throughs	10.9 (B)	12.3 (B)
NB Fore River Parkway Overall	15.4 (B)	17.2 (B)
SB Fore River Parkway Throughs	20.2 (C)	22.4 (C)
SB Fore River Parkway Rights	9.5 (A)	10.3 (B)
SB Fore River Parkway Overall	18.3 (B)	20.0 (B)
Overall Intersection	**18.1 (B)**	**19.8 (B)**

As demonstrated above, the signalized intersection of Fore River Parkway, the I-295 Off-Ramp, and Thompsons Point Connector Road is operating at a good LOS "B" overall under both the counted June volumes (with peak summer conditions for Fore River Parkway and the ramp) and under the inflated volumes for PTC. No capacity constraints were identified for the peak of the existing facility on Thompsons Point Road. Additionally, neither Fore River Parkway nor the ramp are experiencing any operational deficiencies under existing conditions with the current signal timings.

Unsignalized Intersection Analysis

Capacity analysis was also completed for the intersection of Thompson's Point Connector Road, Main Access, and Lot "A" access during the peak period for the PTC utilizing Synchro/SimTraffic 10. The results are attached to this memorandum and summarized below:

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Table 3
Traffic Operations (Delay in Seconds)
Intersection of Thompsons Point Connector Road, Main Access, and Lot "A"

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Overall	0.3 (A)	0.4 (A)
WB Thompsons Point Lefts	3.1 (A)	3.2 (A)
WB Thompsons Point Overall	2.2 (A)	2.5 (A)
NB Main Access Drive Overall	3.5 (A)	3.7 (A)
SB Lot "A" Access Overall	5.7 (A)	6.3 (A)

The unsignalized intersection of Thompsons Point Connector Road, the Main Access, and lot "A" also is currently operating with all movements at LOS "A" demonstrating no existing capacity constraints.

Queue Analysis

Queue analysis was completed for both eastbound Thompson's Point Connector Road at the signal and westbound Thompson's Point Connector Road at the Main Access to determine any impacts existing queues may have on the roadway network. The results are summarized in the tables below:

Table 4
95th Percentile Queue Lengths
Intersection of Fore River Parkway, I-295 Off-Ramp, and Thompsons Point Connector Road

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Lefts	92'	107'
EB Thompsons Point Rights	120'	141'

Table
95th Percentile Queue Lengths
Intersection of Thompsons Point Connector Road, Main Access, and Lot "A"

Movement	Counted June Volumes	Inflated August Volumes
WB Thompsons Point Lefts	33'	36'

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As shown in the first table, queues at the signal from Thompsons point do not currently extend more than the 175' of storage available for both lanes and therefore do not impact the Main Access driveway. The exit driveway is approximately 130' from the stop bar at the signal, demonstrating that that drive will be blocked very minimally when the PTC is generating its peak levels of traffic. Additionally, Thompsons Point left-turns into the Main Access are shown as very minimal at one to two vehicles. However, this is deceiving given that spillback traffic from the drop-off/pick-up loop is not represented in the analysis. Long queues from this area have been observed in the past, thus creating longer queues turning left into the Main Access. As such, the PTC is proposing to redevelop the pick-up and drop-off area to remove the existing parking spaces to create for two additional drop-off lanes, one specifically for taxis and other ridesharing related vehicles.

Safety Analysis

The most recent three-year crash data (2015 to 2017) was obtained from MaineDOT for the vicinity of PTC on Thompsons Point Connector Road to determine if there are any high crash locations (HCLs) in the vicinity. An intersection or section of roadway is deemed an HCL if two criteria are met: A Critical Rate Factor (CRF) greater than 1.0 and a minimum of 8 accidents in a three-year period. The obtained data is attached to this memorandum and summarized in the following tables:

Intersections

Thompsons Point Road Intersections	Node	# Accidents	CRF	HCL
I-295 Exit 5A Off-Ramp Right-Turn Slip	59418	2	0.69	No
Fore River Parkway, I-295 Exit 5A Off-Ramp	59413	9	0.39	No

Roadway Sections

Thompsons Point Connector Road Links	Node to Node	# Accidents	CRF	HCL
From Fore River Pkway to Previous Sewell St	59423 – 59417	1	0.16	No

As shown in the tables above, there are no high crash locations in the direct vicinity of the PTC on Thompson's Point Connector Road.

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LOCATION MAP

PORTLAND TRANSPORTATION CENTER

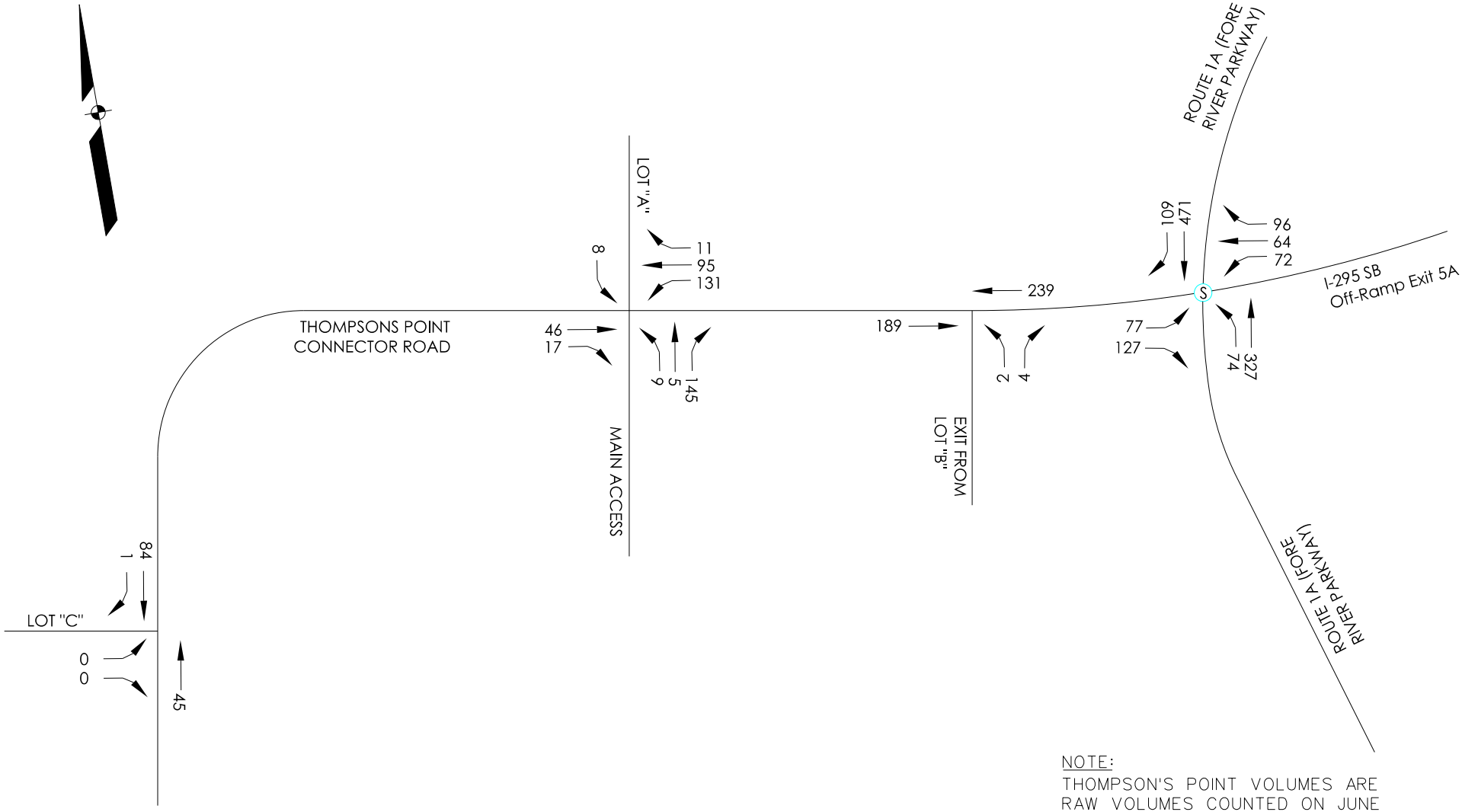
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 1- OF - 3



NOTE:
THOMPSON'S POINT VOLUMES ARE RAW VOLUMES COUNTED ON JUNE 8, 2018. NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

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2018 COUNTED PEAK HOUR VOLUMES

PORTLAND TRANSPORTATION CENTER

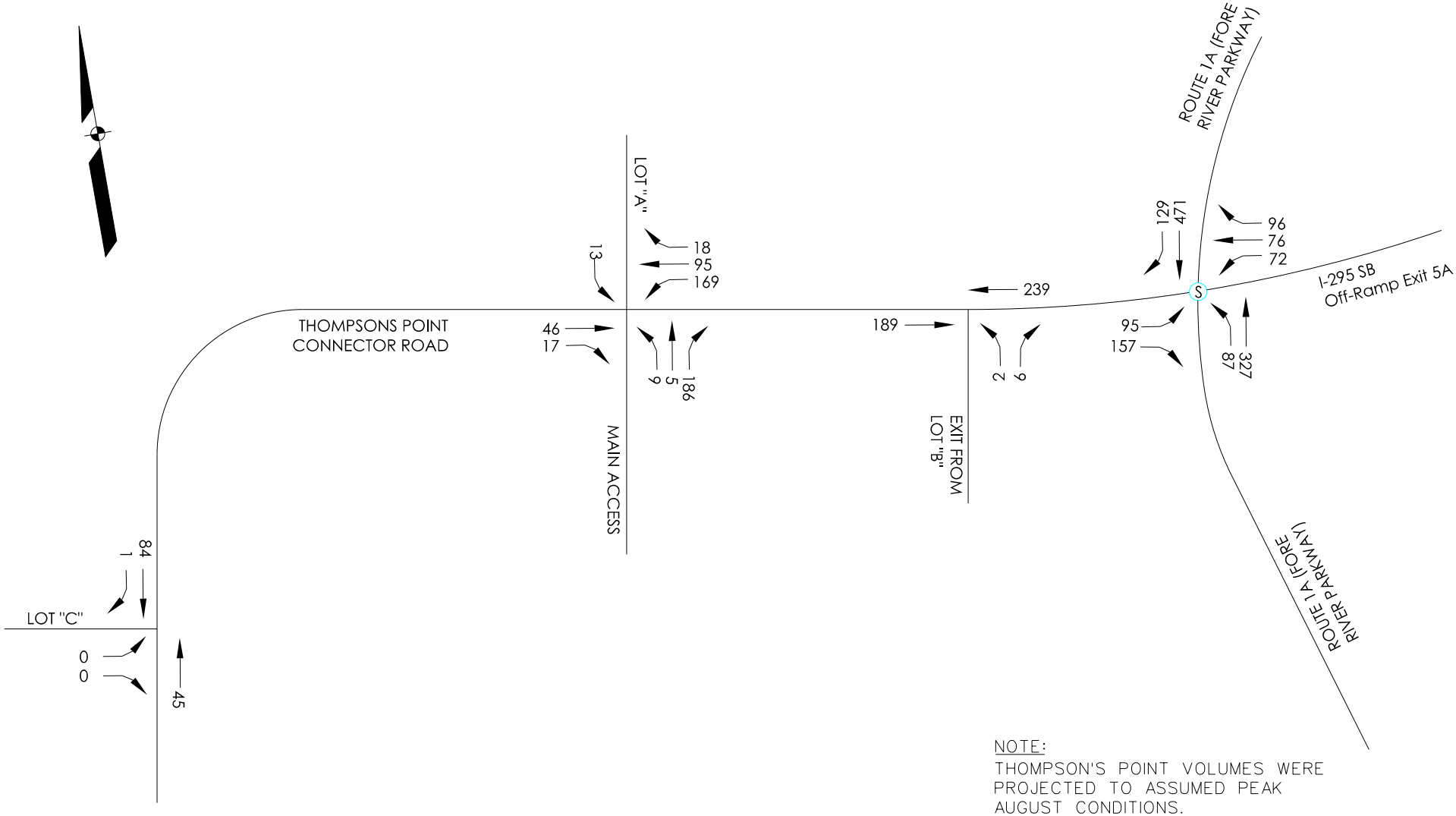
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 2-OF-3



NOTE:
THOMPSON'S POINT VOLUMES WERE PROJECTED TO ASSUMED PEAK AUGUST CONDITIONS.
NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

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2018 ESTIMATED AUGUST TRIP VOLUMES

PORTLAND TRANSPORTATION CENTER

100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 3-OF-3

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
10:30 AM	0	99	2	0	11	5	35	12	85	0	0	6	0	14	269
10:45 AM	0	104	8	0	18	10	39	8	79	0	0	6	0	11	283
Total	0	203	10	0	29	15	74	20	164	0	0	12	0	25	552
11:00 AM	0	83	15	0	16	13	33	18	79	0	2	14	0	14	287
11:15 AM	0	108	19	0	19	16	27	19	67	0	1	15	0	17	308
11:30 AM	0	115	25	0	15	21	21	18	65	0	0	19	0	28	327
11:45 AM	0	123	36	1	13	12	14	16	84	0	2	21	0	40	362
Total	0	429	95	1	63	62	95	71	295	0	5	69	0	99	1284
12:00 PM	0	114	29	0	23	15	32	21	103	0	0	22	0	41	400
12:15 PM	0	139	15	0	26	8	20	17	84	0	0	11	0	28	348
12:30 PM	0	139	18	0	22	10	21	15	97	0	2	17	0	34	375
12:45 PM	0	118	11	1	19	13	26	22	93	0	0	17	0	27	347
Total	0	510	73	1	90	46	99	75	377	0	2	67	0	130	1470
01:00 PM	0	118	14	0	14	15	20	17	93	0	1	16	0	30	338
01:15 PM	0	88	16	0	19	13	30	15	88	0	0	9	0	25	303
01:30 PM	0	111	19	0	25	20	21	16	95	0	0	13	0	31	351
01:45 PM	0	121	21	0	19	21	34	28	83	0	2	19	0	33	381
Total	0	438	70	0	77	69	105	76	359	0	3	57	0	119	1373
02:00 PM	0	86	16	0	16	21	26	26	102	0	0	17	0	43	353
02:15 PM	0	95	17	0	12	5	25	7	86	0	0	10	0	21	278
02:30 PM	0	100	12	0	19	11	21	27	91	0	0	15	0	33	329
02:45 PM	0	120	20	0	23	17	30	14	111	0	0	16	0	29	380
Total	0	401	65	0	70	54	102	74	390	0	0	58	0	126	1340

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
03:00 PM	0	114	17	0	17	19	20	27	120	0	1	18	0	50	403
03:15 PM	0	98	28	0	20	21	20	23	129	0	0	15	0	36	390
Grand Total	0	2193	358	2	366	286	515	366	1834	0	11	296	0	585	6812
Apprch %	0	85.9	14	0.1	31.4	24.5	44.1	16.6	82.9	0	0.5	33.6	0	66.4	
Total %	0	32.2	5.3	0	5.4	4.2	7.6	5.4	26.9	0	0.2	4.3	0	8.6	
Cars	0	2182	355	2	360	277	507	343	1820	0	11	283	0	564	6704
% Cars	0	99.5	99.2	100	98.4	96.9	98.4	93.7	99.2	0	100	95.6	0	96.4	98.4
Trucks	0	11	3	0	6	9	8	23	14	0	0	13	0	21	108
% Trucks	0	0.5	0.8	0	1.6	3.1	1.6	6.3	0.8	0	0	4.4	0	3.6	1.6

Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 1

Groups Printed- Cars - Trucks

	Thompsons Point From East		Exit Only From South		Thompsons Point From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
10:30 AM	0	14	0	1	17	0	32
10:45 AM	0	31	1	0	19	0	51
Total	0	45	1	1	36	0	83
11:00 AM	0	43	0	0	29	0	72
11:15 AM	0	54	0	0	32	0	86
11:30 AM	0	66	1	1	49	1	118
11:45 AM	0	62	0	2	58	0	122
Total	0	225	1	3	168	1	398
12:00 PM	0	65	1	1	58	0	125
12:15 PM	0	37	0	0	43	0	80
12:30 PM	0	42	0	2	49	0	93
12:45 PM	0	48	1	0	41	0	90
Total	0	192	2	3	191	0	388
01:00 PM	0	48	0	1	45	0	94
01:15 PM	0	40	0	0	39	0	79
01:30 PM	0	61	0	0	42	0	103
01:45 PM	0	67	0	3	53	0	123
Total	0	216	0	4	179	0	399
02:00 PM	0	60	0	1	52	0	113
02:15 PM	0	32	1	1	32	0	66
02:30 PM	0	46	0	0	49	0	95
02:45 PM	0	50	0	4	41	0	95
Total	0	188	1	6	174	0	369
03:00 PM	0	65	0	1	64	1	131
03:15 PM	0	76	0	0	53	0	129
Grand Total	0	1007	5	18	865	2	1897
Apprch %	0	100	21.7	78.3	99.8	0.2	

Accurate Counts

978-664-2565

Total %	0	53.1	0.3	0.9	45.6	0.1	
Cars	0	974	5	18	825	2	1824
% Cars	0	96.7	100	100	95.4	100	96.2
Trucks	0	33	0	0	40	0	73
% Trucks	0	3.3	0	0	4.6	0	3.8

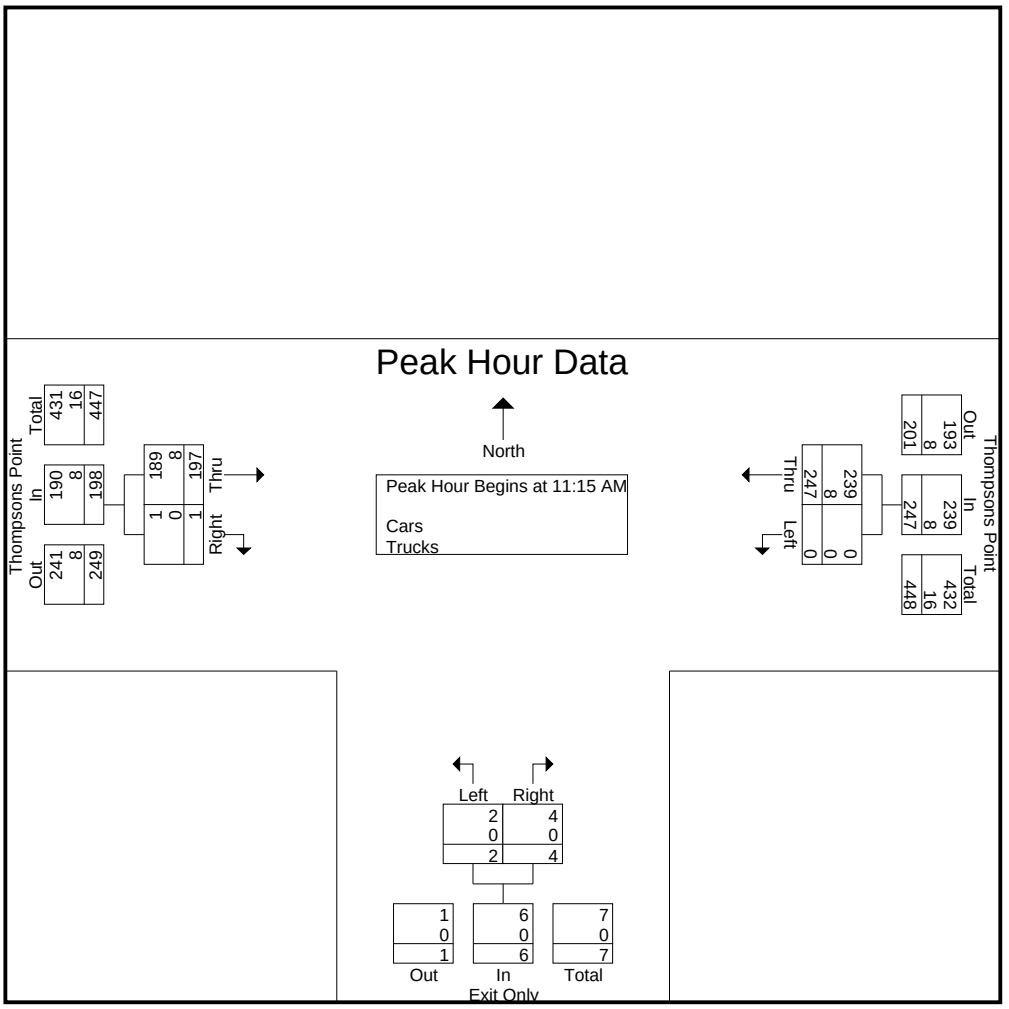
Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 3

	Thompsons Point From East			Exit Only From South			Thompsons Point From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	0	54	54	0	0	0	32	0	32	86
11:30 AM	0	**66**	**66**	**1**	1	**2**	49	**1**	50	118
11:45 AM	0	62	62	0	**2**	2	**58**	0	**58**	122
12:00 PM	0	65	65	1	1	2	58	0	58	**125**
Total Volume	0	247	247	2	4	6	197	1	198	451
% App. Total	0	100		33.3	66.7		99.5	0.5		
PHF	.000	.936	.936	.500	.500	.750	.849	.250	.853	.902
Cars	0	239	239	2	4	6	189	1	190	435
% Cars	0	96.8	96.8	100	100	100	95.9	100	96.0	96.5
Trucks	0	8	8	0	0	0	8	0	8	16
% Trucks	0	3.2	3.2	0	0	0	4.1	0	4.0	3.5



Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	0	0	11	5	0	0	0	9	0	9	0	34
10:45 AM	0	1	0	9	15	3	0	0	6	0	10	2	46
Total	0	1	0	20	20	3	0	0	15	0	19	2	80
11:00 AM	0	0	0	25	14	4	1	0	13	0	13	1	71
11:15 AM	0	0	0	25	26	2	1	1	25	0	10	4	94
11:30 AM	2	0	0	40	19	4	3	1	39	0	5	4	117
11:45 AM	3	0	0	40	27	2	3	1	46	0	13	5	140
Total	5	0	0	130	86	12	8	3	123	0	41	14	422
12:00 PM	3	0	0	26	33	3	2	2	35	0	25	4	133
12:15 PM	2	0	0	13	22	2	3	4	11	0	26	2	85
12:30 PM	2	0	1	14	28	1	2	2	14	0	33	4	101
12:45 PM	1	0	1	20	25	2	2	0	15	1	25	3	95
Total	8	0	2	73	108	8	9	8	75	1	109	13	414
01:00 PM	3	1	0	17	31	2	1	1	22	0	22	1	101
01:15 PM	1	0	0	11	31	0	0	0	10	1	23	3	80
01:30 PM	0	0	0	20	30	7	2	3	13	0	31	1	107
01:45 PM	1	1	0	28	32	5	0	7	19	2	26	5	126
Total	5	2	0	76	124	14	3	11	64	3	102	10	414
02:00 PM	0	0	0	35	26	5	1	7	33	0	22	1	130
02:15 PM	0	1	0	13	17	0	0	0	10	0	20	0	61
02:30 PM	0	0	0	18	29	0	1	1	13	0	35	2	99
02:45 PM	2	0	0	29	26	1	0	0	22	0	19	2	101
Total	2	1	0	95	98	6	2	8	78	0	96	5	391

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	3	0	0	26	26	4	0	0	36	0	24	3	122
03:15 PM	0	0	0	26	50	1	0	0	18	0	36	5	136
Grand Total	23	4	2	446	512	48	22	30	409	4	427	52	1979
Apprch %	79.3	13.8	6.9	44.3	50.9	4.8	4.8	6.5	88.7	0.8	88.4	10.8	
Total %	1.2	0.2	0.1	22.5	25.9	2.4	1.1	1.5	20.7	0.2	21.6	2.6	
Cars	23	4	2	446	476	48	22	30	409	4	392	52	1908
% Cars	100	100	100	100	93	100	100	100	100	100	91.8	100	96.4
Trucks	0	0	0	0	36	0	0	0	0	0	35	0	71
% Trucks	0	0	0	0	7	0	0	0	0	0	8.2	0	3.6

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

	Lot A From North				Thompsons Point From East				Main Access From South				Thompsons Point From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	25	26	2	53	1	1	25	27	0	10	4	14	94
11:30 AM	2	0	0	2	**40**	19	**4**	63	**3**	1	39	43	0	5	4	9	117
11:45 AM	**3**	0	0	**3**	40	27	2	**69**	3	1	**46**	**50**	0	13	**5**	18	**140**
12:00 PM	3	0	0	3	26	**33**	3	62	2	**2**	35	39	0	**25**	4	**29**	133
Total Volume	8	0	0	8	131	105	11	247	9	5	145	159	0	53	17	70	484
% App. Total	100	0	0		53	42.5	4.5		5.7	3.1	91.2		0	75.7	24.3		
PHF	.667	.000	.000	.667	.819	.795	.688	.895	.750	.625	.788	.795	.000	.530	.850	.603	.864
Cars	8	0	0	8	131	95	11	237	9	5	145	159	0	46	17	63	467
% Cars	100	0	0	100	100	90.5	100	96.0	100	100	100	100	0	86.8	100	90.0	96.5
Trucks	0	0	0	0	0	10	0	10	0	0	0	0	0	7	0	7	17
% Trucks	0	0	0	0	0	9.5	0	4.0	0	0	0	0	0	13.2	0	10.0	3.5

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	4	0	0	0	0	0	6	0	0	0	0	10
10:45 AM	0	15	0	0	0	1	0	8	0	0	0	0	24
Total	0	19	0	0	0	1	0	14	0	0	0	0	34
11:00 AM	0	12	1	0	0	1	0	13	0	1	0	0	28
11:15 AM	2	18	1	0	0	0	0	8	0	0	0	0	29
11:30 AM	0	15	0	0	0	2	0	5	0	0	0	0	22
11:45 AM	0	18	0	0	0	0	0	13	0	0	0	0	31
Total	2	63	2	0	0	3	0	39	0	1	0	0	110
12:00 PM	0	33	0	0	0	0	0	19	0	0	0	0	52
12:15 PM	1	17	2	0	0	0	0	25	0	0	0	0	45
12:30 PM	1	27	0	0	0	1	0	28	0	2	0	0	59
12:45 PM	0	20	1	0	0	1	0	23	0	0	0	0	45
Total	2	97	3	0	0	2	0	95	0	2	0	0	201
01:00 PM	0	29	0	0	0	0	0	17	0	0	0	0	46
01:15 PM	0	24	0	0	0	0	0	22	1	0	0	0	47
01:30 PM	0	25	0	0	0	1	0	27	0	0	0	0	53
01:45 PM	0	22	1	0	0	0	0	20	0	0	0	0	43
Total	0	100	1	0	0	1	0	86	1	0	0	0	189
02:00 PM	0	23	0	0	0	0	0	18	0	0	0	0	41
02:15 PM	0	13	0	0	0	1	0	17	0	0	0	0	31
02:30 PM	0	32	0	0	0	0	0	34	0	0	0	0	66
02:45 PM	0	12	0	0	0	0	0	4	0	0	0	0	16
Total	0	80	0	0	0	1	0	73	0	0	0	0	154

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	1	17	0	0	0	0	0	22	0	1	0	0	41
03:15 PM	1	38	0	0	0	2	0	27	0	0	0	0	68
Grand Total	6	414	6	0	0	10	0	356	1	4	0	0	797
Apprch %	1.4	97.2	1.4	0	0	100	0	99.7	0.3	100	0	0	
Total %	0.8	51.9	0.8	0	0	1.3	0	44.7	0.1	0.5	0	0	
Cars	6	413	6	0	0	9	0	355	1	4	0	0	794
% Cars	100	99.8	100	0	0	90	0	99.7	100	100	0	0	99.6
Trucks	0	1	0	0	0	1	0	1	0	0	0	0	3
% Trucks	0	0.2	0	0	0	10	0	0.3	0	0	0	0	0.4

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.3
Denied Del/Veh (s)	0.1	2.9	0.7	0.1	0.7
Total Delay (hr)	1.3	1.3	1.8	3.0	7.3
Total Del/Veh (s)	21.2	19.5	15.4	18.3	18.1

7: Main Access/Lot "A" & Thompsons Point Connector Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.2	0.2	0.0	0.3
Total Del/Veh (s)	0.3	2.2	3.5	5.7	2.5

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.3
Total Del/Veh (s)	20.0

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.3	0.0	0.0	3.7	0.6	3.7	3.3	0.1	0.1	0.2	0.7
Total Delay (hr)	0.6	0.0	0.7	0.7	0.5	0.1	0.7	1.0	2.7	0.3	7.3
Total Del/Veh (s)	26.8	0.3	19.3	31.0	30.9	2.7	36.3	10.9	20.2	9.5	18.1

7: Main Access/Lot "A" & Thompsons Point Connector Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Del/Veh (s)	0.3	0.0	3.1	1.3	1.1	6.6	7.3	3.2	5.7	2.5

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.3
Total Del/Veh (s)	20.0

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.3
Denied Del/Veh (s)	0.1	2.8	0.8	0.1	0.7
Total Delay (hr)	1.6	1.5	2.0	3.5	8.5
Total Del/Veh (s)	22.4	20.8	17.2	20.0	19.8

7: Main Access/Lot "A" & Thompsons Point Connector Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.2	0.2	0.0	0.4
Total Del/Veh (s)	0.4	2.5	3.7	6.3	2.8

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	21.9

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.2	0.0	0.0	3.8	0.7	3.7	3.4	0.1	0.1	0.2	0.7
Total Delay (hr)	0.7	0.0	0.9	0.7	0.6	0.1	0.9	1.1	3.1	0.4	8.5
Total Del/Veh (s)	29.2	0.7	19.7	32.5	31.4	2.7	36.3	12.3	22.4	10.3	19.8

7: Main Access/Lot "A" & Thompsons Point Connector Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.4
Total Del/Veh (s)	0.5	0.1	3.2	1.5	1.2	7.5	8.3	3.4	6.3	2.8

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	21.9

Intersection: 1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	L	T	T	T	TR
Maximum Queue (ft)	117	161	120	124	114	151	108	240	228
Average Queue (ft)	48	63	43	43	47	61	28	122	84
95th Queue (ft)	92	120	93	92	90	122	76	199	179
Link Distance (ft)		421		534		767	767	707	707
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175		400		200				
Storage Blk Time (%)		0							
Queuing Penalty (veh)		0							

Intersection: 7: Main Access/Lot "A" & Thompsons Point Connector

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	45	75	30
Average Queue (ft)	8	41	6
95th Queue (ft)	33	66	26
Link Distance (ft)		127	119
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	L	T	T	T	TR
Maximum Queue (ft)	135	168	141	131	125	153	116	217	192
Average Queue (ft)	55	79	48	48	57	66	29	136	97
95th Queue (ft)	107	141	104	100	105	125	76	204	175
Link Distance (ft)		421		534		767	767	707	707
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175		400		200				
Storage Blk Time (%)		0			0				
Queuing Penalty (veh)		1			0				

Intersection: 7: Main Access/Lot "A" & Thompsons Point Connector

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	49	77	30
Average Queue (ft)	10	46	10
95th Queue (ft)	36	72	33
Link Distance (ft)		127	119
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Thompsons Point Connector Rd in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 3200149	Start Node: 59413	Start Offset: 0	☐ Exclude First Node
	End Node: 59420	End Offset: 0	☐ Exclude Last Node
Route: 3200556	Start Node: 59413	Start Offset: 0	☑ Exclude First Node
	End Node: 59418	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
59420	3200149 - 0.21	End of THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	0.340	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
59426	3200149 - 0.14	Int of SEWELL ST THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	1.112	0.00	0.52	0.00
												Statewide Crash Rate:	0.14	
59413	3200149 - 0	Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS F	9	9	0	0	1	2	6	33.3	6.211	0.48	1.23	0.39
												Statewide Crash Rate:	0.74	
59418	3200556 - 0.09	Int of FORE RIVER PKY RINV 3200156	2	2	0	0	0	0	2	0.0	2.770	0.24	0.37	0.65
												Statewide Crash Rate:	0.12	
Study Years: 3.00		NODE TOTALS:		11	0	0	1	2	8	27.3	10.433	0.35	0.80	0.44

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
59413	59426	2029332	0 - 0.14	3200149 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00207	161.15	987.49	0.16
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59426	59420	2029333	0 - 0.07	3200149 - 0.14	0.07	2	0	0	0	0	0	0	0.0	0.00048	0.00	1433.94	0.00
Int of SEWELL ST THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59413	59418	3115322	0 - 0.04	3200556 - 0.05	0.04	2	0	0	0	0	0	0	0.0	0.00086	0.00	774.75	0.00
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200556											Statewide Crash Rate: 218.73		
Study Years: 3.00				Section Totals:	0.25		1	0	0	0	0	1	0.0	0.00341	97.87	794.52	0.12
				Grand Totals:	0.25		12	0	0	1	2	9	25.0	0.00341	1174.44	964.07	1.22

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum

99607

To: **Jean Fraser, City of Portland**

From: **Steve Sawyer**

Date: **May 10, 2018**

Subject: **Sebago's Comment/Responses to City Of Portland's Email May 4, 2018**
Portland Transportation Center

cc: **File**

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1. Traffic

The City's consultant site plan review engineer (Tom Errico) has commented: "I continue to review the application materials but wanted to request that the Applicant provide an estimate of peak hour traffic volume change (the highest volume peak hour) associated with ridership activity at the Transportation Center over the last 10 years. This estimate will be used to assess the requirement for a Traffic Movement Permit. I would note that according to information provided by the Applicant, annual ridership has increased significantly over the past 10 years and a corresponding increase in traffic volume would be expected." A response is being prepared and will follow as a separate submittal soon.

2. Existing parking provision

Please confirm whether any of the existing parking in the vicinity of the Transportation Center is leased to other parties, or committed to known users, not associated with the Center eg. Doctor's offices on Sewall Street.
A total of 60 parking spaces in the MaineDOT owned parking lot across the street from the PTC are leased to the Doctors on Sewall Street. However, these spaces have blackout dates during peak periods, i.e. weekends, Christmas vacation, and school vacations.

3. Interim situation during phase 1 preloading:

- Will the area of (Phase 1) asphalt reclaim include the entire 2.86 area of final parking lot? Yes
- How will this area be drained in the interim condition and to where? See the response below.

- What stormwater management and treatment will be installed as part of the phase 1 (pre-load) construction? Stormwater will flow as sheet flow to the southeastern corner of the pre-load area. Stormwater will be collected in a temporary sediment basin. A temporary outlet pipe will discharge stormwater toward the existing outlet pipes located under the railroad tracks.
- The project description states an approximately one year pre-load whereas SWCole recommended up to 18 months for the pre-load – do you have a basis for saying approximately one year? The settlement rate that is expected on site is not an exact science. SWCole has given us a 12-18 month timeframe. Our intent is to install monitoring platforms that will be checked regularly to document actual settlement values. Once we achieve the desired results we will move into Phase 2. This will likely be between 12 and 18 months.

4. Excavation in the wetland area (likely location of former canal):

- Please clarify the sequencing of the filling of the wetland area (approximately 2 acres) for the pre-load and then later excavation to install the stormwater system, so we can understand the impacts on the wetland buffer area and water table, and how excavation of the wetlands is avoided (per the MHPC concerns about impacts to archaeological material associated with the former canal). Sand fill will be placed as part of the pre-load directly over the wetland, with no excavation performed. After the pre-load has settled, then we intend to excavate the pre-load material sufficiently to be able to install the proposed stormwater treatment chambers. This operation will not result in the excavation of any subsurface archaeological materials.

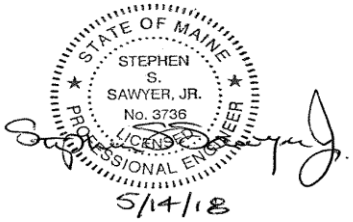
75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum

99607



To: **Jean Fraser, City of Portland**

From: **Steve Sawyer**

Date: **May 11, 2018**

Subject: **Sebago's Comment/Responses to City Of Portland's Email May 4, 2018**
Portland Transportation Center – Additional Traffic Information

cc: **File**

1. Traffic

The City's consultant site plan review engineer (Tom Errico) has commented: "I continue to review the application materials but wanted to request that the Applicant provide an estimate of peak hour traffic volume change (the highest volume peak hour) associated with ridership activity at the Transportation Center over the last 10 years. This estimate will be used to assess the requirement for a Traffic Movement Permit. I would note that according to information provided by the Applicant, annual ridership has increased significantly over the past 10 years and a corresponding increase in traffic volume would be expected."

The ridership data presented in the application covered the period 2001 to 2016. More recent passenger volumes were not available for the train and bus services at the time the application was prepared. Therefore, the following 10-year comparison is for the years 2006 and 2016.

1. The first thing to compare among to two time horizons is the active schedules (buses and trains):

   2006 – 42 buses daily (arrivals and departures)
   8 trains (arrivals and departures)

   2016 - 55 buses daily (arrivals and departures) (same as 2018)
   10 trains (arrivals and departures)

   Note: It is clear that the activity (number of buses and trains) have increased between 2006 and 2016, from 50 to 65. The daily coverage is the same, though, for these two time periods (beginning at 3:15AM with the first departure and ending at 1:25AM with the last arrival). The additional bus service is a result of the addition of multiple buses being used for multiple time

periods throughout the day (rather than just one for each scheduled departure) and the addition of a fifth train service. There were only four in 2006.

2. We discussed the matter of a peak hour at the PTC with CCL and they suggested that a mid-day Friday during the summer would be a representative time period for a peak hour of activity at the PTC. In reviewing the current schedules for the bus and train we chose the hour of 11:00AM to 12:00Noon. During this timeframe the PTC has two bus departures at 11:30AM, two bus arrivals at 11:45AM and 11:55AM, a train departure at 11:55AM and a train arrival at 11:35AM.

   In 2006, CCL had one less arrival and the train had only an arrival (no departure) during this same timeframe (11:00AM to 12:00Noon).

3. We checked historical records at the PTC and found the following data for passenger activity on Friday August 12, 2016.

CCL	11:30AM (through bus)		22 passengers got off the arriving bus
			65 passengers got onto the 2 buses for departure
	11:45AM		56 passengers got off the arriving bus
			12 moved to the departing 11:55 bus as a continuation
	11:55AM		40 passengers got off the arriving bus
			28 got on the bus for a continuation (12 from 11:45 bus)
Downeaster		11:35AM	60 passengers got off the train
		11:55AM	30 passengers got on the train

4. **Passenger Profile:** It is assumed that the average bus passenger arrives and departs the PTC in vehicles with an average occupancy of 1.5 per vehicle. Whereas the vehicle occupancy for train passengers is assumed to be 2.0. It is further assumed that during the summertime Friday peak hour we have selected for analysis 50% of bus patrons boarding and arriving at the PTC are dropped off or picked up at the terminal and 50% are parkers. Train patrons arriving during this same timeframe are 75% picked up and 25% are parkers, whereas those boarding are 75% parkers and 25% drop offs (the tendency is for longer trips).

5. **2016 Peak Hour Trip Generation:**

CCL

11:30AM	22 arrivals @ 1.5 per vehicle or 15 vehicles (50% parkers and 50% pick ups) Therefore, 7 parkers @ 1 trip each + 8 pick ups @ 2 trips each = 23 trips
	65 departures @ 1.5 per vehicle or 43 vehicles (50% parkers and 50% drop offs) Therefore, 21 parkers @ 1 trip each + 22 drop offs @ 2 trips each = 65 trips

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11:45AM (56-12) arrivals @ 1.5 per vehicle or 29 vehicles
(50% parkers and 50% pick ups)
Therefore, 14 parkers @ 1 trip each + 15 pick ups @ 2 trips each = 44 trips

11:55AM 40 arrivals @ 1.5 per vehicle or 27 vehicles
(50% parkers and 50% pick ups)
Therefore, 13 parkers @ 1 trip each + 14 pick ups @ 2 trips each = 41 trips

(28-12) departures @ 1.5 per vehicle or 11 vehicles
(50% parkers and 50% drop offs)
Therefore, 5 parkers at 1 trip each + 6 drop offs @ 2 trips each = 12 trips

Downeaster

11:35AM 60 arrivals @ 2 per vehicle or 30 vehicles
(25% parkers and 75% pick ups)
Therefore, 7 parkers at 1 trip each + 23 pick ups @ 2 trips each = 53 trips

11:55AM 30 departures @ 2 per vehicle or 15 vehicles
(75% parkers and 25% drop offs)
Therefore, 11 parkers @ 1 trip each + 4 pick ups @ 2 trips each = 19 trips

Total 2016 Peak Hour Trips **262** (129 Entering and 133 Exiting the PTC)
7+14+13+7=41 exits
21+5+11=37 enters
8+22+15+14+6+23+4=92 enters and 92 exits

6. 2006 Peak Hour Trip Generation:

CCL

11:30AM 55 departures @ 1.5 per vehicle or 37 vehicles
(50% parkers and 50% drop offs)
Therefore, 18 parkers @ 1 trip each + 19 drop offs @ 2 trips each = 56 trips

11:55AM 32 arrivals @ 1.5 per vehicle or 21 vehicles
(50% parkers and 50% pick ups)
Therefore, 10 parkers @ 1 trip each + 11 pick ups @ 2 trips each = 32 trips

Downeaster

12:15PM 52 arrivals @ 2 per vehicle or 28 vehicles
(25% parkers and 75% pick ups)
Therefore, 7 parkers at 1 trip each + 21 pick ups @ 2 trips each = 49 trips

Total 2006 Peak Hour Trips **137** (69 Entering and 68 Exiting the PTC)
18 enters

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17 exits
19+11+21=51 enters and 51 exits

From the data provided herein, it appears that while total annual ridership has increased from 480,110 to 661,712 during the period 2006 to 2016 (or 38%), peak hour traffic activity at the PTC has also grown but at a different rate 137 to 262 or 91%.

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No.	Bus Departures	Bus Arrivals	Train Departures	Train Arrivals
1	3:15 AM			
2	4:45 AM			
3	4:45 AM			
4			5:20 AM	
5	6:00 AM			
6	6:00 AM			
7	7:30 AM			
8	7:30 AM			
9		7:55 AM		
10			8:20 AM	
11	8:30 AM			
12	8:30 AM			
13	9:30 AM			
14	9:30 AM			
15		9:45 AM		
16		9:55 AM		
17	10:30 AM			
18	10:30 AM			
19	11:30 AM			
20	11:30 AM			
21			11:35 AM	
22		11:45 AM		
23		11:55 PM	11:55 AM	
24	12:30 PM			
25	12:30 PM			
26		12:45 PM		
27		12:55 PM		
28	1:30 PM			
29	1:30 PM			
30		1:45 PM		
31		1:55 PM		
32			2:20 PM	
33	2:30 PM			
34	2:30 PM			
35		2:45 PM		
36		2:55 PM		
37	3:30 PM			
38	3:30 PM			
39				3:40 PM
40		3:45 PM		
41		4:10 PM		
42		4:45 PM		
43	5:00 PM			
44	5:00 PM			
45		5:10 PM		
46		5:45 PM		
47	6:00 PM			
48	6:00 PM			
49		6:10 PM		
50			6:15 PM	
51		6:45 PM		
52		7:10 PM		
53	7:30 PM			7:30 PM
54		7:45 PM		
55		8:10 PM		
56		8:45 PM		
57				8:55 PM
58		9:10 PM		
59		9:45 PM		
60		10:10 PM		
61		11:10 PM		
62		12:10 AM		
63				12:55 AM
64		1:25 AM		

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION K NATURAL FEATURES

THE SITE IS LOCATED IN AN URBAN AREA, HOWEVER, IT DOES CONTAIN A SIGNIFICANT AREA OF FRESHWATER WETLANDS. UNFORTUNATELY, THE ENTIRE WETLAND AREA WILL BE FILLED IN ORDER TO ACCOMPLISH THE PROPOSED PARKING EXPANSION. THE APPLICANT CONSIDERED ALTERNATIVES, SUCH AS SATELLITE PARKING AREAS, HOWEVER, THEY DID NOT PROVE TO BE VIABLE ALTERNATIVES. THE APPLICANT HAS SUBMITTED AN NRPA PERMIT TO THE MAINE DEP AND US ARMY CORPS FOR THEIR REVIEW.

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

Stormwater Management Report

To:

Maine Department of Environmental Protection

Portland Transportation Center

Thompson's Point Connector
Portland, Maine

Prepared for:
Langdon Street Real Estate
7 Langdon Street
Concord, NH 03301

Prepared by:
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75 John Roberts Road, Suite 1A
South Portland, Maine 04106

June 2018

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Attachment B – Pre-Development Stormwater Modeling
Attachment C – Preload-Development Stormwater Modeling
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Attachment E – Inspection, Maintenance, and Housekeeping Plan

Stormwater Management Narrative

A. General

This Stormwater Management Plan has been prepared to address the potential impacts associated with the proposed modification in stormwater runoff characteristics for the proposed development at Portland Transportation Center located at Thompson's Point Connector in Portland. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements to evaluate the pre- and post-development conditions.

The existing development consist of approximately 8.74 acres of impervious areas and associated vegetated areas. Proposed improvements to the site include the construction of paved surfaces for parking and vehicular traffic with the remaining developed area comprised of vegetated side slopes and landscaped areas. The project will result in a net increase in impervious area of 2.86 acres, for a total impervious area of approximately 6.32 acres.

B. Existing Conditions

The site has been developed in the past dating back to 1996. The existing site includes a building totaling 15,600 square feet accessed by paved parking lot located off of Thompson's Point Connector. The remaining developed land consists of paved areas used for vehicular traffic and parking, landscaped areas and a stormwater detention basin.

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond. For stormwater calculating purposes, runoff was analyzed at two study points where the runoff exits the subject parcel. Study Point 1 (SP-1) is located at the southeastern corner of the property. Runoff at SP-1 leaving the property enters into the Fore River. Study Point 2 (SP-2) is located along Thompson's Point Connector along the north western sideline of the property. Runoff at this location enters into the existing closed storm drain system.

C. Preload Site Improvements

Based on the recommendations of the geotechnical engineer, it will be necessary to preload the proposed developed area for a period of approximately 12-18 months to eliminate the majority of the anticipated settlement that will occur from the weak underlying soils before any permanent drainage structures or pavement is installed. Prior to the placement of any preload material, trees and shrubs will be removed down to ground level, leaving as much vegetation along the perimeter of the preload area to minimized the potential for erosion. A stormwater bypass pipe will be installed to direct runoff that currently drains onto the property from offsite around the perimeter of the preload area to the existing 36-inch diameter culvert that flows under the railroad tracks. The initial preload fill will consist of a three foot thick sand layer placed directly onto the cleared wetland area. From there, common borrow material will be installed to an elevation of one-foot below the proposed elevation of the parking lot subbase gravel. One foot of gravel borrow will be installed upon the preload fill prior to the installation of the pavement subbase and base gravels. After the

subbase and base gravels are installed 3 inches of reclaimed asphalt pavement will be installed to cap the fill and help minimize erosion during the preload phase.

During the preload phase, stormwater from the existing building and parking lots flowing to the existing detention basin will be treated by constructing a "drainage ring" within the footprint of the detention basin. The drainage ring will be constructed by installing an open bottom 8-foot diameter concrete structure surrounded by crushed stone. The concrete structure will be perforated to allow stormwater to flow out the sides of the structure to the surrounding crushed stone. The concrete structure will be installed on a base of crushed stone over a sand filter layer. Perforated pipes installed in crushed stone under the sand filter layer will be installed to collect the treated stormwater and direct it to the existing 36-inch culverts under the railroad tracks.

During the preload phase of approximately 12-18 months, stormwater from the surface of the preload area will be treated by constructing two underdrained soil filters in the south east corner of the preload area. Sediment forebays will be constructed adjacent to each of the underdrained soil filters to pretreat the stormwater prior to overflowing into the underdrained soil filter. Stormwater will then pass through a layer of mulch and a layer of soil filter media before being collected in the underdrain pipes. The proposed underdrained soil filters have been designed to conform to the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

D. Proposed Site Improvements

Proposed improvements involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the total impervious surfaces by approximately 2.86 acres over the existing impervious areas that exist today. With the development of the site, stormwater BMPs will be constructed to treat runoff prior to entering into the existing drainage system. The proposed stormwater BMP, a proposed Subsurface Sand Filter, has been designed to treat stormwater runoff prior to leaving the site. The proposed stormwater BMP has been designed to conform to the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

The stormwater management plan was designed so that existing drainage patterns are not significantly altered at the two study points SP-1, and SP-2.

E. Soils

Soil information for the site was obtained via the USDA United States Department of Agriculture and Natural Resources Conservation Service's Web Soil Survey. The Hydrologic Soil Group (HSG) of the site soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Type	Symbol	HSG	Drainage Class
Belgrade	BgB	B	Moderately Well Drained
Belgrade	BgC2	B	Moderately Well Drained
Cut and Fill	Cu	-	Moderately Well Drained
Gravel Pits	Gp	-	
Tidal Marsh	Tm	-	Very Poorly Drained
Windsor	WmB	A	Very Well Drained
Water	W	-	

F. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland for the 2-year, 10-year and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.10
10-yr	4.60
25-yr	5.80

G. Pre-Development Watershed Model

The pre-development watershed model consists of eleven (11) subcatchments.

Subcatchments 1S through 6S, includes a majority of the subject parcel. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to an existing wet pond. Stormwater flows generally from west to east, designated as Study Point 1 (SP-1).

Subcatchment 7S includes portions of the site east of the existing parking lot with runoff that drains to the existing wetland, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchment 9S includes a portion of the site in the southwestern corner of the property. This area flows to an existing culvert that discharges directly into the existing wetland, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S.

H. Preload-Development Watershed Model

The pre-development watershed model consists of twelve (12) subcatchments.

Subcatchments 1S through 5S, includes a majority of the existing development. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to a proposed drainage ring. Stormwater is collected in the underdrain system below the drainage ring. Stormwater then flows through the proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchments 6S and 7S includes the preload surface area. Stormwater from the preload surface will be directed to two undrained soil filters. Treated stormwater will flow through undrain collection pipes and discharged to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 9S and 11S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S. These offsite subcatchments are not included in the development but are used to account for the total outflow at the Fore River in the preload-development condition.

I. Post-Development Watershed Model

The post-development watershed model consists of nineteen (19) subcatchments. Modeling reflects on-site ground cover changes to include proposed landscaping and impervious areas associated with the parking lot and associated sidewalks. Existing drainage patterns will be generally maintained with the proposed stormwater design.

Subcatchments 1S through 7S and 9S through 15S includes the existing parking areas, portions of the existing building, the proposed parking areas and proposed landscape areas associated the expansion. The area is graded to discharge runoff through a closed storm drain system to the proposed Subsurface Sand Filter. Stormwater will then flow through proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 16S and 17S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S. These offsite subcatchments are not included in the development but are used to account for the total outflow at the Fore River in the post-development condition.

J. Stormwater Quality Management (General Standard)

Runoff from the existing development that was treated in the wet pond, along with the proposed development will be directed to a subsurface sand filter. The subsurface sand filter is designed in general conformance with Section 7.3 of the BMPs Technical Design Manual. An inlet control structure will distribute flow from a 1 inch rain storm evenly to four isolator rows within the system. Through the isolator rows, flow will disperse equally to exterior chambers so that a consistent water level is maintained throughout the entire system. An outlet control structure will be constructed with a weir installed so that storage is provided for at least the first 1 inch of runoff. Additional runoff from larger storm events will be diverted along the easterly side of the system so that additional flow does not impact conditions upstream. Runoff contained in the chambers will first pass through a media for treatment before discharging to the project's closed storm drainage system.

The new impervious surface combined with the existing impervious areas currently being treated in the wet pond would require a total impervious treatment of 246,946 square feet (SF). The new landscape areas combined with the existing landscape areas currently being treated would require a total landscape treatment of 30,974 square feet (SF). Therefore, the proposed development will treat stormwater to a much greater extent than what is actually required to be treated through a strict interpretation of the MeDEP Stormwater Law regulations.

Test pits were observed within the general area of the proposed development. Test pits indicate the presence of groundwater approximately two feet below existing ground level in the lower area adjacent to the proposed subsurface sand filter. Given the existing topography in the area of the proposed parking lot, the proposed subsurface sand filter will be constructed entirely in fill conditions. This will place the bottom of the proposed subsurface sand filter approximately four feet above groundwater table. As a safety measure, a liner will be used to prevent any potential groundwater or tidal water from backing up into the proposed subsurface sand filter.

Stormwater management design calculations for the Subsurface Sand Filter, and for General Standard compliance, are enclosed as part of **Attachment A**.

K. Stormwater Quantity Management (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project area. Calculations and computer modeling data sheets are provided with this report.

The HydroCAD model predicts increases in estimated peak flow rates during the 2-, 10- and 25-year storm events at SP-1. During a 25-year storm event, the increase of flow to the existing four 36-inch culverts will increase by approximately 5 inches over existing conditions. This increase in water level remains below the top of the existing culverts. At SP-2 the model predicts that peaks flows remain constant during the 2- and 10-year storms and decreases slightly during the 25-year storm. Stormwater exiting the site will enter into Fore River.

As permitted under Chapter 500 §4.F(3)(a), the project is eligible for a waiver from the Flooding Standard since it is within the direct watershed of a coastal wetland with adequate capacity and the stormwater is conveyed through a piped system directly to Fore River. Fore River, which separates South Portland and Portland, is a direct tributary to Casco Bay. Due to the proximity to Casco Bay and ultimately the Atlantic Ocean, Fore River is subject to tidal influence, as such, there are no anticipated detrimental impacts to downstream receiving structures, drainage channels, or properties. A waiver from the flooding standards has been requested. Please refer to Attachment B, Attachment C and Attachment D for pre-, preload- and post-development stormwater modeling.

Preload Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Preload (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Preload (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Preload (cfs)**	**Diff. (cfs)**
SP-1	31.48	39.43	7.95	51.99	69.89	17.90	73.39	97.09	23.70
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**
SP-1	31.48	38.32	6.84	51.99	71.84	19.85	73.39	99.49	26.10
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

L. Inspection & Maintenance

Provisions for periodic inspection and maintenance of the subsurface sand filter are included in the Inspection, Maintenance, and Housekeeping Plan included in this section of the application.

M. Summary

An Erosion and Sedimentation Control Plan has been developed using the Maine Department of Environmental Protection's 2015 Erosion and Sediment Control Field Guide for Contractors for the project site placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan is incorporated into the design plans and includes the locations of the erosion control provisions (i.e., silt fence, construction entrance) along with a narrative and construction details for reference by the contractor during construction.

The proposed development will include the construction of a Subsurface Sand Filter to which a majority of runoff from impervious and developed areas will be directed. The construction of the Subsurface Sand Filter will provide water quality treatment of stormwater runoff from the site so that the General Standards are satisfied. Increases in post-development peak flow rates during the 10-year, and 25-year storm events are anticipated to have negligible impact on flow characteristics of Fore River, immediately downstream of the site and further downstream.

With incorporation of these measures, no significant impacts to off-site drainage are anticipated due to the development of the property

Prepared by

SEBAGO TECHNICS, INC.

Craig A. Burgess, P.E.
Senior Project Engineer

CAB/BJB

Attachment A

Water Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	-	**246,946**	**25,892**	**272,838**	-

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

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JOB	99607		
SHEET NO.	1	OF	2
CALCULATED BY	BJB	DATE	6/12/2018
CHECKED BY	CAB		
FILE NAME	99607-WQC	PRINT DATE	6/19/2018

MDEP Site Location of Development Submission

Note: Underdrained Soil Filters are sized in accordance with Chapter 7.1 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Underdrained Soil Filter #1 (UDSF-1) - Preload Phase									
Subcatchments tributary to UDSF-1 include 6S									
WQV Calculation									
(WQV = Water Quality Volume)									
Total Impervious Area =			55,468.0	sf					
Total Landscaped Area=			0.0	sf					
WQV Required= 1" x Impervious Area + 0.4"x Landscape Area =						4,622.3	cf		
WQV Provided =		**7,437.0**	cf @ 1.5' depth						
Filterbed Area Calculation									
Filterbed Area Required = 0.05 x Impervious + 0.02 x Landscape =						2773.4	sf		
Filterbed Area Provided=			**3,003.0**	sf					
Pre-treatment Sediment Forebay Volume Calculation									
Sand Application Rate=			50.0	cf/acre/year					
Total Impervious Area=			55,468.0	sf					
Tributary to UDSF #1									
Required Pre-treatment Volume=			63.7	cf					
Provided Pre-treatment Volume=			126.0	cf					

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JOB	99607		
SHEET NO.	2	OF	2
CALCULATED BY	BJB	DATE	6/12/2018
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FILE NAME	99607-WQC	PRINT DATE	6/19/2018

MDEP Site Location of Development Submission

Note: Underdrained Soil Filters are sized in accordance with Chapter 7.1 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Underdrained Soil Filter #2 (UDSF-2) - Preload Phase									
Subcatchments tributary to UDSF-2 include 7S									
WQV Calculation									
(WQV = Water Quality Volume)									
Total Impervious Area =			70,595.0	sf					
Total Landscaped Area=			2,733.0	sf					
WQV Required= 1" x Impervious Area + 0.4"x Landscape Area =						5,974.0	cf		
WQV Provided =		**9,919.0**	cf @ 1.5' depth						
Filterbed Area Calculation									
Filterbed Area Required = 0.05 x Impervious + 0.02 x Landscape =						3584.4	sf		
Filterbed Area Provided=			**4,077.0**	sf					
Pre-treatment Sediment Forebay Volume Calculation									
Sand Application Rate=			50.0	cf/acre/year					
Total Impervious Area=			70,595.0	sf					
Tributary to UDSF #2									
Required Pre-treatment Volume=			81.0	cf					
Provided Pre-treatment Volume=			93.0	cf					

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 1A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/15/2018
FILE NAME	99607-WQC.xls	PRNT DATE	6/18/2018

UNDERDRAINED SUBSURFACE SAND FILTER-1

Task: Calculate water quality volume per MDEP chapter 500 regulations

References
1. Maine DEP Chapter 500, Section 4.C.(3)(b)
"must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

2. Maine DEP Best Management Practices Stormwater Manual, Section 7.3.2
a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
c. "treatment flow rate for the Stormtech Isolator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	fs/chamber
SC-740	0.20	fs/chamber
DC-780	0.20	fs/chamber
MC-3500	0.30	fs/chamber
Cultech 150XLHD	0.185	fs/chamber
Cultech 330XLHD	0.227	fs/chamber

Tributary to Subsurface Sand Filter

Landscaped Area	30,974	SF	
Impervious Area	246,946	SF	

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	30,974	SF	Area	619.5	SF	
Total Impervious Area	246,946	SF	Area	12,347.3	SF	
Required Minimum Surface Area				12,966.8	SF	
Provided Surface Area				16,932.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	30,974	SF	Volume	1,032.5				
Impervious Area	246,946	SF	Volume	20,578.8				
Treatment Volume Required				21,611.3	CF	0.496	AF	
Provided Treatment Volume				24,354.0	CF	Elev.= 13.00		

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:		14.28	cfs
ISO Row sizing for:	**SC-740**	**0.2**	cfs
Total number of Isolator Row Chambers required:		72	

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JOB	99607		
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FILE NAME	99607-WQC.xls	PRNT DATE	6/18/2018

ORIFICE SIZING CALCULATION

SUBSURFACE SAND FILTER #1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{TV}{tCF}$$

T = Treatment Volume (cf)
t = Recovery Time (hrs)
CF = Conversion Factor = 3600 sec/hr

TV = 24,354 cf
t = 24 hr

$$Q = \frac{TV}{tCF} = 0.28 \text{ cfs}$$

surface area of filter = 16,932 SF

h = 1.44 ft

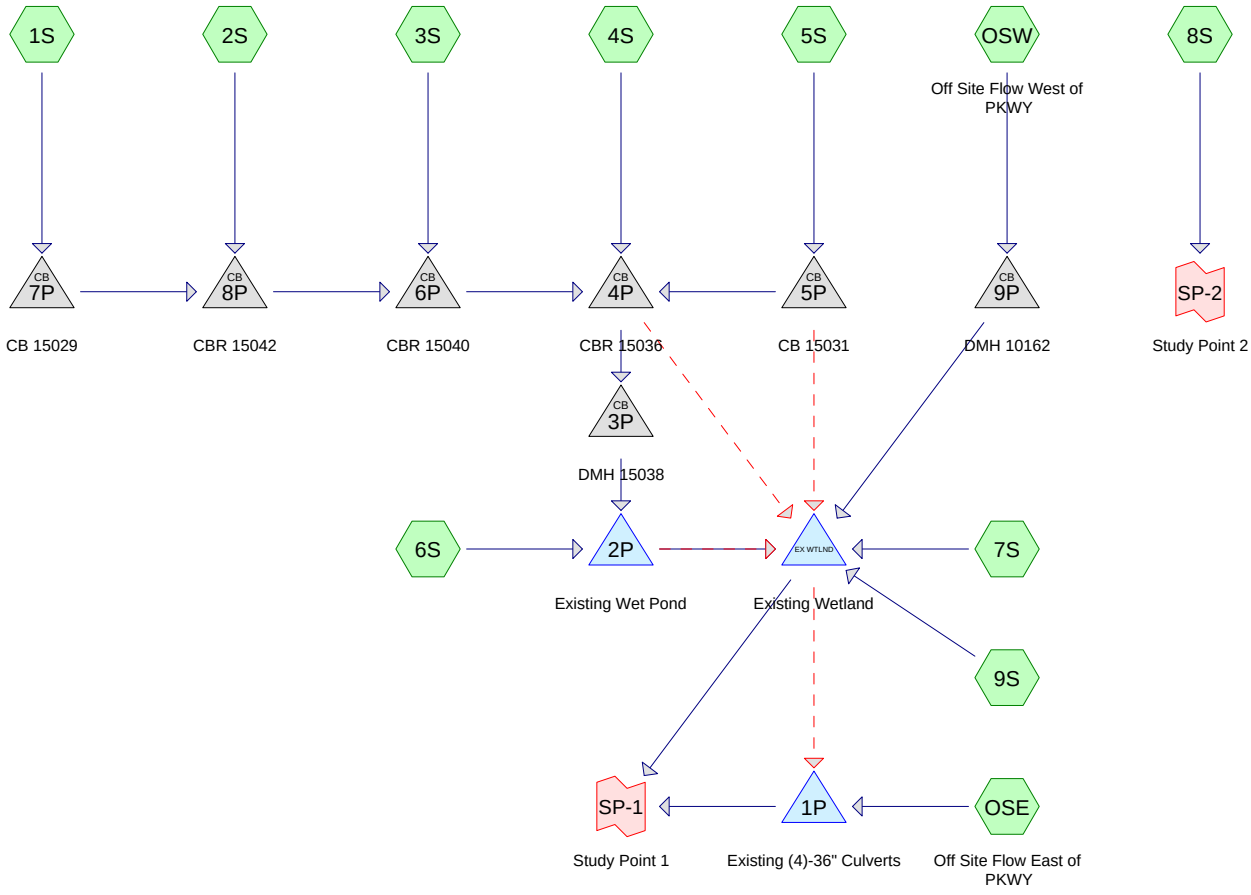
$$A = \frac{Q}{C\sqrt{(2gh)}}$$

A = 0.049 sf = 7.03 sq. in.

Diam = 2.99 in

Attachment B

Pre-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Pre
Prepared by Sebago Techincs, Printed 6/18/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
415,703	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, OSE)
80,663	80	>75% Grass cover, Good, HSG D (6S, 7S)
589,516	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 9S, OSE, OSW)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 7S, 9S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
7,169	98	Water Surface, HSG B (7S)
84,579	98	Water Surface, HSG D (6S, 7S)
1,729,428	**86**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.43 cfs 4,740 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=1.98 cfs 6,694 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.91 cfs 9,217 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=1.33"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.29 cfs 906 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=1.60"
Flow Length=306' Tc=6.3 min CN=84 Runoff=9.09 cfs 28,446 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=5.78' Storage=2,040 cf Inflow=14.53 cfs 82,901 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=14.50 cfs 82,184 cf

Pond 2P: Existing Wet Pond Peak Elev=14.61' Storage=8,947 cf Inflow=8.75 cfs 30,609 cf
Primary=5.59 cfs 26,082 cf Secondary=0.48 cfs 176 cf Outflow=6.07 cfs 26,257 cf

Pond 3P: DMH 15038 Peak Elev=15.55' Inflow=8.47 cfs 29,703 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=8.47 cfs 29,703 cf

Pond 4P: CBR 15036 Peak Elev=16.65' Inflow=8.47 cfs 29,703 cf
Primary=8.47 cfs 29,703 cf Secondary=0.01 cfs 0 cf Outflow=8.47 cfs 29,703 cf

Pond 5P: CB 15031 Peak Elev=21.03' Inflow=2.91 cfs 9,217 cf
Primary=2.03 cfs 8,422 cf Secondary=0.88 cfs 795 cf Outflow=2.91 cfs 9,217 cf

Pond 6P: CBR 15040 Peak Elev=17.13' Inflow=4.46 cfs 14,587 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.46 cfs 14,587 cf

Pond 7P: CB 15029 Peak Elev=23.84' Inflow=1.80 cfs 5,805 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=1.80 cfs 5,805 cf

Pond 8P: CBR 15042 Peak Elev=17.57' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 9P: DMH 10162 Peak Elev=10.85' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=19.88 cfs 118,098 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.83' Storage=26,521 cf Inflow=27.73 cfs 179,068 cf
Primary=17.83 cfs 179,087 cf Secondary=0.00 cfs 0 cf Outflow=17.83 cfs 179,087 cf

Link SP-1: Study Point 1 Inflow=31.48 cfs 261,271 cf
Primary=31.48 cfs 261,271 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 266,885 cf Average Runoff Depth = 1.85"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.17 cfs 7,395 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.98 cfs 10,314 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.66 cfs 15,115 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=2.55"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.56 cfs 1,741 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=2.91"
Flow Length=306' Tc=6.3 min CN=84 Runoff=16.47 cfs 51,713 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=6.18' Storage=2,740 cf Inflow=29.03 cfs 163,337 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=29.00 cfs 162,620 cf

Pond 2P: Existing Wet Pond Peak Elev=14.86' Storage=9,875 cf Inflow=10.63 cfs 47,480 cf
Primary=6.46 cfs 40,990 cf Secondary=2.77 cfs 2,137 cf Outflow=9.23 cfs 43,128 cf

Pond 3P: DMH 15038 Peak Elev=16.23' Inflow=10.07 cfs 45,739 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=10.07 cfs 45,739 cf

Pond 4P: CBR 15036 Peak Elev=17.59' Inflow=12.83 cfs 46,700 cf
Primary=10.07 cfs 45,739 cf Secondary=2.76 cfs 961 cf Outflow=12.83 cfs 46,700 cf

Pond 5P: CB 15031 Peak Elev=21.19' Inflow=4.66 cfs 15,115 cf
Primary=2.96 cfs 13,320 cf Secondary=1.70 cfs 1,795 cf Outflow=4.66 cfs 15,115 cf

Pond 6P: CBR 15040 Peak Elev=18.25' Inflow=6.88 cfs 23,065 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.88 cfs 23,065 cf

Pond 7P: CB 15029 Peak Elev=24.16' Inflow=2.80 cfs 9,284 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=2.80 cfs 9,284 cf

Pond 8P: CBR 15042 Peak Elev=18.59' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 9P: DMH 10162 Peak Elev=11.37' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=31.45 cfs 191,269 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.22' Storage=56,078 cf Inflow=46.25 cfs 298,303 cf
Primary=24.03 cfs 292,032 cf Secondary=3.27 cfs 6,290 cf Outflow=27.29 cfs 298,322 cf

Link SP-1: Study Point 1 Inflow=51.99 cfs 454,652 cf
Primary=51.99 cfs 454,652 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 460,934 cf Average Runoff Depth = 3.20"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.76 cfs 9,529 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.78 cfs 13,217 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.04 cfs 19,911 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=3.60"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 2,462 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=4.01"
Flow Length=306' Tc=6.3 min CN=84 Runoff=22.50 cfs 71,335 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=6.57' Storage=3,623 cf Inflow=46.36 cfs 247,405 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=46.33 cfs 246,689 cf

Pond 2P: Existing Wet Pond Peak Elev=14.95' Storage=10,235 cf Inflow=11.98 cfs 60,344 cf
Primary=6.78 cfs 51,984 cf Secondary=3.95 cfs 4,008 cf Outflow=10.73 cfs 55,992 cf

Pond 3P: DMH 15038 Peak Elev=16.70' Inflow=11.19 cfs 57,882 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=11.19 cfs 57,882 cf

Pond 4P: CBR 15036 Peak Elev=18.41' Inflow=16.24 cfs 60,292 cf
Primary=11.19 cfs 57,882 cf Secondary=5.05 cfs 2,410 cf Outflow=16.24 cfs 60,292 cf

Pond 5P: CB 15031 Peak Elev=21.29' Inflow=6.04 cfs 19,911 cf
Primary=3.66 cfs 17,177 cf Secondary=2.38 cfs 2,733 cf Outflow=6.04 cfs 19,911 cf

Pond 6P: CBR 15040 Peak Elev=19.46' Inflow=8.79 cfs 29,897 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,897 cf

Pond 7P: CB 15029 Peak Elev=24.51' Inflow=3.60 cfs 12,095 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=3.60 cfs 12,095 cf

Pond 8P: CBR 15042 Peak Elev=20.04' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 9P: DMH 10162 Peak Elev=11.76' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=40.62 cfs 250,553 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.46' Storage=75,208 cf Inflow=62.32 cfs 395,740 cf
Primary=27.79 cfs 368,997 cf Secondary=10.51 cfs 26,748 cf Outflow=38.30 cfs 395,744 cf

Link SP-1: Study Point 1 Inflow=73.39 cfs 615,685 cf
Primary=73.39 cfs 615,685 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 622,591 cf Average Runoff Depth = 4.32"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Summary for Subcatchment 1S:

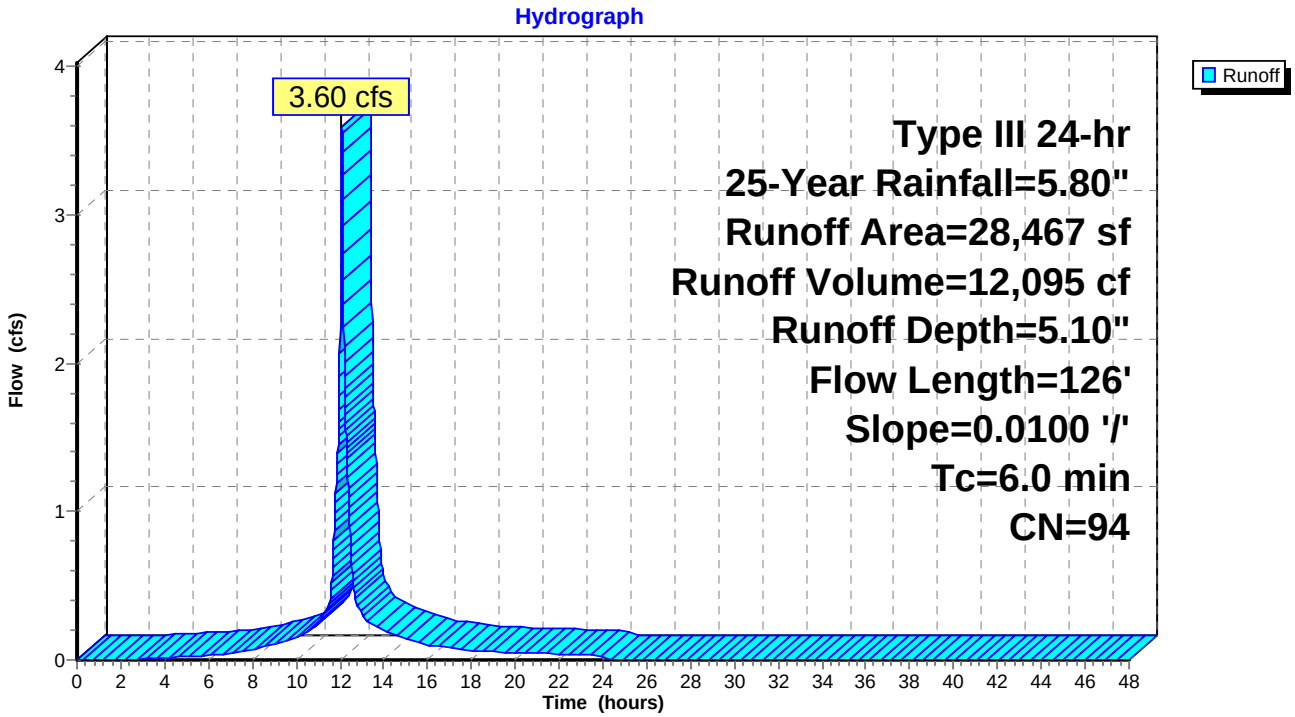
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

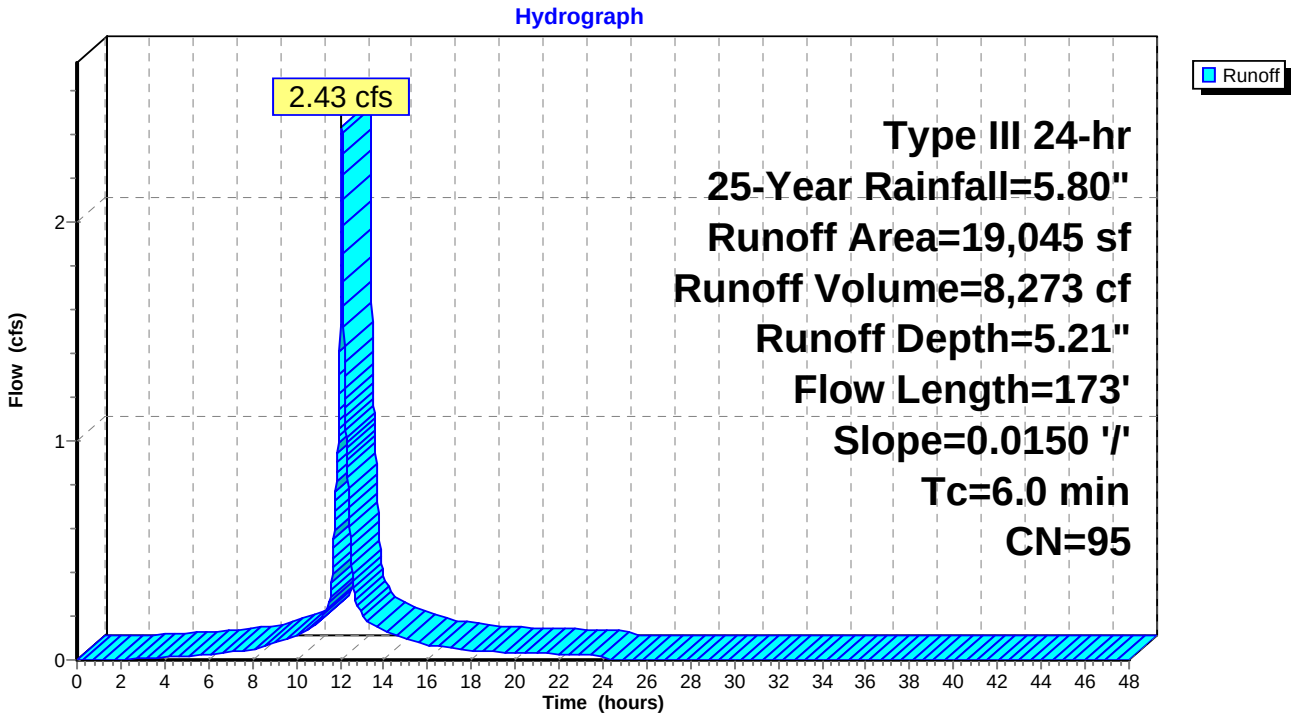
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

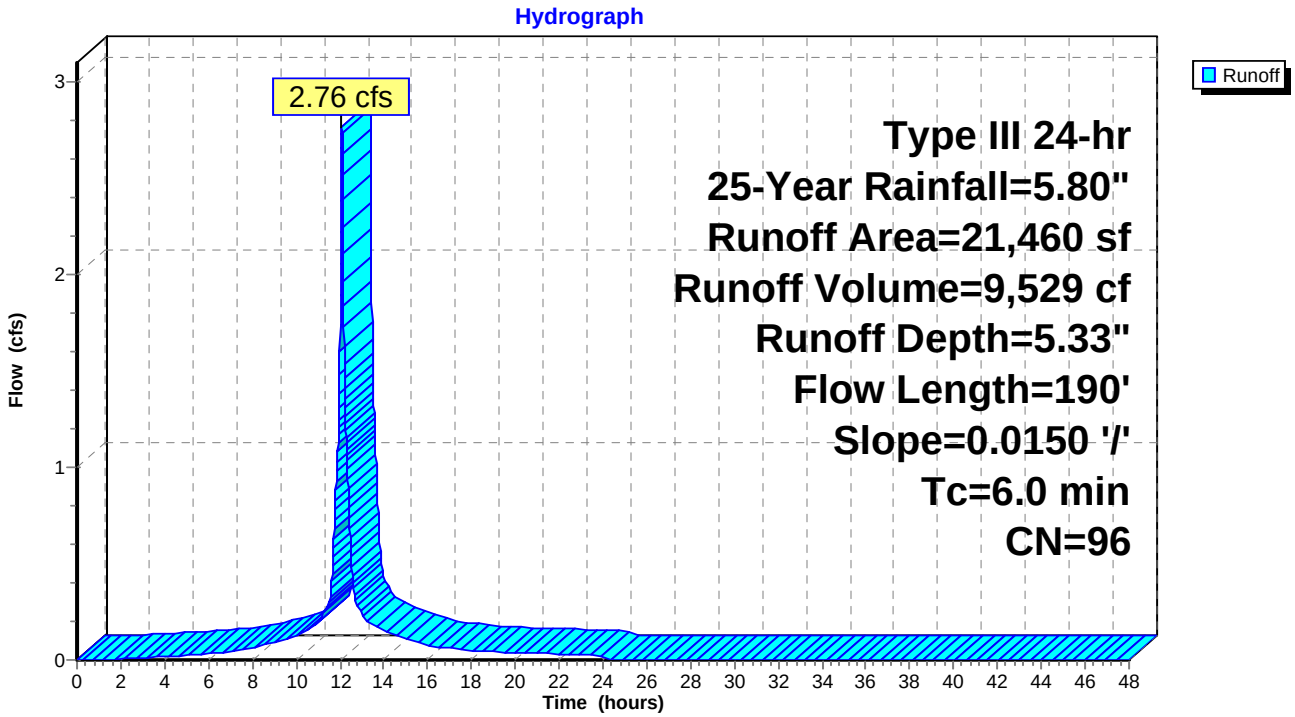
Runoff = 2.76 cfs @ 12.08 hrs, Volume= 9,529 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
259	98	Roofs, HSG B
19,851	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,460	96	Weighted Average
1,350		6.29% Pervious Area
20,110		93.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

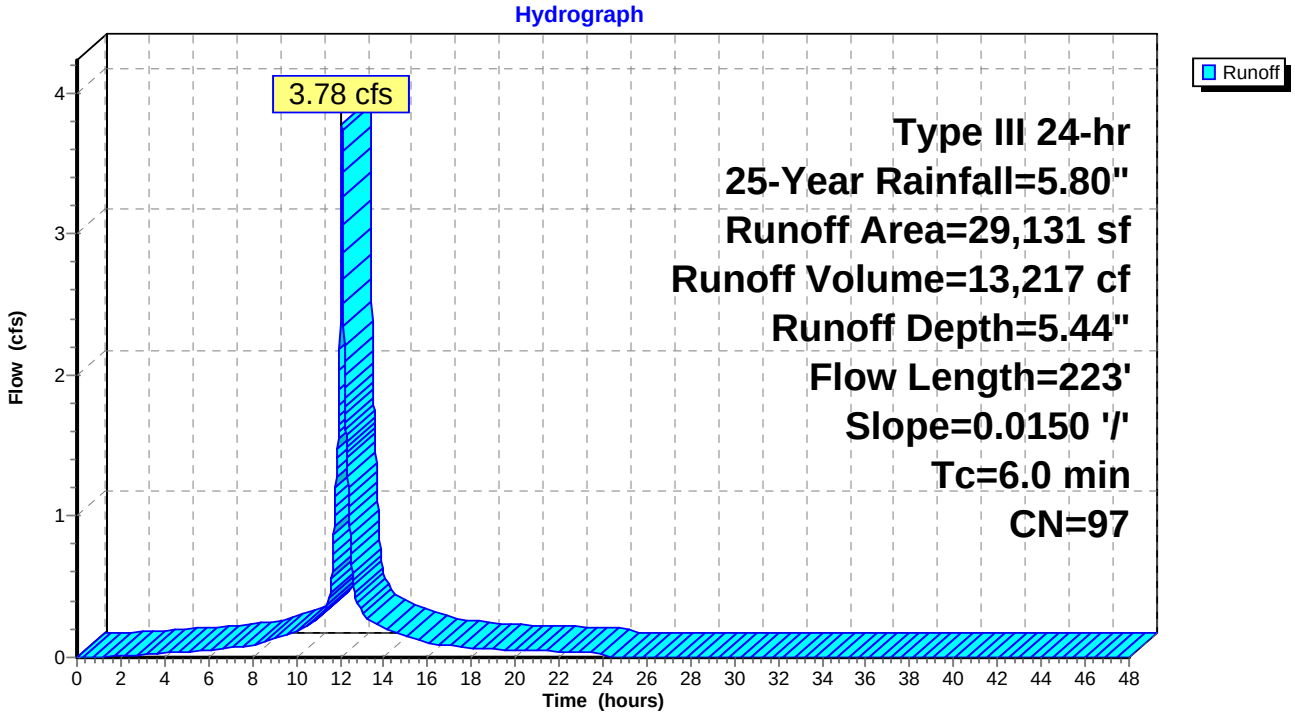
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 13,217 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
28,151	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
29,131	97	Weighted Average
980		3.36% Pervious Area
28,151		96.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

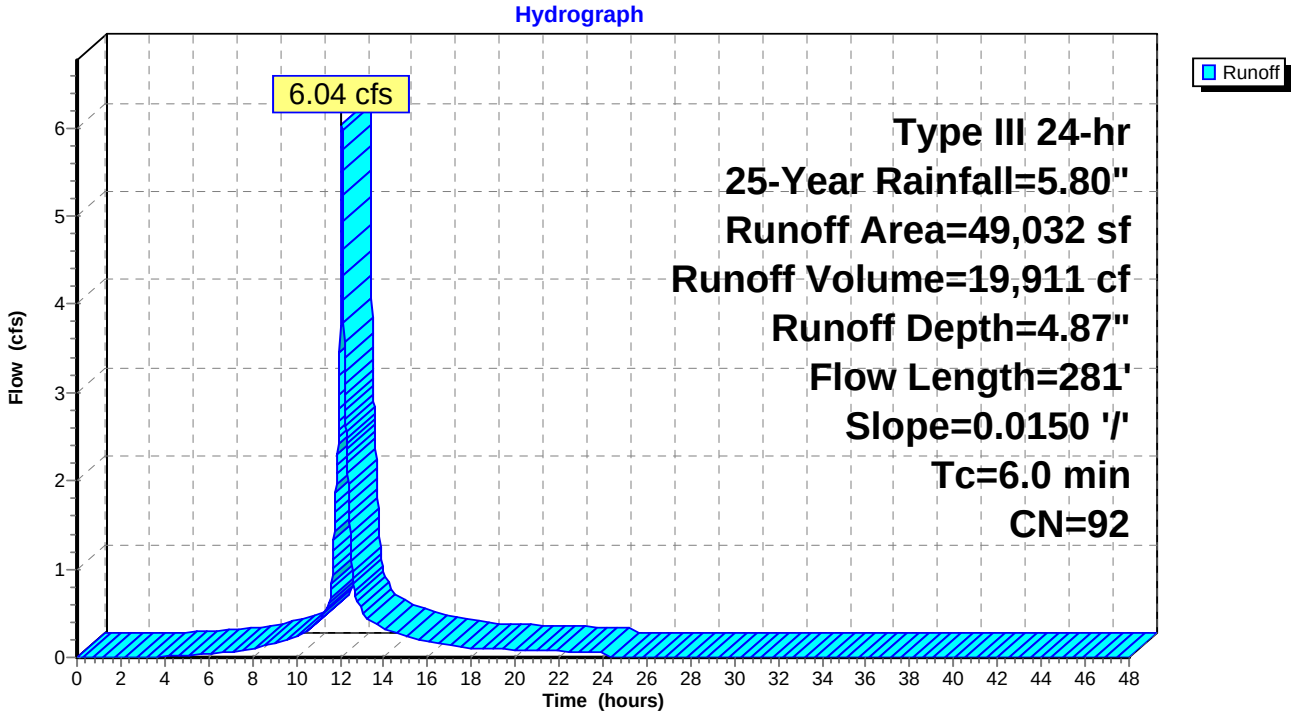
Runoff = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,586	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,032	92	Weighted Average
8,446		17.23% Pervious Area
40,586		82.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S:



Summary for Subcatchment 6S:

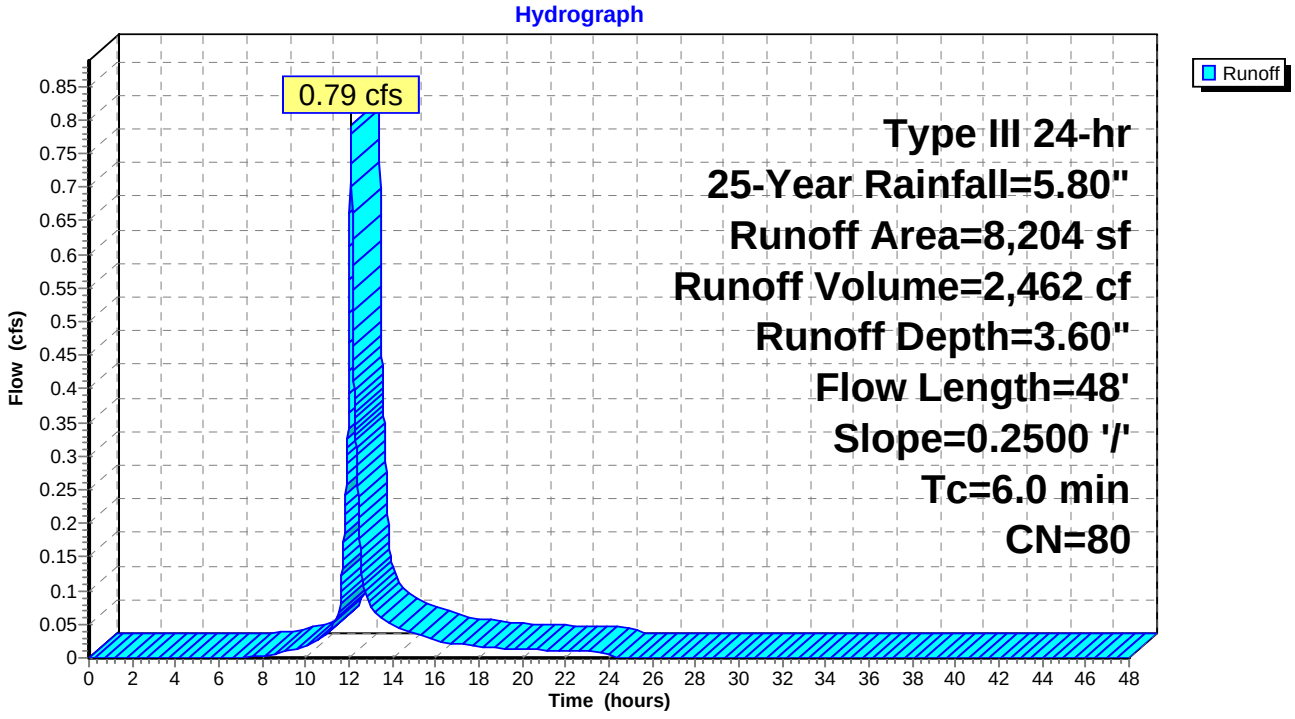
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,462 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
3,041	61	>75% Grass cover, Good, HSG B
1,992	80	>75% Grass cover, Good, HSG D
3,171	98	Water Surface, HSG D
8,204	80	Weighted Average
5,033		61.35% Pervious Area
3,171		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	48	0.2500	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
4.0					**Direct Entry,**
6.0	48	Total			

Subcatchment 6S:



Summary for Subcatchment 7S:

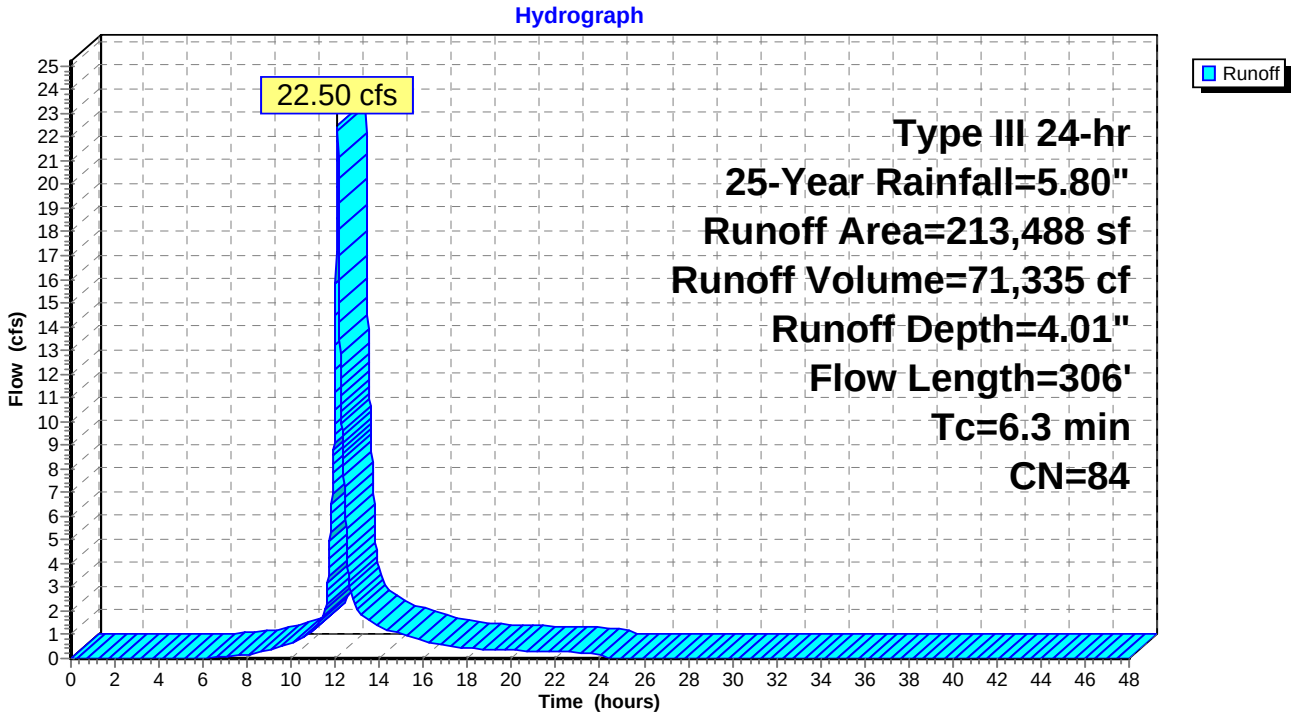
Runoff = 22.50 cfs @ 12.09 hrs, Volume= 71,335 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
45,283	61	>75% Grass cover, Good, HSG B
78,671	80	>75% Grass cover, Good, HSG D
7,169	98	Water Surface, HSG B
81,408	98	Water Surface, HSG D
957	98	Roofs, HSG B
213,488	84	Weighted Average
123,954		58.06% Pervious Area
89,534		41.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.2	44	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	191	0.0100	4.15	45.69	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=1.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
6.3	306	Total			

Subcatchment 7S:



Summary for Subcatchment 8S:

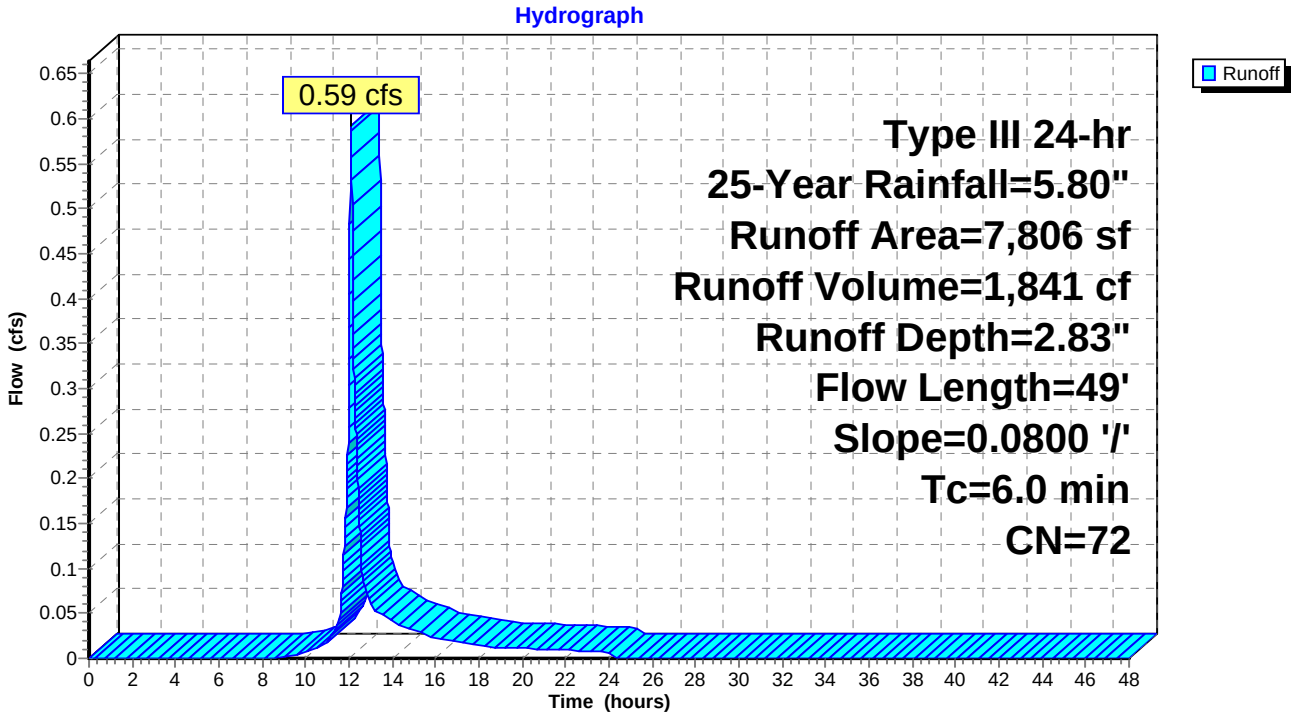
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S:



Summary for Subcatchment 9S:

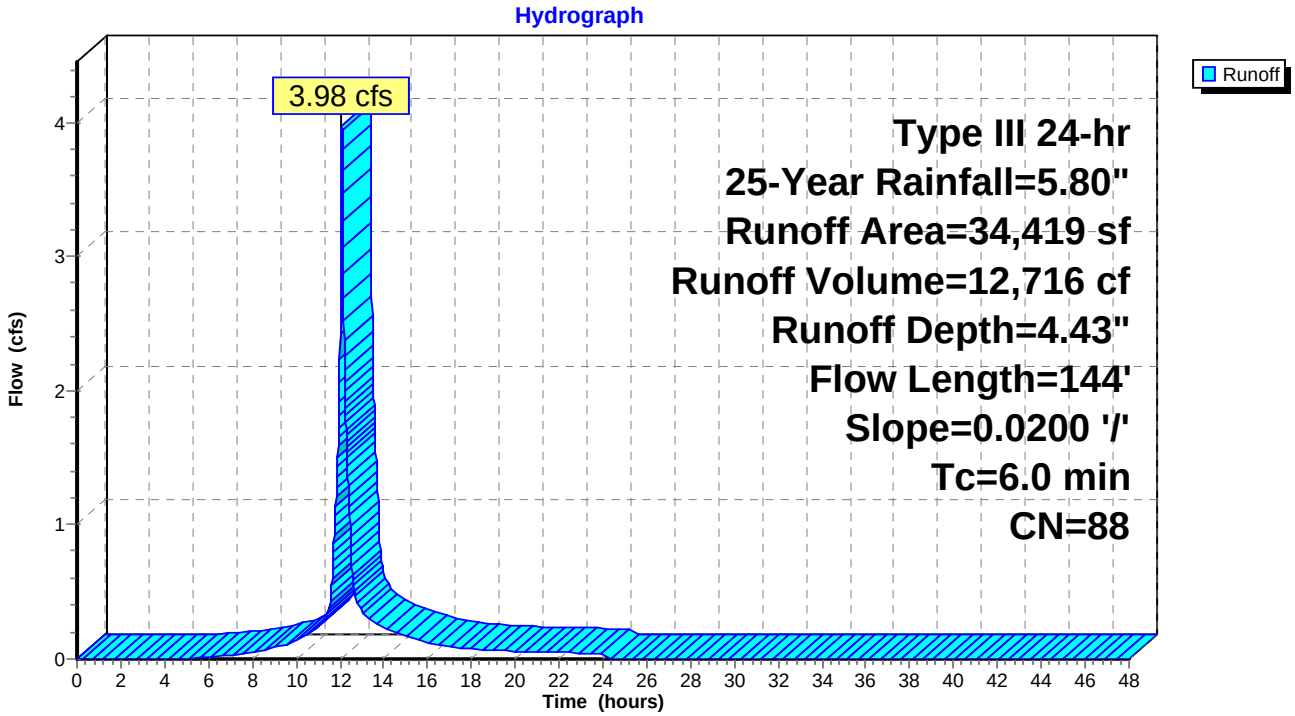
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 9S:



Summary for Subcatchment OSE: Off Site Flow East of PKWY

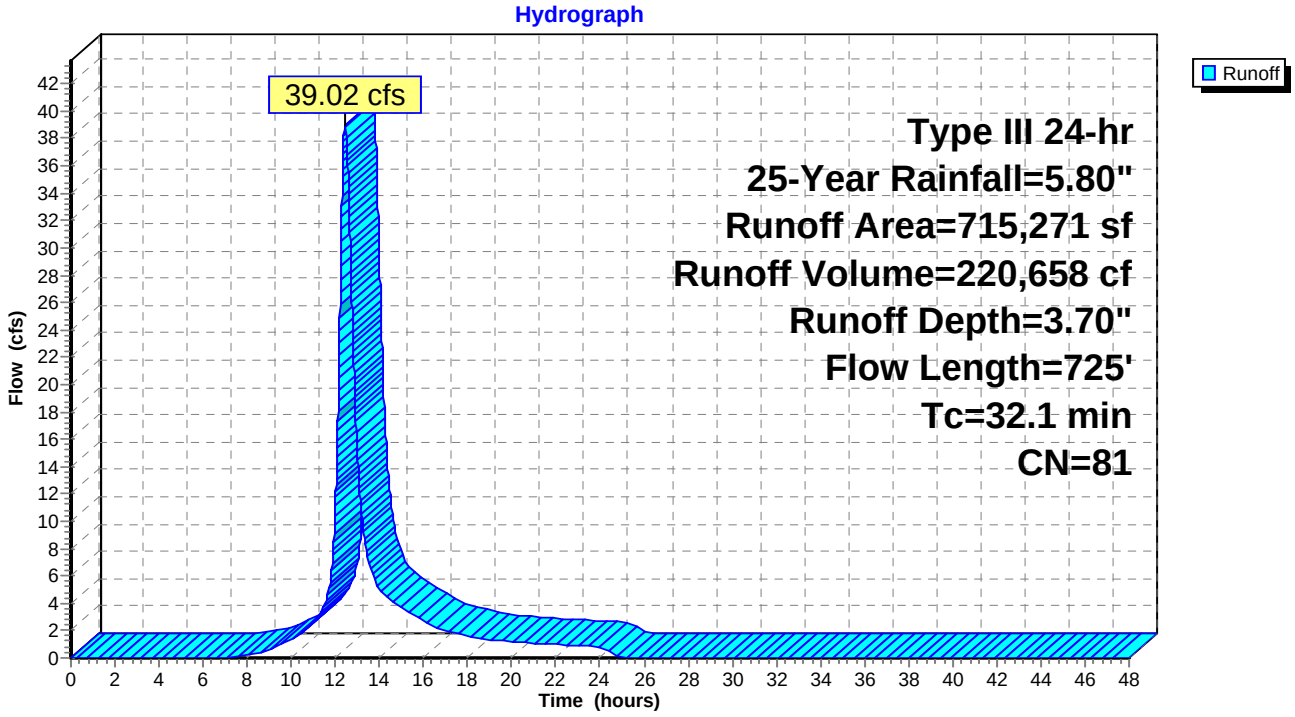
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

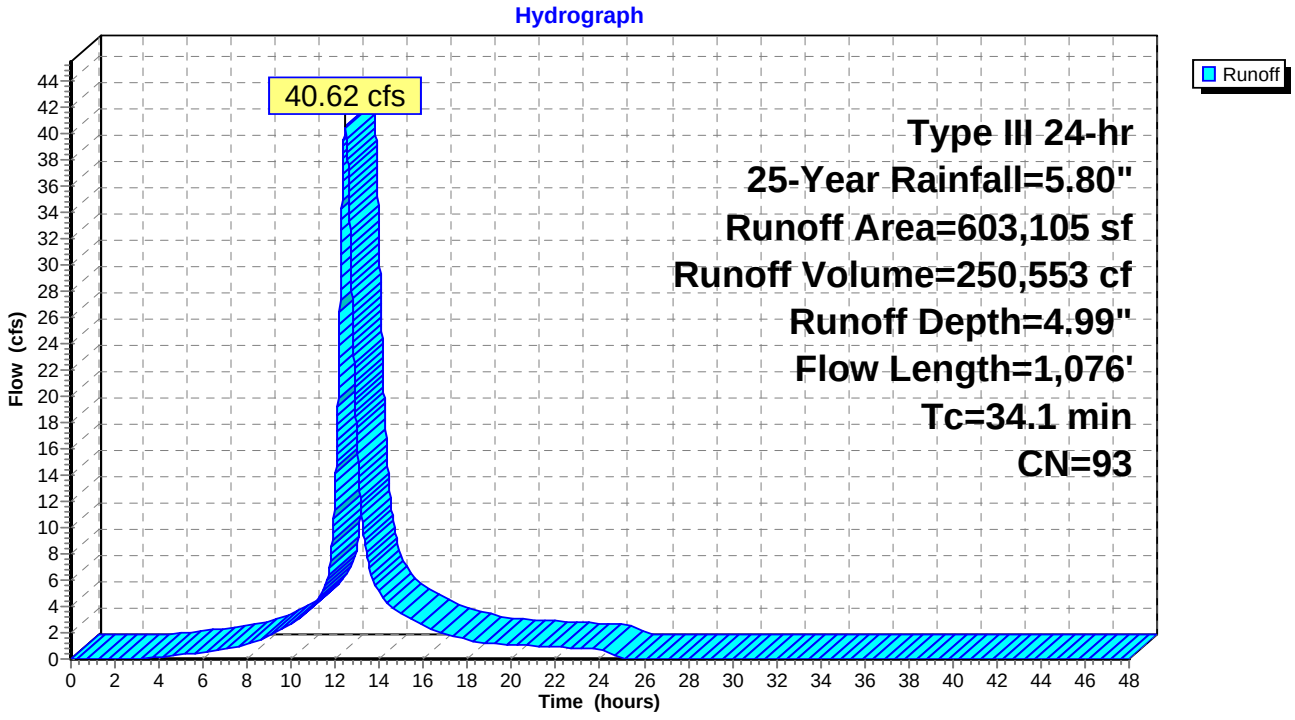
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.15" for 25-Year event
Inflow = 46.36 cfs @ 12.50 hrs, Volume= 247,405 cf
Outflow = 46.33 cfs @ 12.52 hrs, Volume= 246,689 cf, Atten= 0%, Lag= 0.8 min
Primary = 46.33 cfs @ 12.52 hrs, Volume= 246,689 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.57' @ 12.52 hrs Surf.Area= 2,580 sf Storage= 3,623 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 5.3 min calculated for 246,689 cf (100% of inflow)
Center-of-Mass det. time= 3.3 min (832.8 - 829.5)

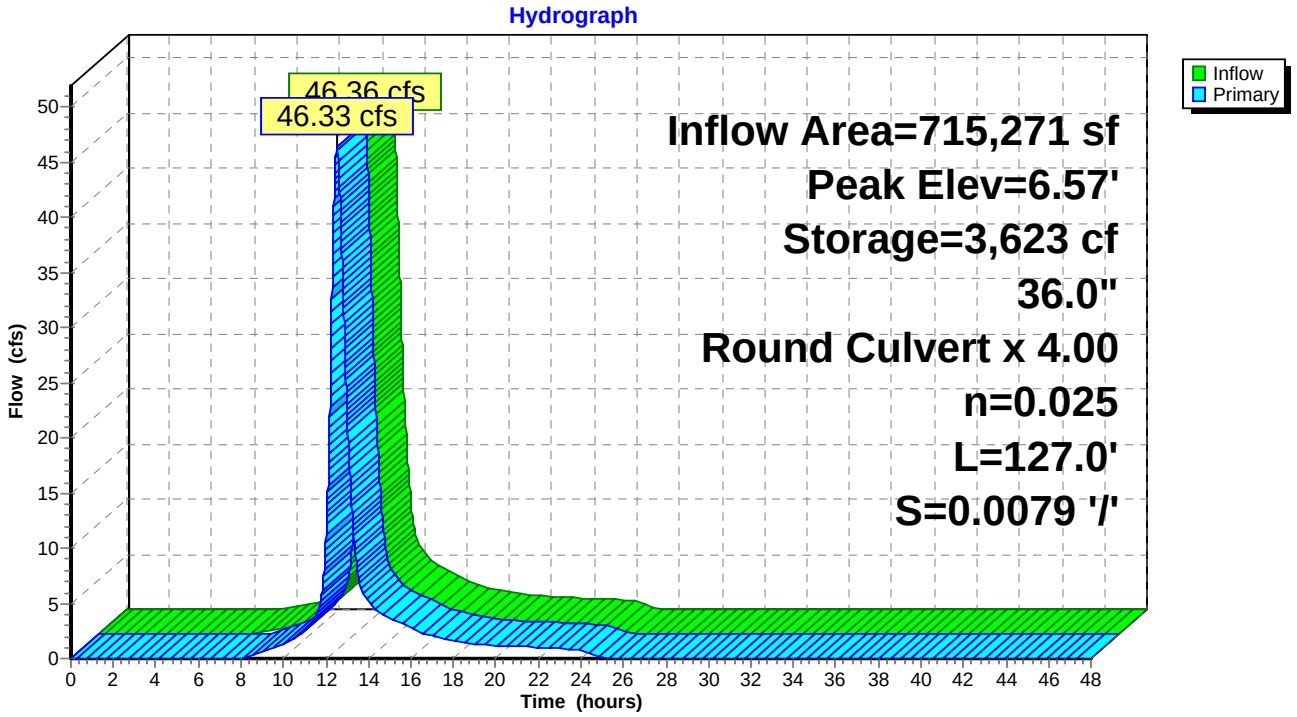
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=46.32 cfs @ 12.52 hrs HW=6.57' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 46.32 cfs @ 3.98 fps)

Pond 1P: Existing (4)-36" Culverts



Summary for Pond 2P: Existing Wet Pond

Inflow Area = 155,339 sf, 87.13% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 60,344 cf
Outflow = 10.73 cfs @ 12.14 hrs, Volume= 55,992 cf, Atten= 10%, Lag= 3.4 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 51,984 cf
Secondary = 3.95 cfs @ 12.14 hrs, Volume= 4,008 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.95' @ 12.14 hrs Surf.Area= 3,953 sf Storage= 10,235 cf
Flood Elev= 16.00' Surf.Area= 4,707 sf Storage= 14,792 cf

Plug-Flow detention time= 89.8 min calculated for 55,980 cf (93% of inflow)
Center-of-Mass det. time= 50.8 min (822.8 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	14,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

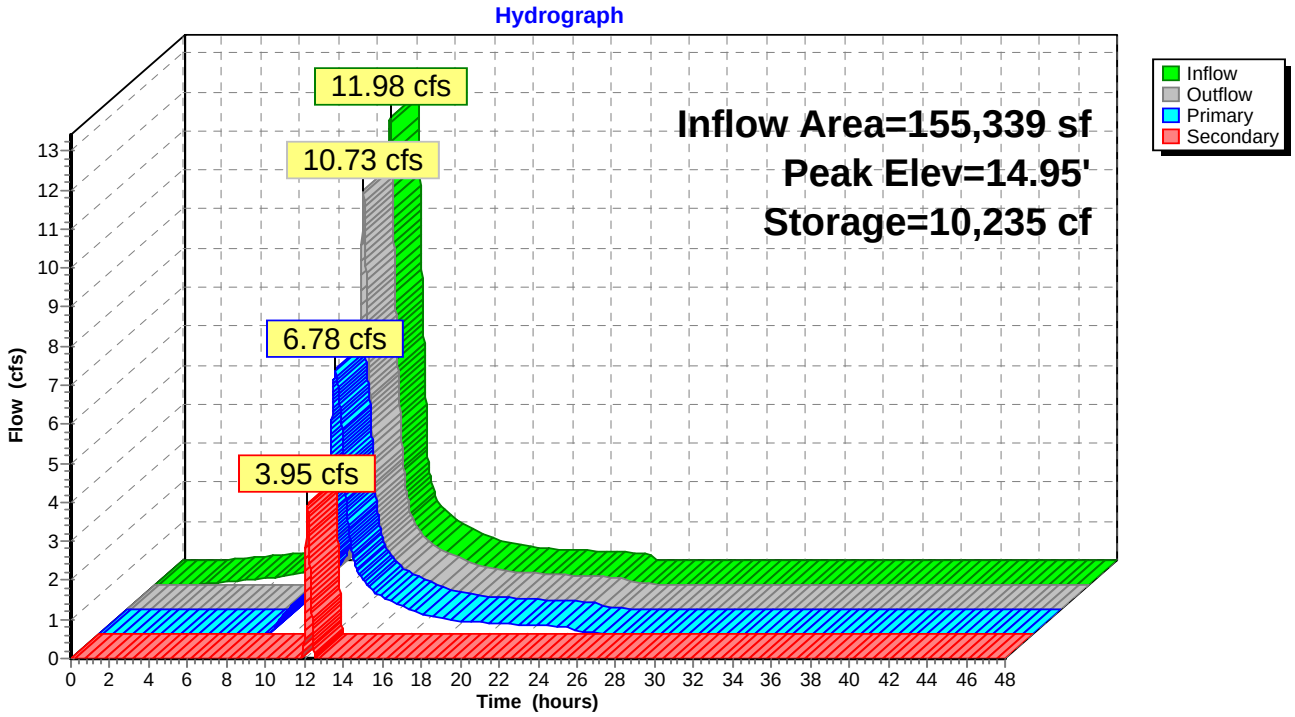
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
9.00	38	0	0
10.00	287	163	163
11.00	765	526	689
12.00	1,474	1,120	1,808
13.00	2,613	2,044	3,852
14.00	3,290	2,952	6,803
15.00	3,990	3,640	10,443
16.00	4,707	4,349	14,792

Device	Routing	Invert	Outlet Devices
#1	Primary	8.16'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.16' / 7.78' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	13.18'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.18' / 12.96' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Secondary	14.50'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=14.95' TW=6.93' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.78 cfs of 28.73 cfs potential flow)
└**2=Culvert** (Inlet Controls 6.78 cfs @ 3.83 fps)

Secondary OutFlow Max=3.95 cfs @ 12.14 hrs HW=14.95' TW=6.93' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.95 cfs @ 1.77 fps)

Pond 2P: Existing Wet Pond



Summary for Pond 3P: DMH 15038

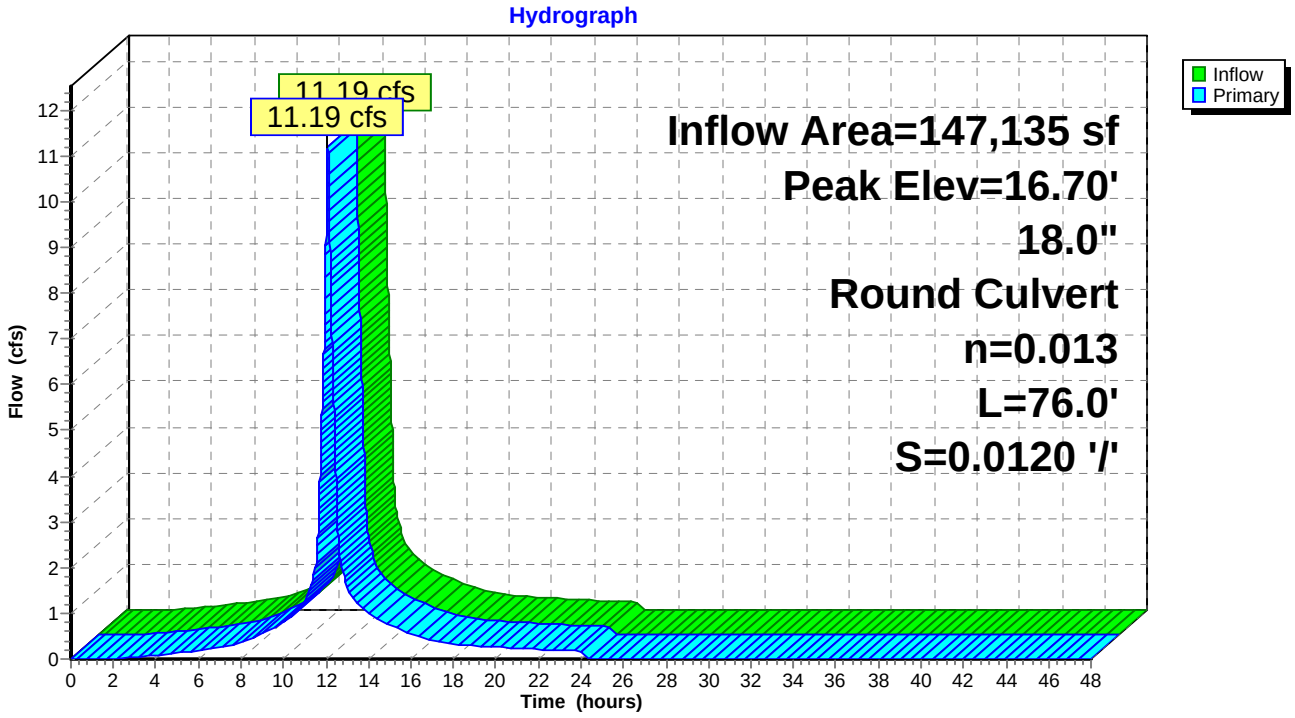
Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Outflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.70' @ 12.09 hrs
Flood Elev= 21.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.81'	**18.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.81' / 12.90' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.18 cfs @ 12.08 hrs HW=16.69' TW=14.89' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 6.32 fps)

Pond 3P: DMH 15038



Summary for Pond 4P: CBR 15036

Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.92" for 25-Year event
Inflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf
Outflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Secondary = 5.05 cfs @ 12.08 hrs, Volume= 2,410 cf

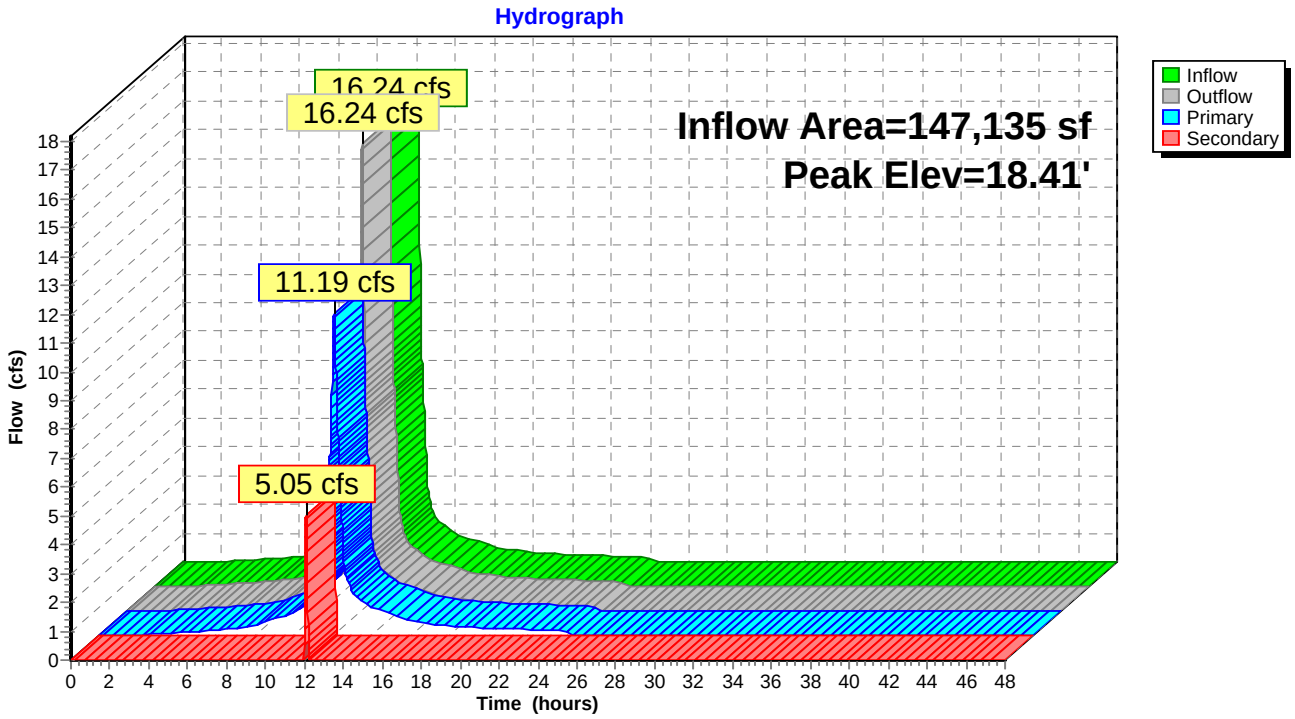
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.41' @ 12.08 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 13.91' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	16.61'	**15.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.61' / 10.60' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=11.14 cfs @ 12.08 hrs HW=18.40' TW=16.69' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 11.14 cfs @ 6.30 fps)

Secondary OutFlow Max=5.03 cfs @ 12.08 hrs HW=18.40' TW=6.80' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 5.03 cfs @ 4.10 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

Inflow Area = 49,032 sf, 82.77% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.08 hrs, Volume= 17,177 cf
Secondary = 2.38 cfs @ 12.08 hrs, Volume= 2,733 cf

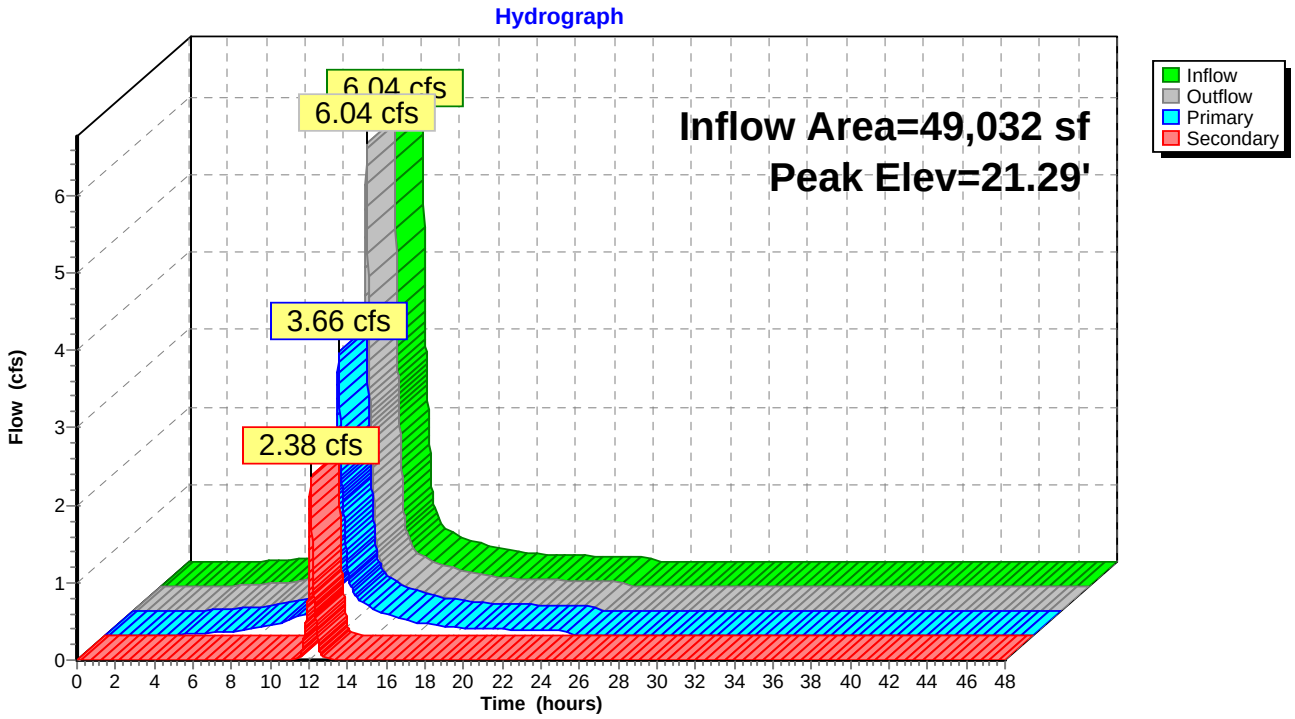
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.29' @ 12.08 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	20.65'	**24.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.65' / 13.39' S= 0.1037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.08 hrs HW=21.29' TW=18.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.66 cfs @ 3.25 fps)

Secondary OutFlow Max=2.37 cfs @ 12.08 hrs HW=21.29' TW=6.80' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.37 cfs @ 2.73 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

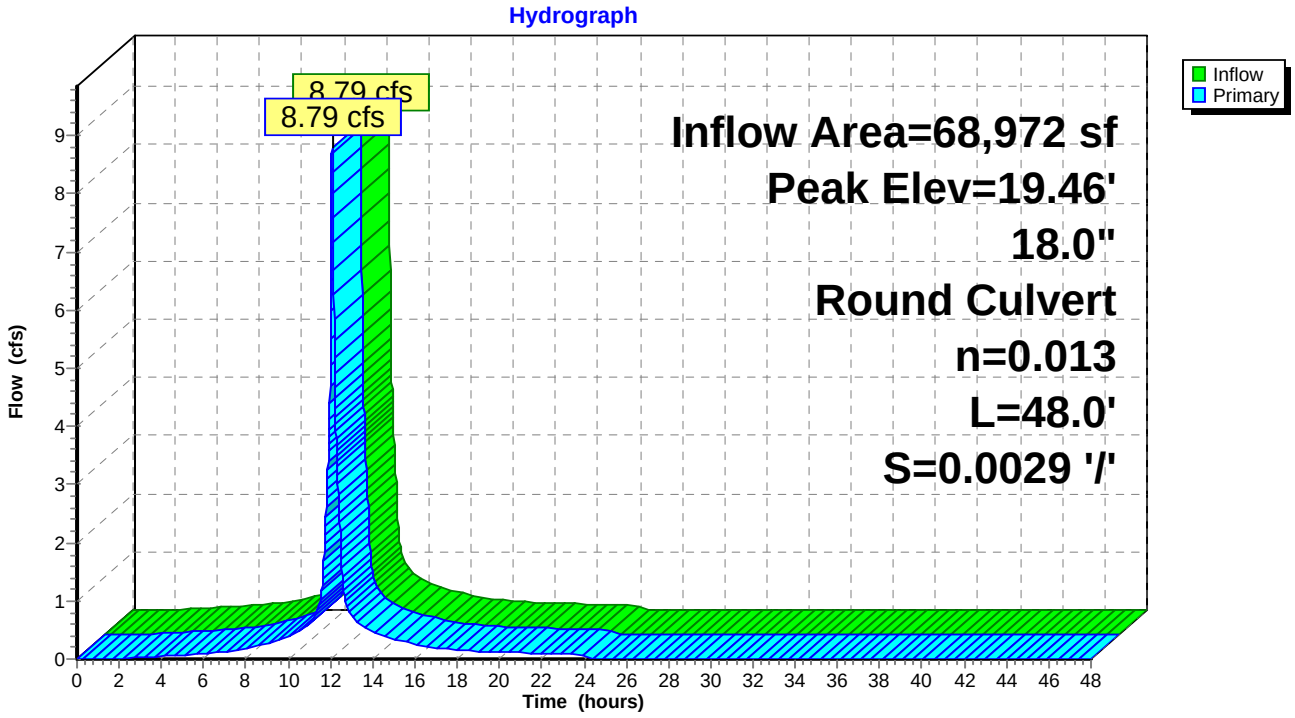
Inflow Area = 68,972 sf, 91.97% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.46' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.71 cfs @ 12.08 hrs HW=19.45' TW=18.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.71 cfs @ 4.93 fps)

Pond 6P: CBR 15040



Summary for Pond 7P: CB 15029

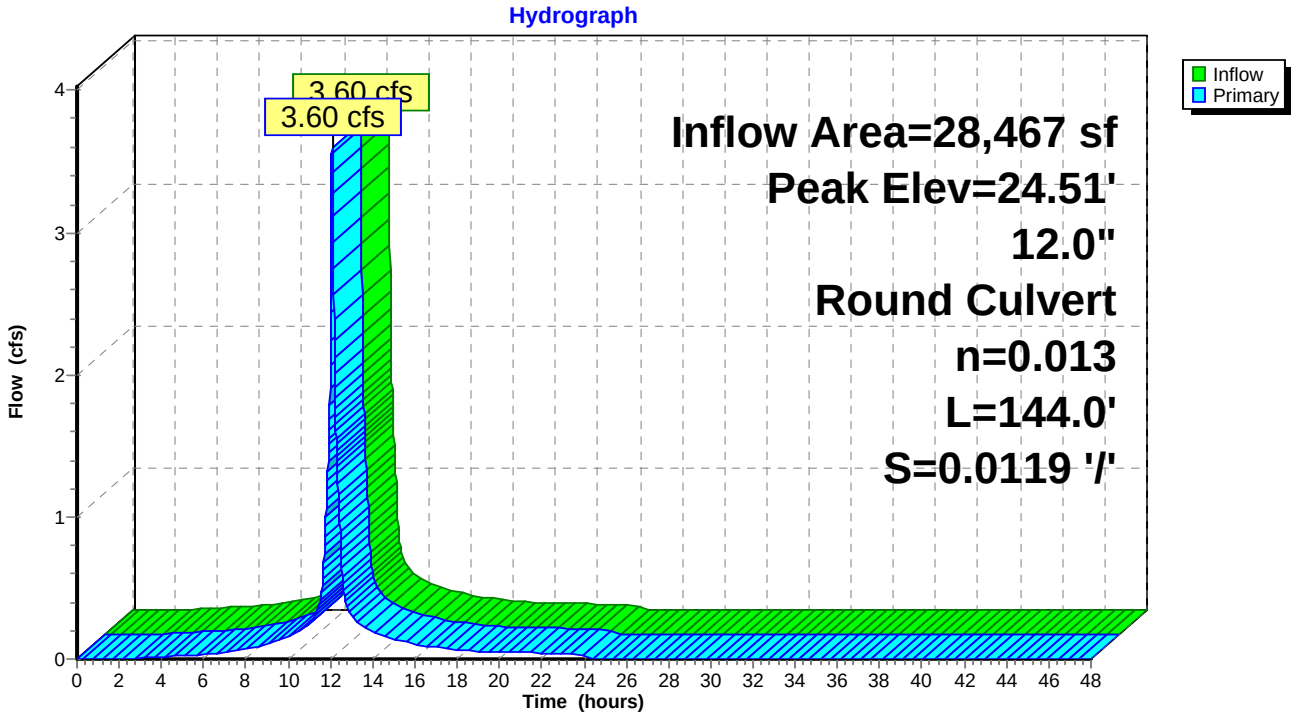
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.51' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.11'	**12.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.11' / 21.40' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.59 cfs @ 12.08 hrs HW=24.51' TW=20.01' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.59 cfs @ 4.57 fps)

Pond 7P: CB 15029



Summary for Pond 8P: CBR 15042

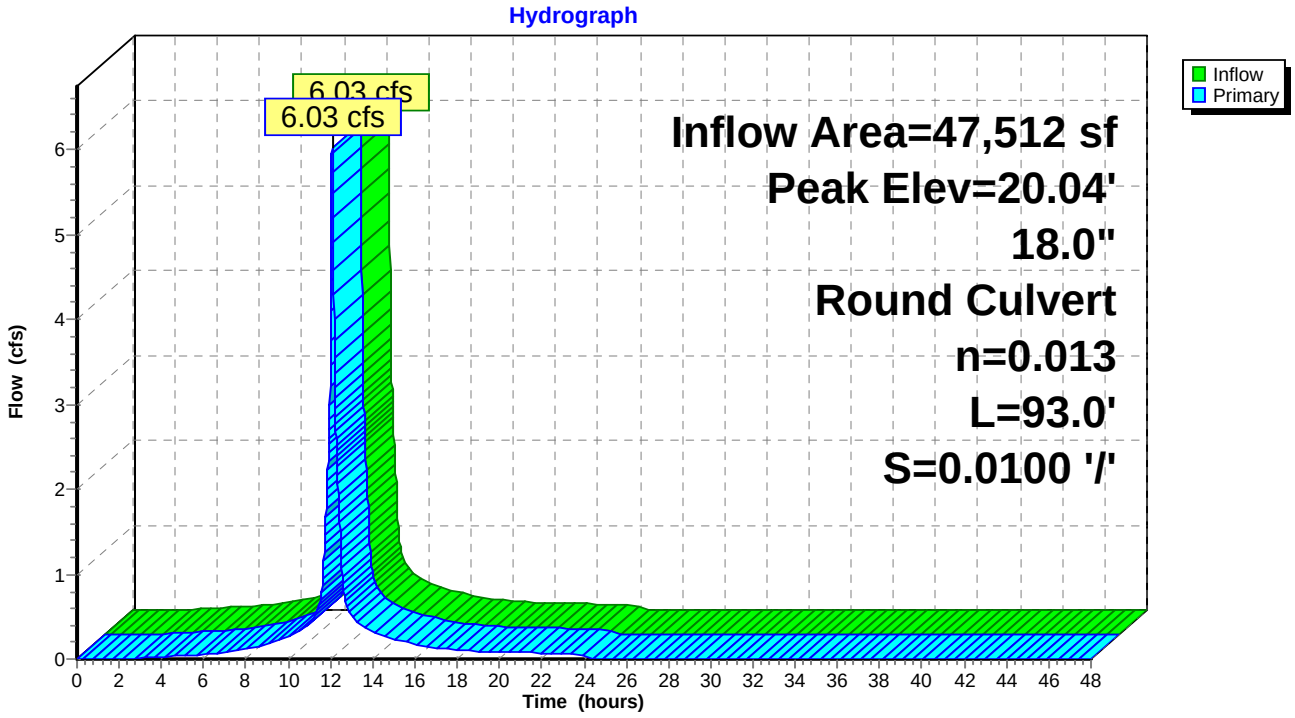
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.04' @ 12.09 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.94 cfs @ 12.08 hrs HW=20.01' TW=19.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.94 cfs @ 3.36 fps)

Pond 8P: CBR 15042



Summary for Pond 9P: DMH 10162

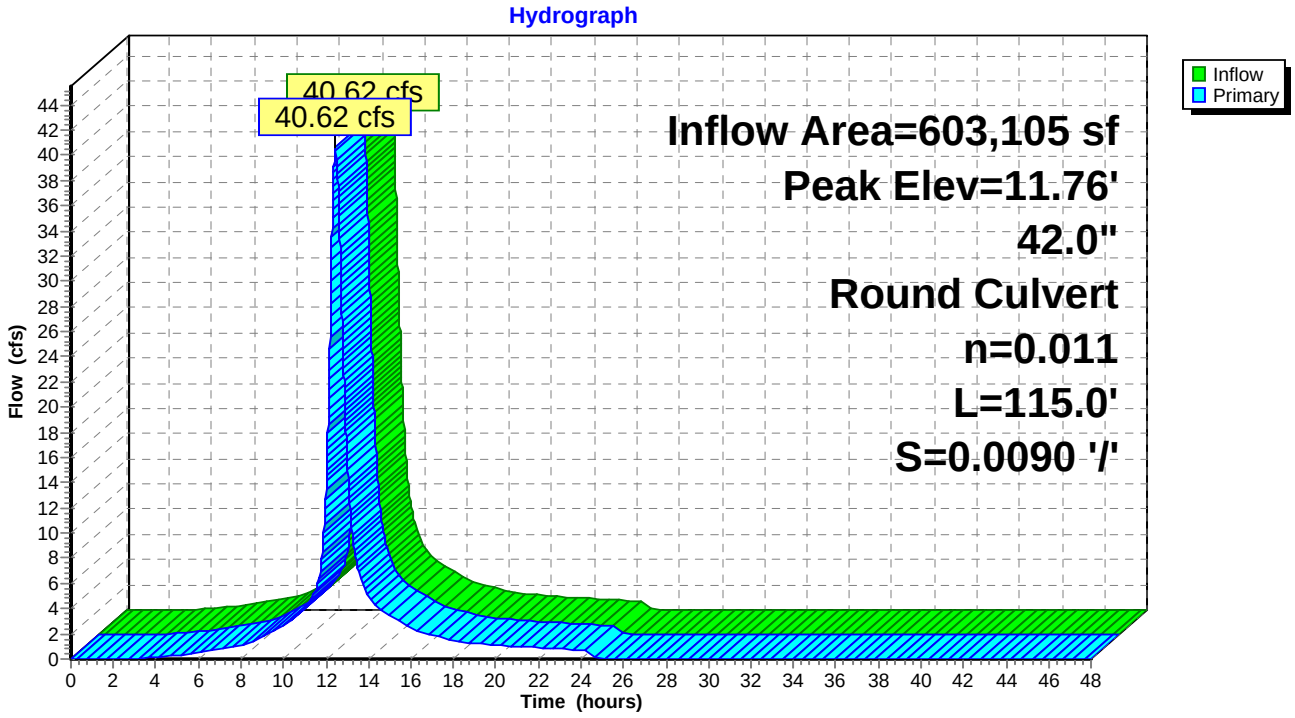
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.76' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 115.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.15' S= 0.0090 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=11.76' TW=7.36' (Dynamic Tailwater)
1=Culvert (Barrel Controls 40.61 cfs @ 7.44 fps)

Pond 9P: DMH 10162



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,351 sf, 76.79% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 62.32 cfs @ 12.10 hrs, Volume= 395,740 cf
Outflow = 38.30 cfs @ 12.68 hrs, Volume= 395,744 cf, Atten= 39%, Lag= 34.8 min
Primary = 27.79 cfs @ 12.68 hrs, Volume= 368,997 cf
Secondary = 10.51 cfs @ 12.68 hrs, Volume= 26,748 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.46' @ 12.68 hrs Surf.Area= 81,430 sf Storage= 75,208 cf
Flood Elev= 9.00' Surf.Area= 86,688 sf Storage= 120,546 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.7 min (820.6 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	120,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

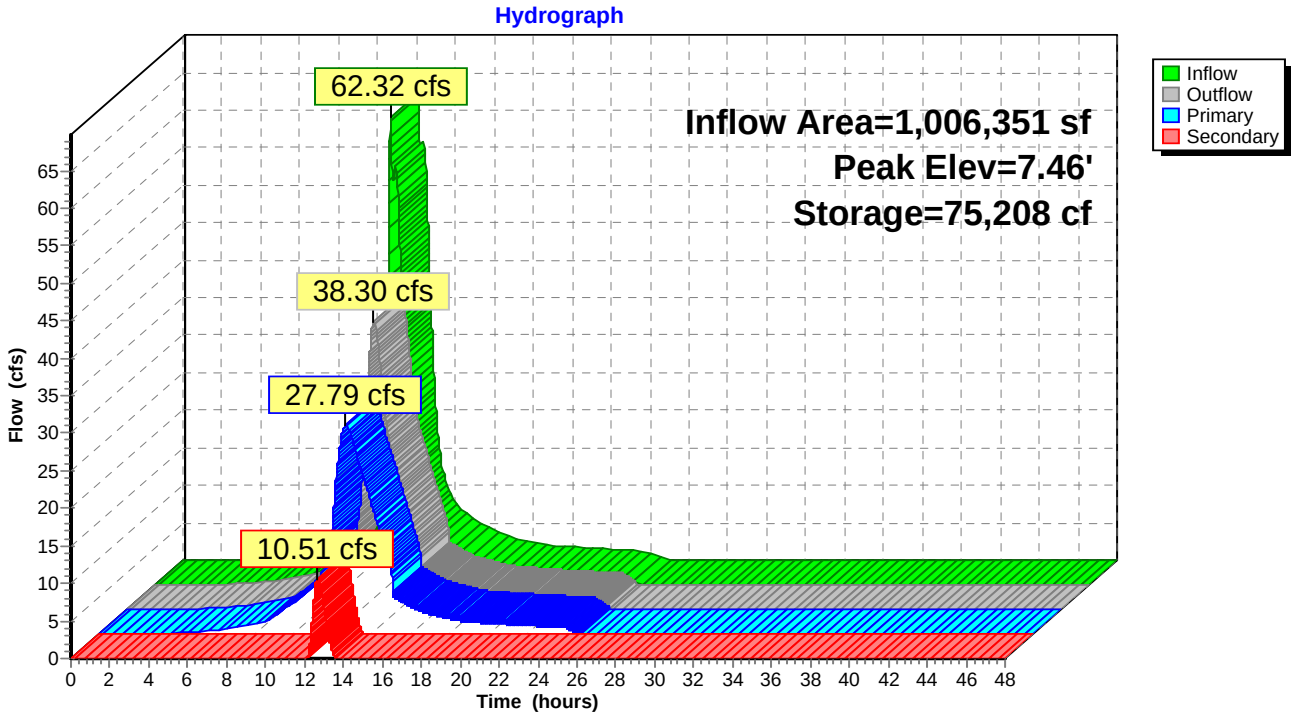
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	523	0	0
7.00	76,940	38,732	38,732
8.00	86,688	81,814	120,546

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=27.79 cfs @ 12.68 hrs HW=7.46' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.79 cfs @ 4.31 fps)

Secondary OutFlow Max=10.51 cfs @ 12.68 hrs HW=7.46' TW=6.45' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 10.51 cfs @ 1.75 fps)

Pond EX WTLND: Existing Wetland

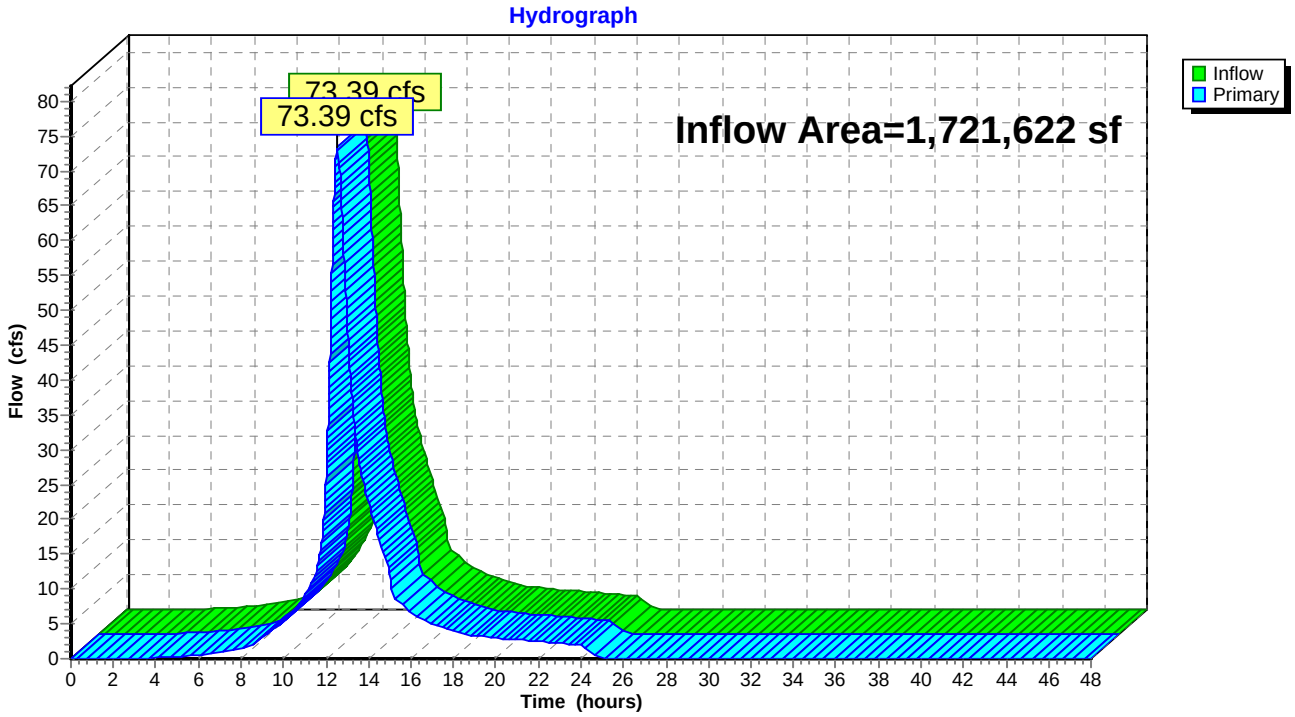


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,622 sf, 66.81% Impervious, Inflow Depth = 4.29" for 25-Year event
Inflow = 73.39 cfs @ 12.53 hrs, Volume= 615,685 cf
Primary = 73.39 cfs @ 12.53 hrs, Volume= 615,685 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

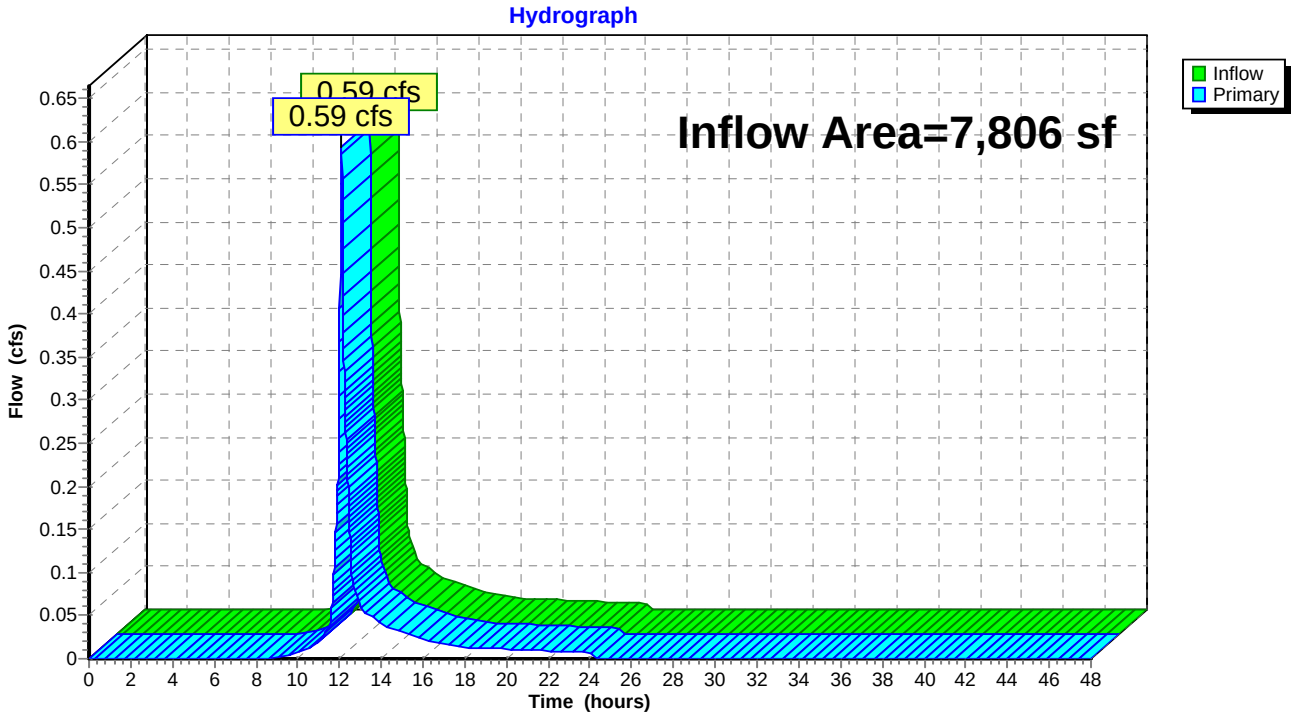


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

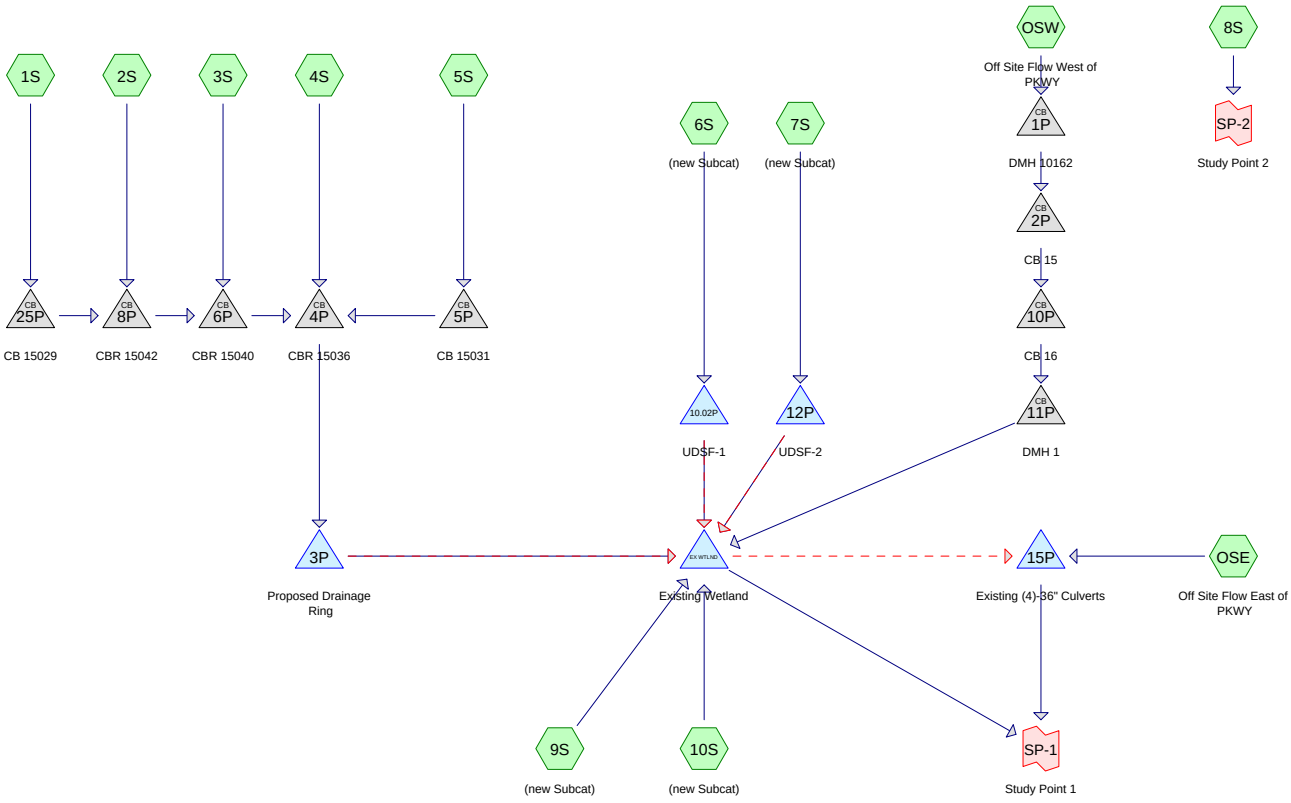
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment C

Preload-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Preload
Prepared by Sebago Techincs, Printed 6/20/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
399,539	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S, OSE)
60,585	80	>75% Grass cover, Good, HSG D (9S)
21,406	96	Gravel surface, HSG B (6S, 7S)
104,657	96	Gravel surface, HSG D (6S, 7S)
591,443	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 10S, OSE, OSW)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 9S, 10S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
1,729,428	**87**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S, 9S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.44 cfs 4,788 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.08 cfs 7,029 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.93 cfs 9,276 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=231' Tc=6.1 min CN=96 Runoff=3.68 cfs 12,252 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=2.55"
Flow Length=439' Tc=6.0 min CN=95 Runoff=4.76 cfs 15,564 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.24 cfs 7,365 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: DMH 10162 Peak Elev=11.28' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=19.88 cfs 118,098 cf

Pond 2P: CB 15 Peak Elev=10.58' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 3P: Proposed Drainage Ring Peak Elev=16.45' Storage=5,354 cf Inflow=9.49 cfs 30,941 cf
Outflow=7.97 cfs 30,918 cf

Pond 4P: CBR 15036 Peak Elev=18.06' Inflow=9.49 cfs 30,941 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=9.49 cfs 30,941 cf

Pond 5P: CB 15031 Peak Elev=21.18' Inflow=2.93 cfs 9,276 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.93 cfs 9,276 cf

Pond 6P: CBR 15040 Peak Elev=18.29' Inflow=4.48 cfs 14,635 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.48 cfs 14,635 cf

Pond 8P: CBR 15042 Peak Elev=18.46' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 10.02P: UDSF-1 Peak Elev=14.33' Storage=4,875 cf Inflow=3.68 cfs 12,252 cf
Primary=0.33 cfs 12,252 cf Secondary=0.00 cfs 0 cf Outflow=0.33 cfs 12,252 cf

Pond 10P: CB 16 Peak Elev=9.65' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 11P: DMH 1 Peak Elev=8.19' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 12P: UDSF-2 Peak Elev=14.28' Storage=6,293 cf Inflow=4.76 cfs 15,564 cf
Primary=0.44 cfs 15,564 cf Secondary=0.00 cfs 0 cf Outflow=0.44 cfs 15,564 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=5.84' Storage=2,140 cf Inflow=16.49 cfs 84,889 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=16.44 cfs 84,172 cf

Pond 25P: CB 15029 Peak Elev=23.55' Inflow=1.80 cfs 5,805 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.80 cfs 5,805 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.16' Storage=2,819 cf Inflow=25.16 cfs 189,669 cf
Primary=23.03 cfs 187,679 cf Secondary=1.97 cfs 1,988 cf Outflow=25.01 cfs 189,667 cf

Link SP-1: Study Point 1 Inflow=39.43 cfs 271,851 cf
Primary=39.43 cfs 271,851 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 273,157 cf Average Runoff Depth = 1.90"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.20 cfs 7,470 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.13 cfs 10,830 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.69 cfs 15,212 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=4.14"
Flow Length=231' Tc=6.1 min CN=96 Runoff=5.60 cfs 19,114 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=4.02"
Flow Length=439' Tc=6.0 min CN=95 Runoff=7.33 cfs 24,587 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.97 cfs 15,526 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: DMH 10162 Peak Elev=12.08' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=31.45 cfs 191,269 cf

Pond 2P: CB 15 Peak Elev=11.36' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 3P: Proposed Drainage Ring Peak Elev=17.61' Storage=7,581 cf Inflow=14.72 cfs 49,183 cf
Outflow=9.43 cfs 49,161 cf

Pond 4P: CBR 15036 Peak Elev=21.21' Inflow=14.72 cfs 49,183 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=14.72 cfs 49,183 cf

Pond 5P: CB 15031 Peak Elev=21.80' Inflow=4.69 cfs 15,212 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.69 cfs 15,212 cf

Pond 6P: CBR 15040 Peak Elev=21.75' Inflow=6.90 cfs 23,140 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.90 cfs 23,140 cf

Pond 8P: CBR 15042 Peak Elev=22.17' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 10.02P: UDSF-1 Peak Elev=15.11' Storage=7,896 cf Inflow=5.60 cfs 19,114 cf
Primary=0.77 cfs 19,114 cf Secondary=0.00 cfs 0 cf Outflow=0.77 cfs 19,114 cf

Pond 10P: CB 16 Peak Elev=10.34' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 11P: DMH 1 Peak Elev=8.80' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 12P: UDSF-2 Peak Elev=15.10' Storage=10,450 cf Inflow=7.33 cfs 24,587 cf
Primary=0.82 cfs 24,587 cf Secondary=0.00 cfs 0 cf Outflow=0.82 cfs 24,587 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=6.46' Storage=3,346 cf Inflow=41.20 cfs 179,604 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=41.08 cfs 178,887 cf

Pond 25P: CB 15029 Peak Elev=23.79' Inflow=2.80 cfs 9,284 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.80 cfs 9,284 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.54' Storage=4,522 cf Inflow=42.63 cfs 309,094 cf
Primary=28.88 cfs 286,533 cf Secondary=13.55 cfs 22,558 cf Outflow=42.43 cfs 309,091 cf

Link SP-1: Study Point 1 Inflow=69.89 cfs 465,420 cf
Primary=69.89 cfs 465,420 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 467,396 cf Average Runoff Depth = 3.24"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.79 cfs 9,626 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.97 cfs 13,879 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.08 cfs 20,039 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=5.33"
Flow Length=231' Tc=6.1 min CN=96 Runoff=7.12 cfs 24,629 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=5.21"
Flow Length=439' Tc=6.0 min CN=95 Runoff=9.36 cfs 31,855 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.38 cfs 22,858 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: DMH 10162 Peak Elev=12.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=40.62 cfs 250,553 cf

Pond 2P: CB 15 Peak Elev=12.12' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 3P: Proposed Drainage Ring Peak Elev=18.76' Storage=9,759 cf Inflow=18.87 cfs 63,912 cf
Outflow=10.67 cfs 63,890 cf

Pond 4P: CBR 15036 Peak Elev=24.56' Inflow=18.87 cfs 63,912 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=18.87 cfs 63,912 cf

Pond 5P: CB 15031 Peak Elev=25.18' Inflow=6.08 cfs 20,039 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.08 cfs 20,039 cf

Pond 6P: CBR 15040 Peak Elev=25.45' Inflow=8.82 cfs 29,994 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.82 cfs 29,994 cf

Pond 8P: CBR 15042 Peak Elev=26.15' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 10.02P: UDSF-1 Peak Elev=15.33' Storage=8,871 cf Inflow=7.12 cfs 24,629 cf
Primary=2.37 cfs 24,629 cf Secondary=0.00 cfs 0 cf Outflow=2.37 cfs 24,629 cf

Pond 10P: CB 16 Peak Elev=10.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 11P: DMH 1 Peak Elev=9.27' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 12P: UDSF-2 Peak Elev=15.37' Storage=11,917 cf Inflow=9.36 cfs 31,855 cf
Primary=2.79 cfs 31,855 cf Secondary=0.00 cfs 0 cf Outflow=2.79 cfs 31,855 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=6.94' Storage=4,668 cf Inflow=64.90 cfs 271,041 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=64.77 cfs 270,325 cf

Pond 25P: CB 15029 Peak Elev=26.70' Inflow=3.60 cfs 12,095 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.60 cfs 12,095 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.82' Storage=6,042 cf Inflow=58.56 cfs 406,501 cf
Primary=32.34 cfs 356,111 cf Secondary=25.93 cfs 50,384 cf Outflow=58.27 cfs 406,495 cf

Link SP-1: Study Point 1 Inflow=97.09 cfs 626,436 cf
Primary=97.09 cfs 626,436 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 629,022 cf Average Runoff Depth = 4.36"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Summary for Subcatchment 1S:

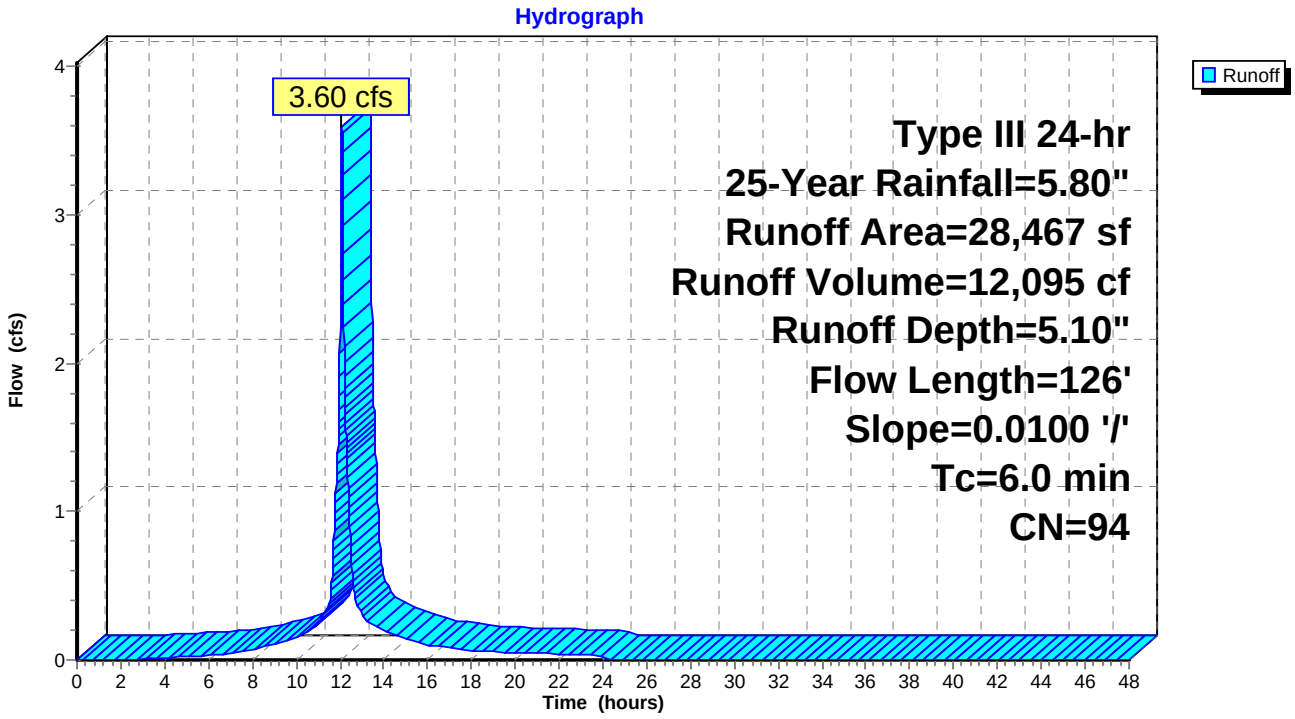
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

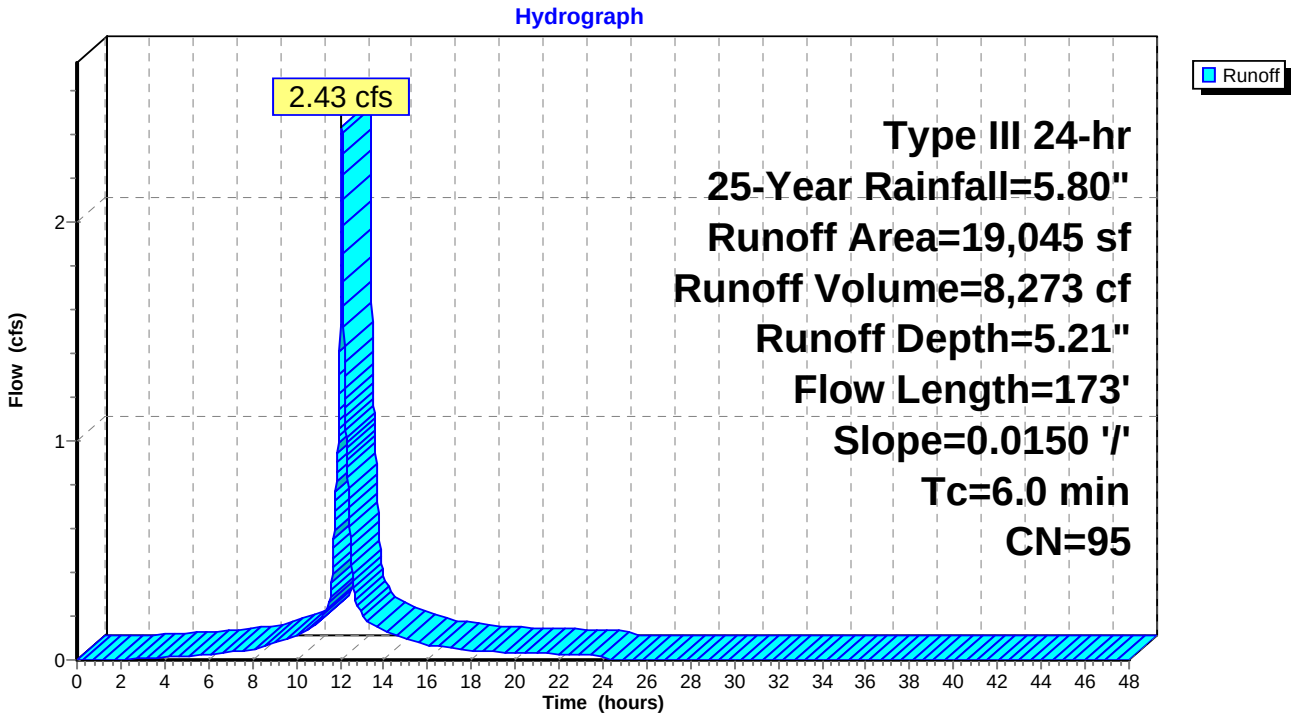
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

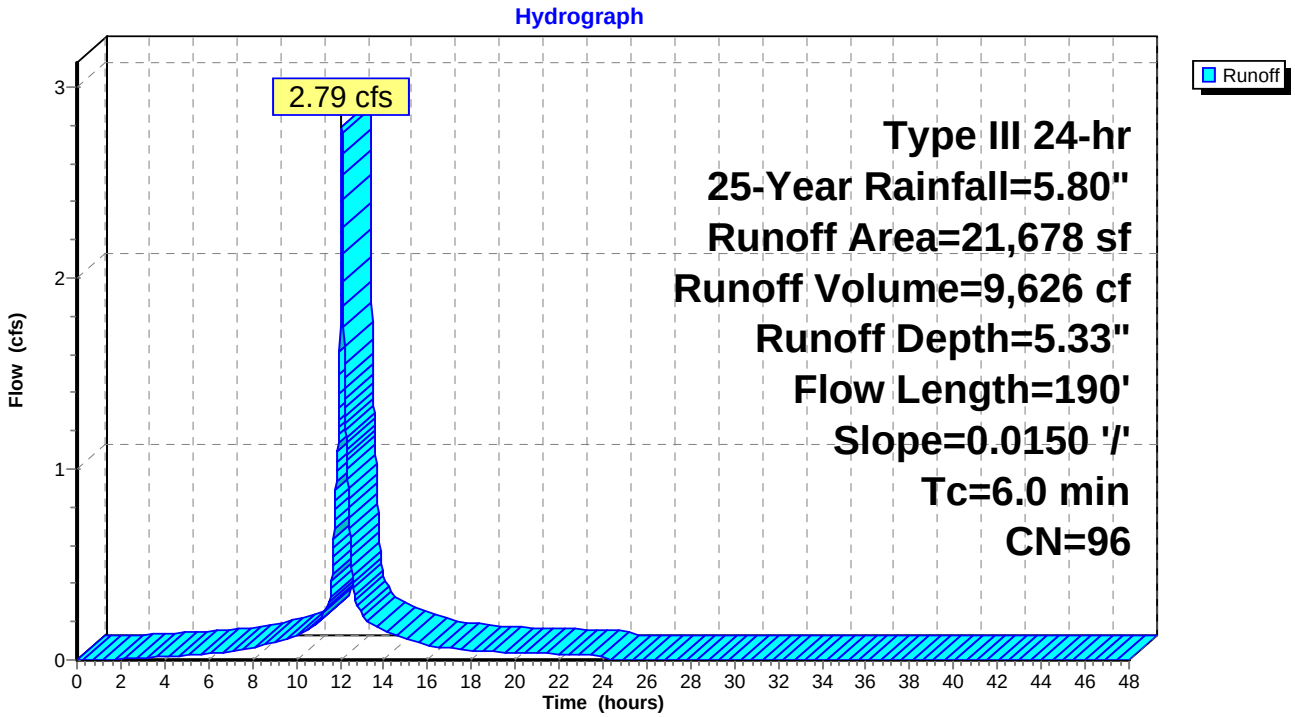
Runoff = 2.79 cfs @ 12.08 hrs, Volume= 9,626 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
324	98	Roofs, HSG B
20,004	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,678	96	Weighted Average
1,350		6.23% Pervious Area
20,328		93.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

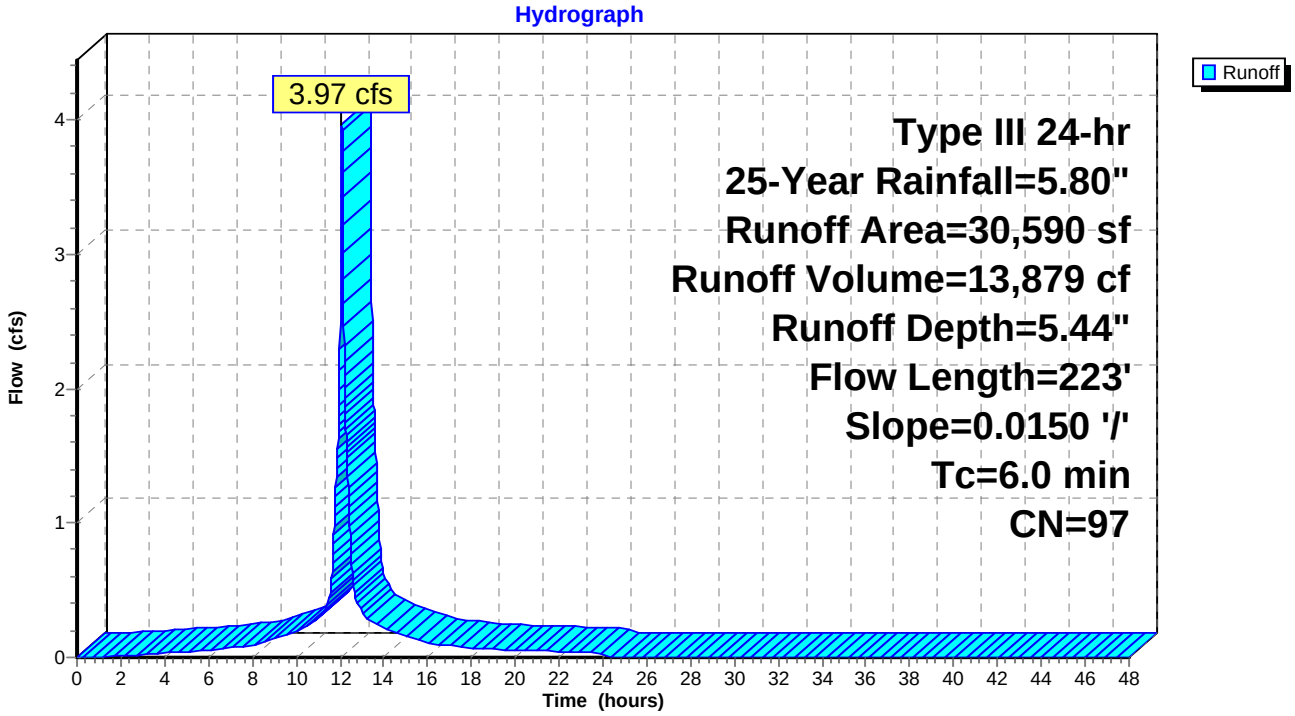
Runoff = 3.97 cfs @ 12.08 hrs, Volume= 13,879 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
29,610	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
30,590	97	Weighted Average
980		3.20% Pervious Area
29,610		96.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

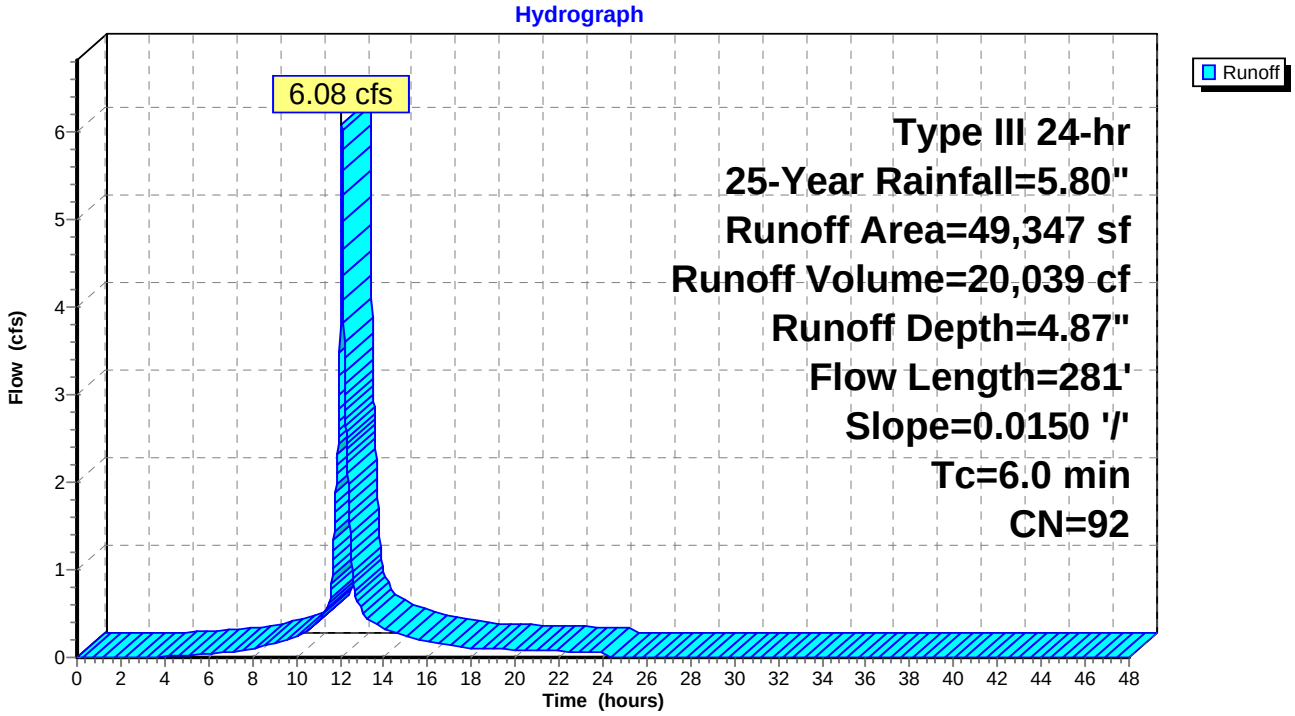
Runoff = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,901	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,347	92	Weighted Average
8,446		17.12% Pervious Area
40,901		82.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S:



Summary for Subcatchment 6S: (new Subcat)

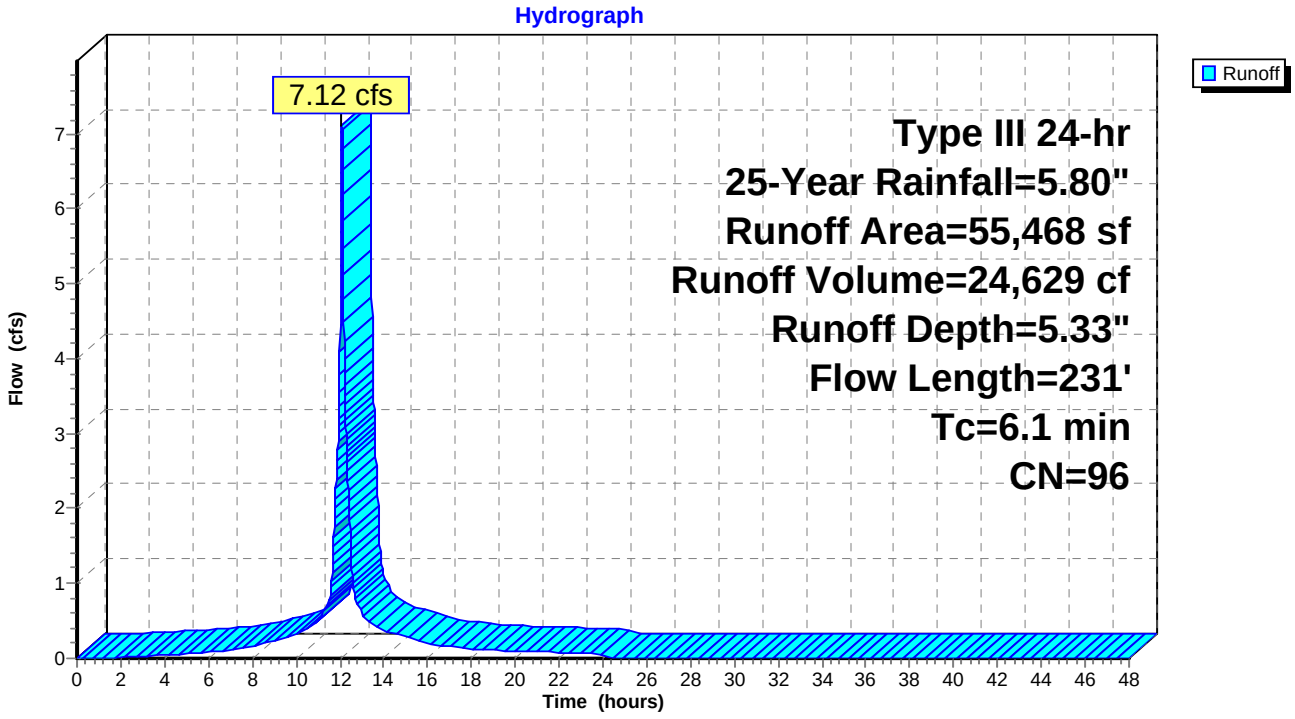
Runoff = 7.12 cfs @ 12.08 hrs, Volume= 24,629 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
7,858	96	Gravel surface, HSG B
47,610	96	Gravel surface, HSG D
55,468	96	Weighted Average
55,468		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

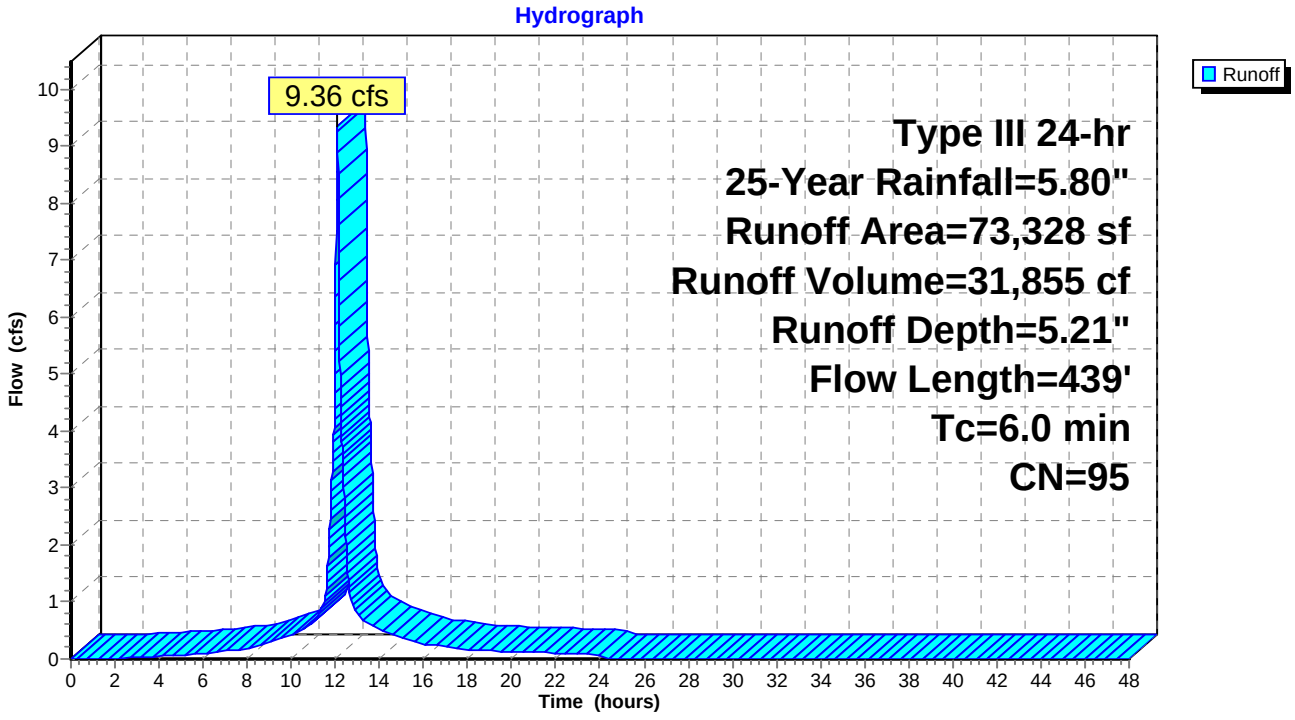
Runoff = 9.36 cfs @ 12.08 hrs, Volume= 31,855 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
13,548	96	Gravel surface, HSG B
57,047	96	Gravel surface, HSG D
2,733	61	>75% Grass cover, Good, HSG B
73,328	95	Weighted Average
73,328		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	265	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	74	0.0260	4.66	8.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 3.0 '/' Top.W=5.00' n= 0.025 Earth, clean & winding
2.6					**Direct Entry,**
6.0	439	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S:

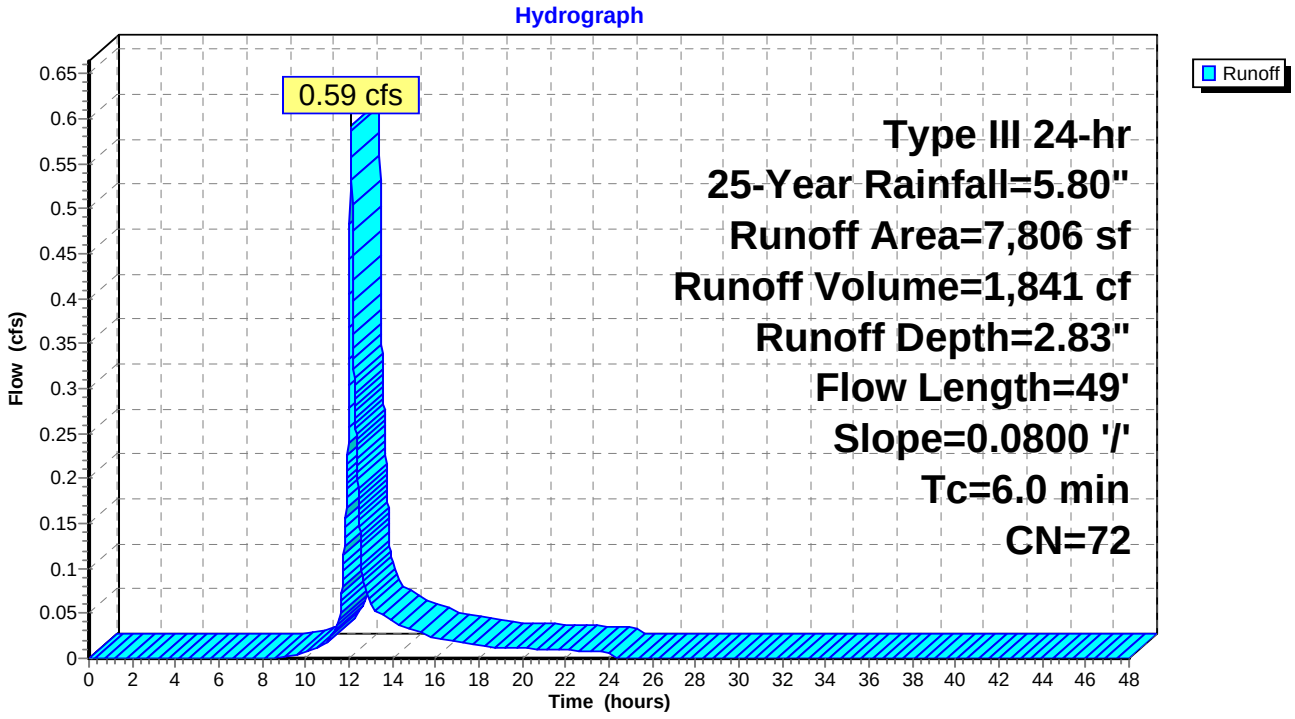
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S:



Summary for Subcatchment 9S: (new Subcat)

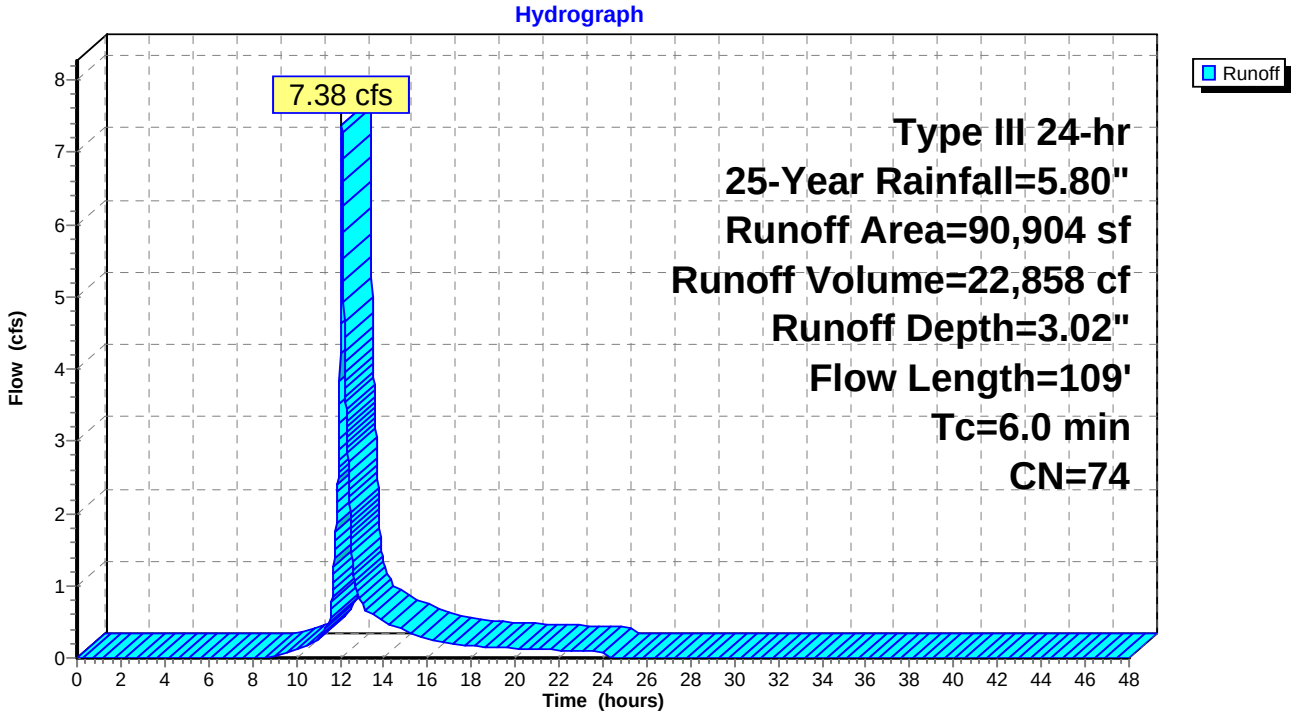
Runoff = 7.38 cfs @ 12.09 hrs, Volume= 22,858 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,585	80	>75% Grass cover, Good, HSG D
90,904	74	Weighted Average
90,012		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

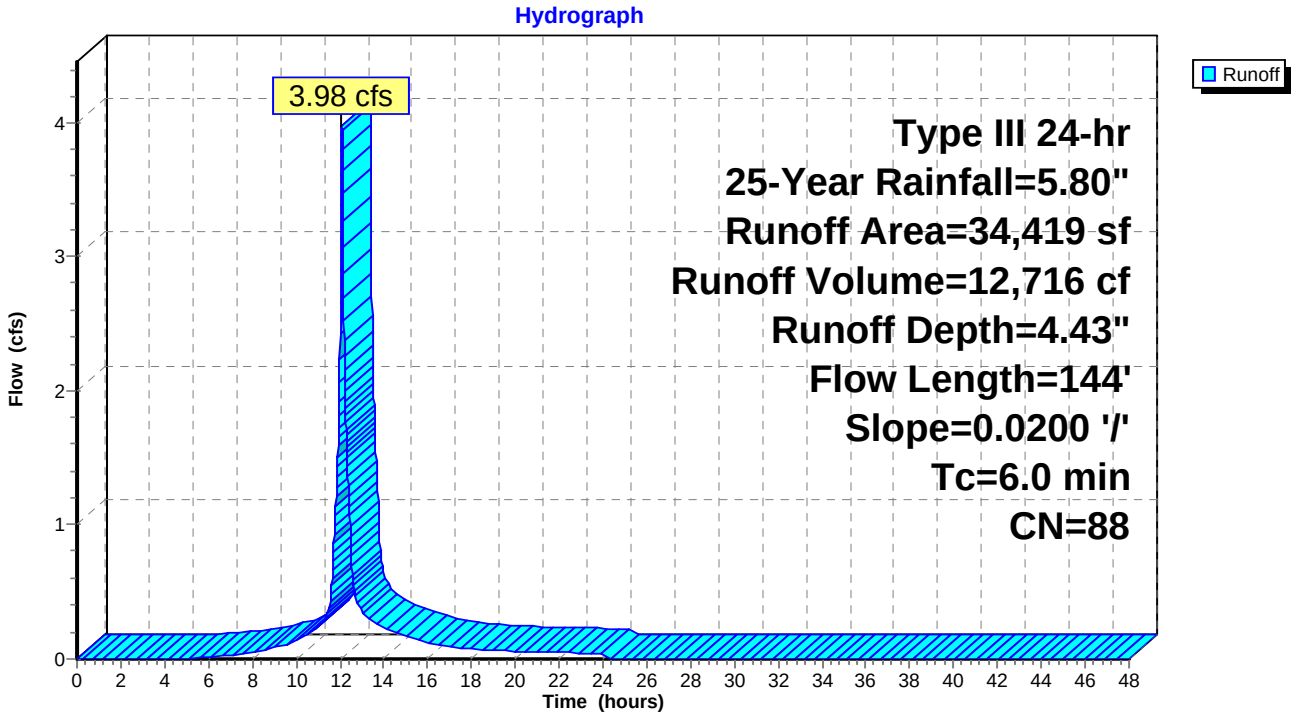
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment OSE: Off Site Flow East of PKWY

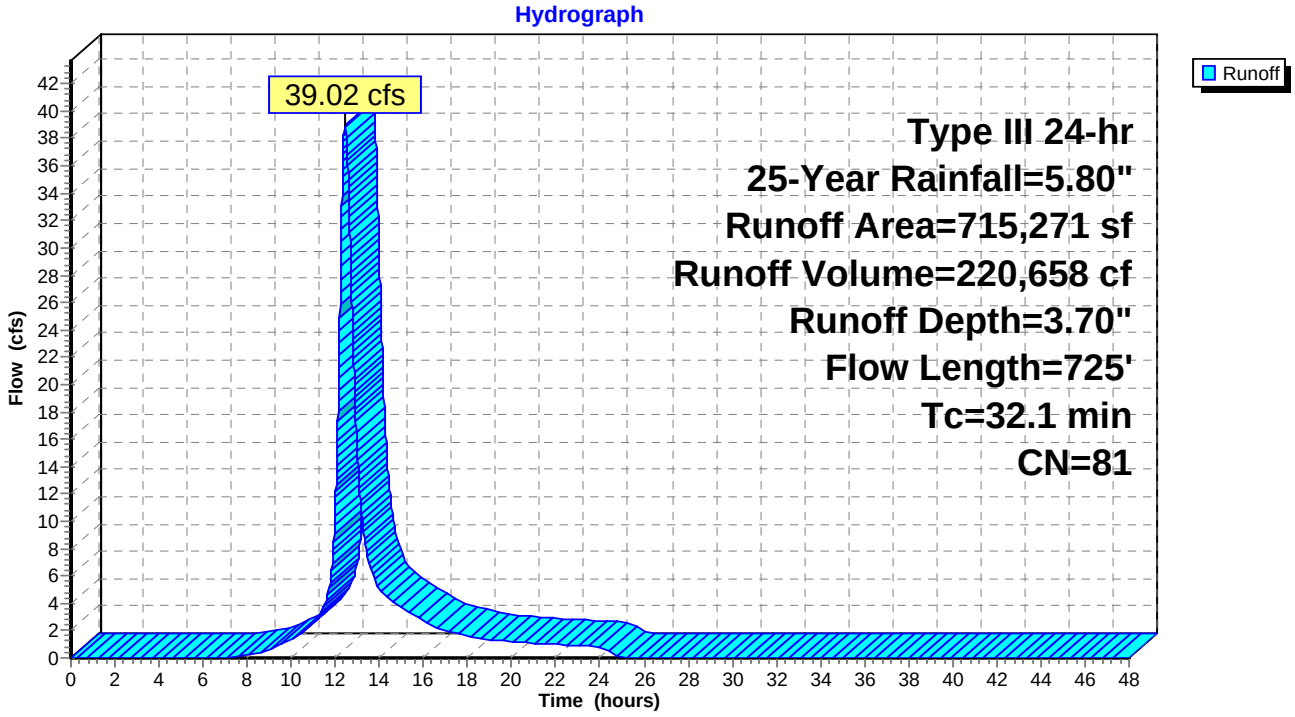
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

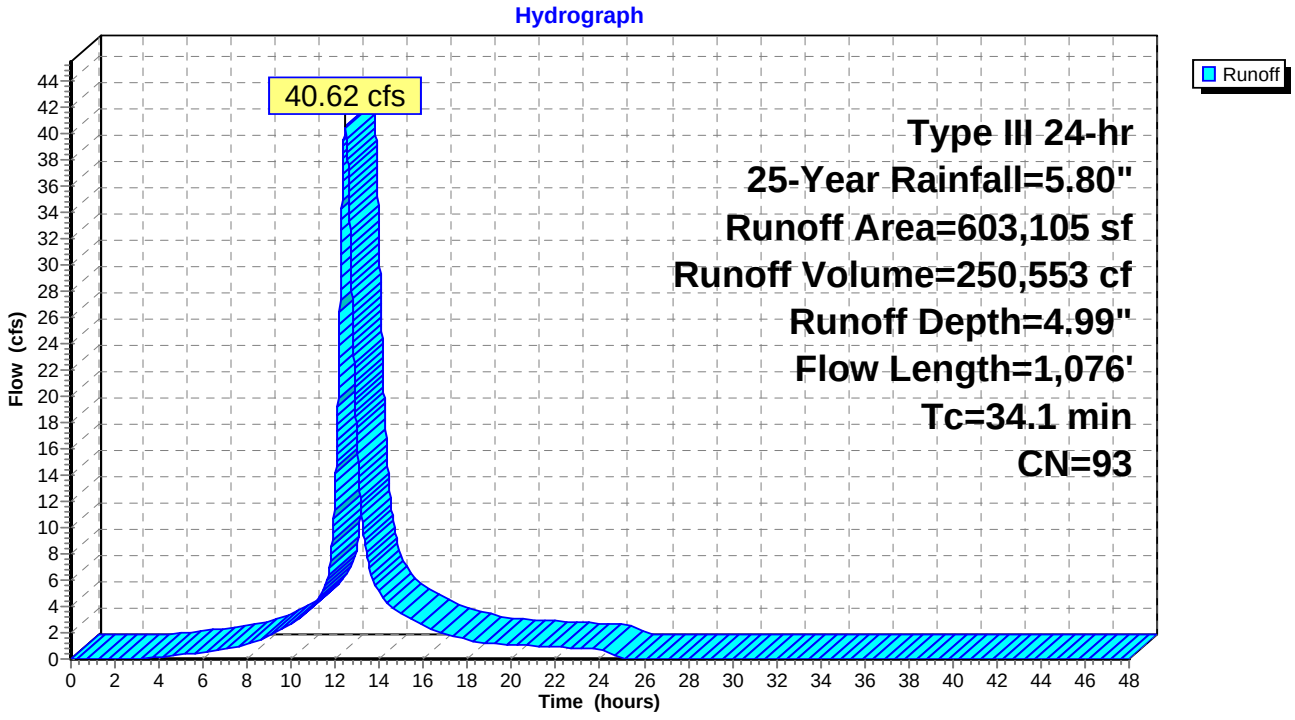
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: DMH 10162

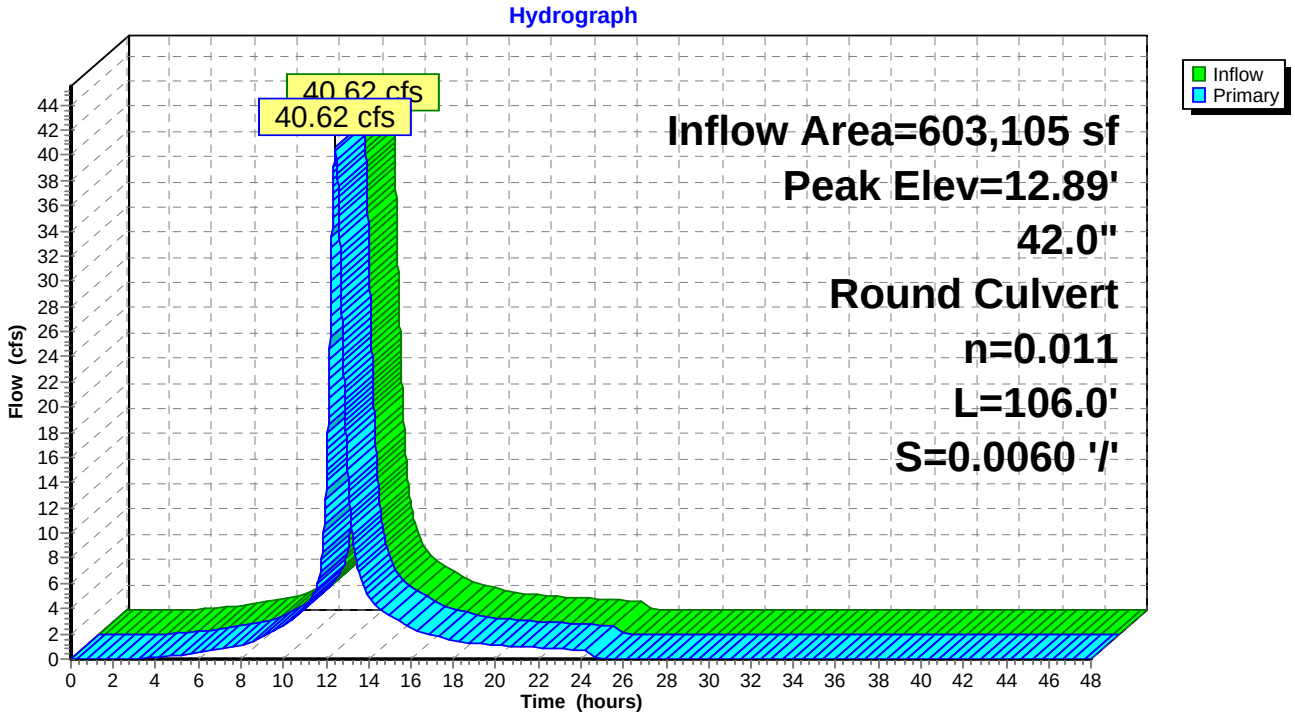
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.89' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 106.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0060 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.58 cfs @ 12.46 hrs HW=12.89' TW=12.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.58 cfs @ 4.22 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB 15

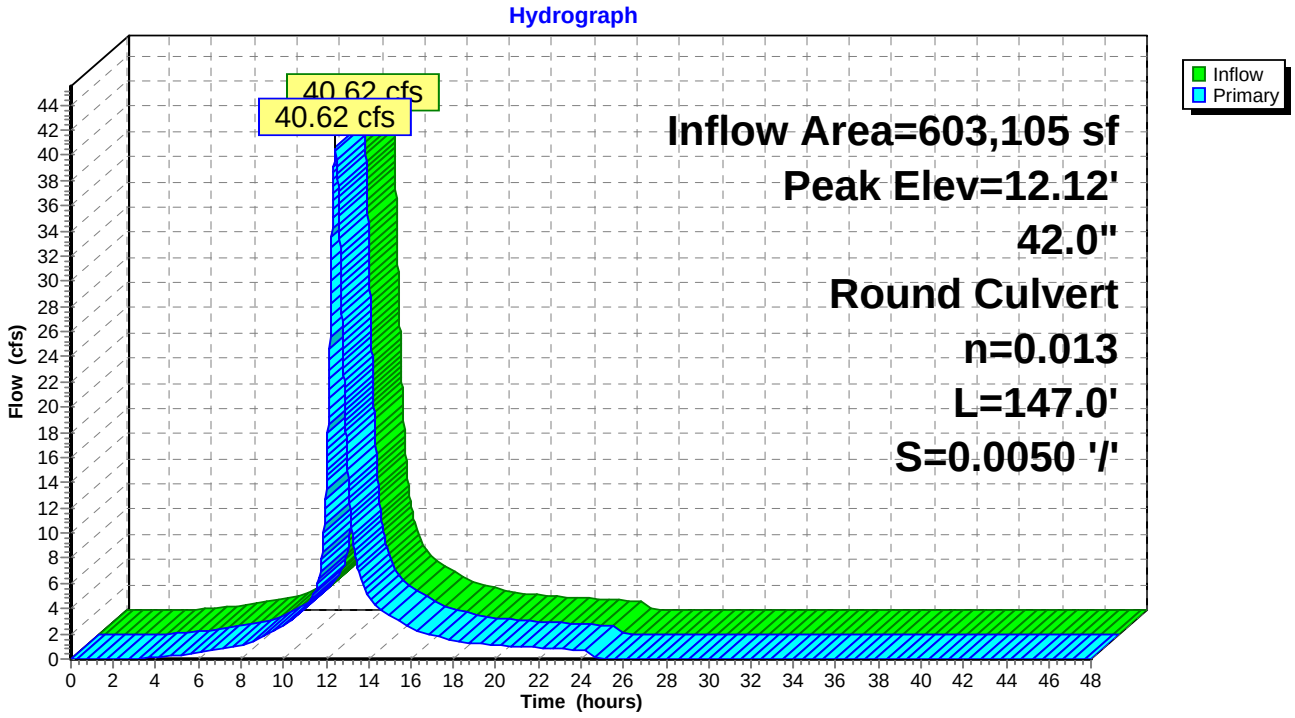
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.12' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**42.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.60 cfs @ 12.46 hrs HW=12.12' TW=10.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 40.60 cfs @ 4.22 fps)

Pond 2P: CB 15



Summary for Pond 3P: Proposed Drainage Ring

Inflow Area = 149,127 sf, 89.96% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf
Outflow = 10.67 cfs @ 12.20 hrs, Volume= 63,890 cf, Atten= 43%, Lag= 6.8 min
Primary = 10.67 cfs @ 12.20 hrs, Volume= 63,890 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.76' @ 12.20 hrs Surf.Area= 4,707 sf Storage= 9,759 cf
Flood Elev= 24.50' Surf.Area= 4,707 sf Storage= 17,821 cf

Plug-Flow detention time= 28.1 min calculated for 63,890 cf (100% of inflow)
Center-of-Mass det. time= 27.8 min (794.2 - 766.3)

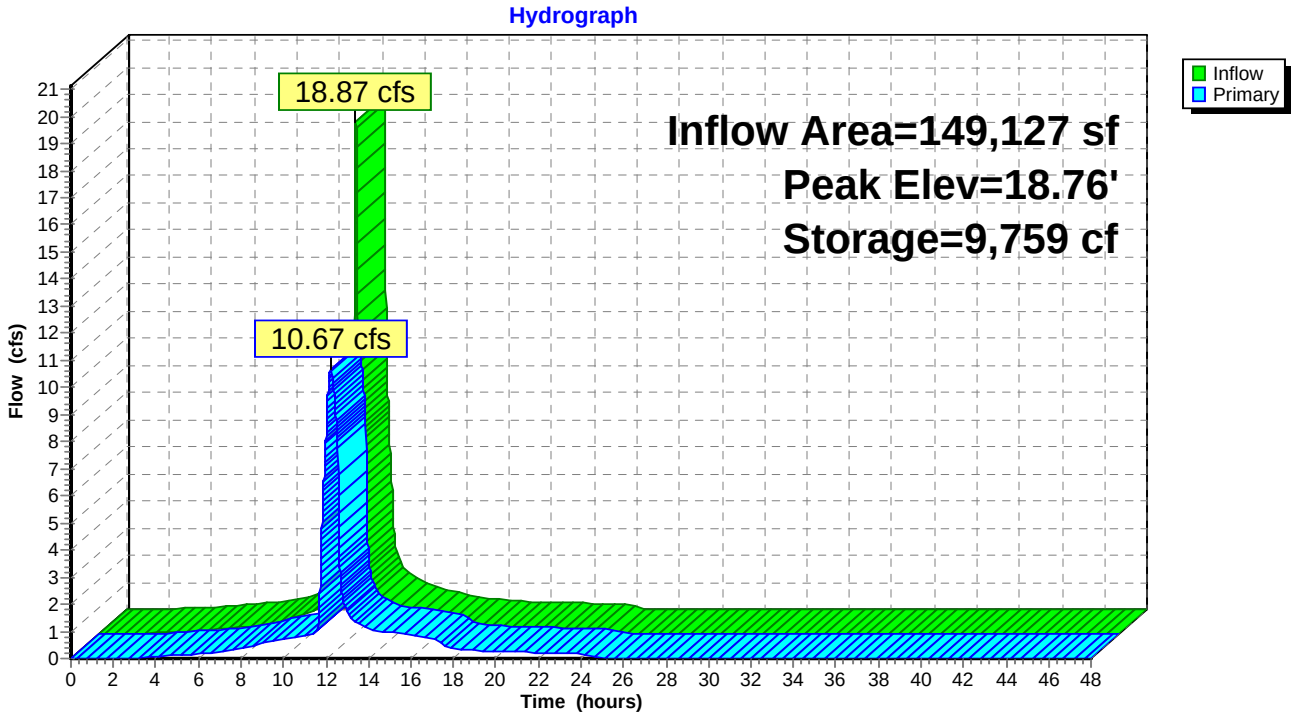
Volume	Invert	Avail.Storage	Storage Description
#1	12.90'	17,520 cf	**Drainage Ring with Stone (Prismatic)**Listed below (Recalc) 44,181 cf Overall - 382 cf Embedded = 43,799 cf x 40.0% Voids
#2	15.65'	302 cf	**8.00'D x 6.00'H Drainage Ring** Inside #1 382 cf Overall - 6.0" Wall Thickness = 302 cf
		17,821 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
12.90	2,613	0	0
12.91	2,613	26	26
14.00	3,290	3,217	3,243
15.00	3,990	3,640	6,883
16.00	4,707	4,349	11,232
16.10	4,707	471	11,702
20.00	4,707	18,357	30,060
23.00	4,707	14,121	44,181

Device	Routing	Invert	Outlet Devices
#1	Primary	12.90'	**24.0" Round Culvert** L= 222.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.90' / 8.00' S= 0.0221 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	12.90'	**15.0" Round Header Pipe** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.90' / 12.90' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	12.90'	**10.000 in/hr Filtration over Surface area**
#4	Device 2	15.56'	**12.0" Vert. 12" Pipes X 3.00** C= 0.600

Primary OutFlow Max=10.67 cfs @ 12.20 hrs HW=18.76' TW=7.57' (Dynamic Tailwater)
- **1=Culvert** (Passes 10.67 cfs of 26.31 cfs potential flow)
  - **2=Header Pipe** (Inlet Controls 10.67 cfs @ 8.69 fps)
    - **3=Filtration** (Passes < 1.09 cfs potential flow)
    - **4=12" Pipes** (Passes < 18.63 cfs potential flow)

Pond 3P: Proposed Drainage Ring



Summary for Pond 4P: CBR 15036

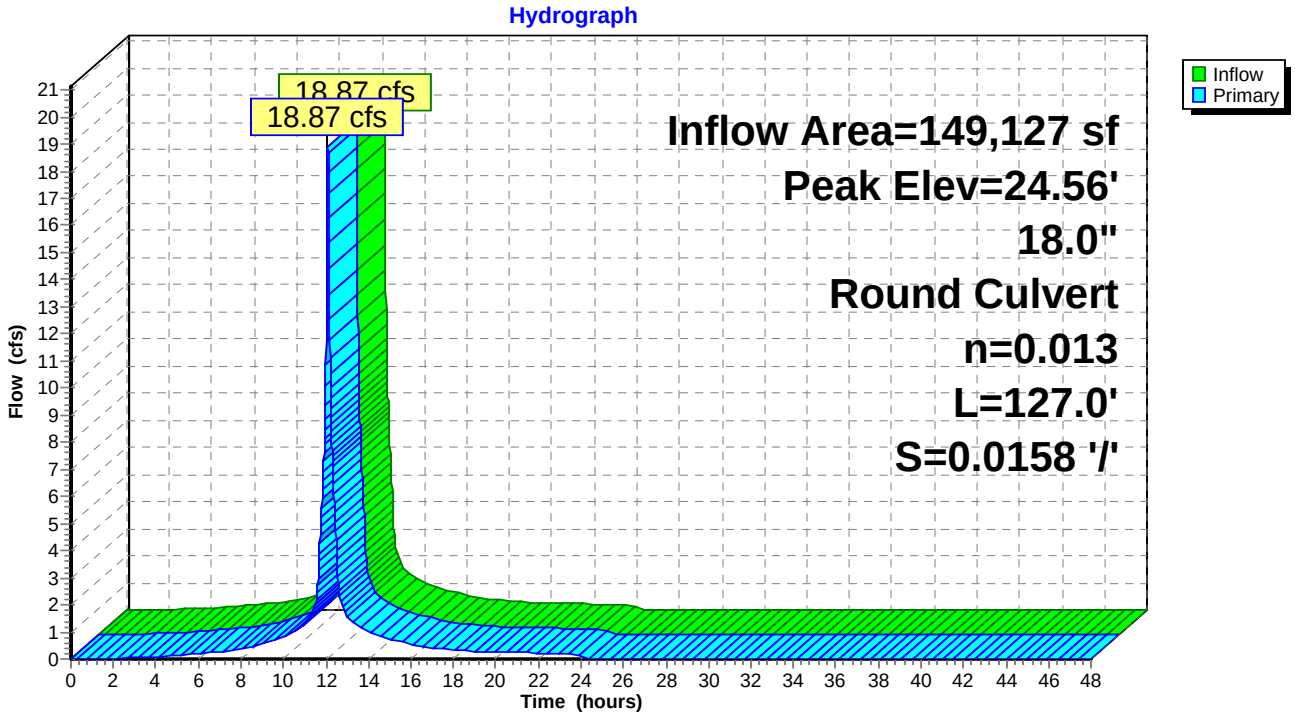
Inflow Area = 149,127 sf, 89.96% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf
Outflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.56' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 127.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 12.90' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=18.84 cfs @ 12.08 hrs HW=24.46' TW=17.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 18.84 cfs @ 10.66 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

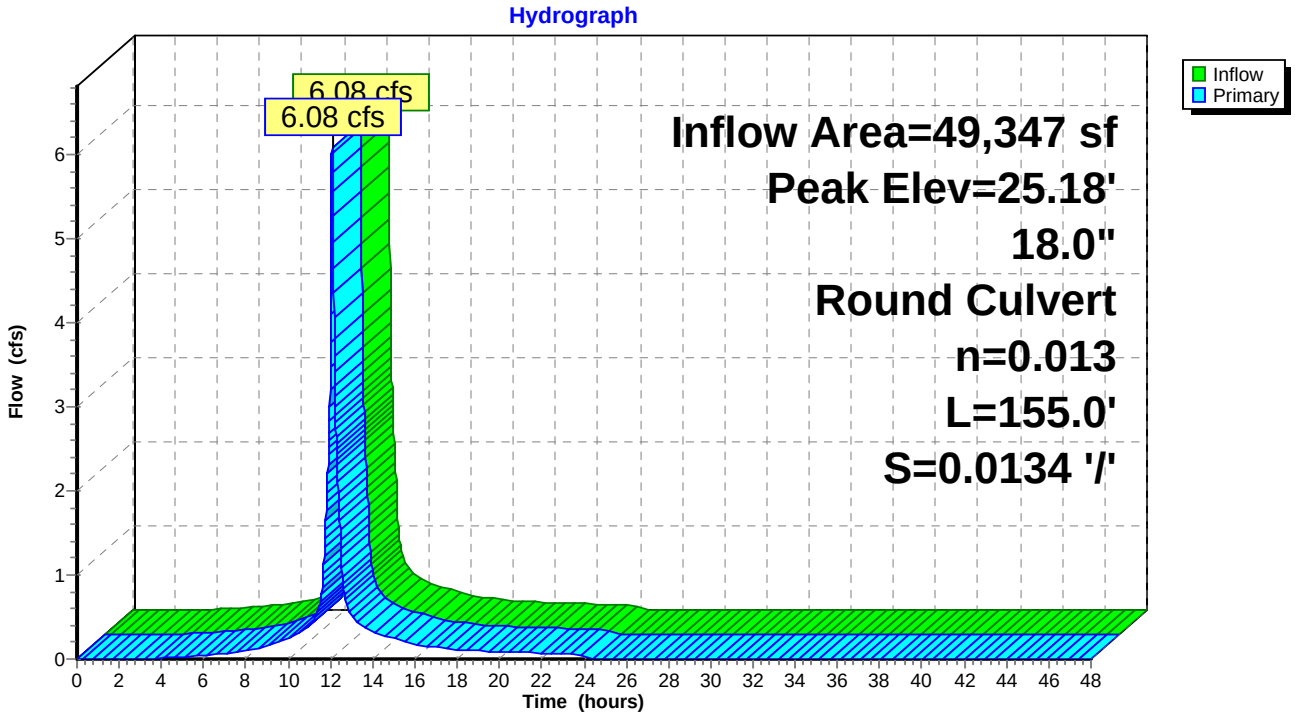
Inflow Area = 49,347 sf, 82.88% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf
Outflow = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.18' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.36 cfs @ 12.08 hrs HW=25.09' TW=24.47' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.36 cfs @ 3.03 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

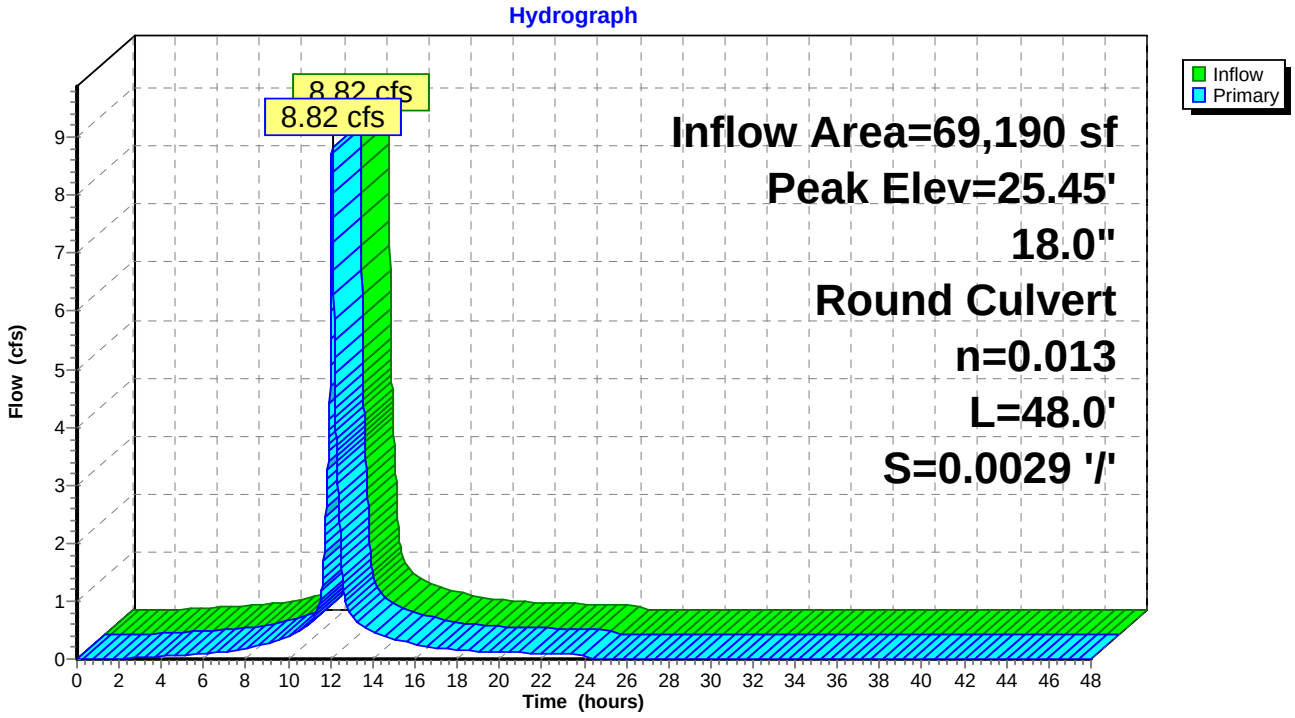
Inflow Area = 69,190 sf, 91.99% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf
Outflow = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.45' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.05 cfs @ 12.08 hrs HW=25.36' TW=24.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.05 cfs @ 4.56 fps)

Pond 6P: CBR 15040



Summary for Pond 8P: CBR 15042

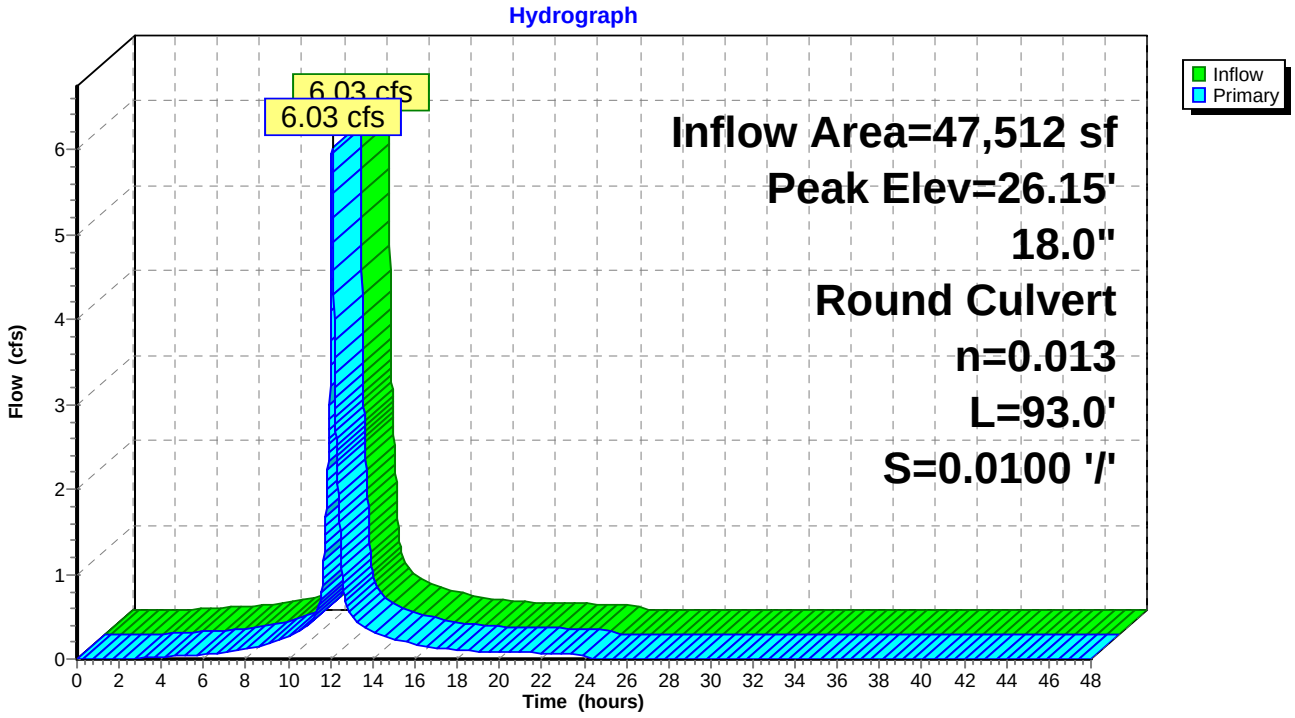
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.15' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.47 cfs @ 12.08 hrs HW=25.83' TW=25.36' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.47 cfs @ 3.09 fps)

Pond 8P: CBR 15042



Summary for Pond 10.02P: UDSF-1

Inflow Area = 55,468 sf, 0.00% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 7.12 cfs @ 12.08 hrs, Volume= 24,629 cf
Outflow = 2.37 cfs @ 12.37 hrs, Volume= 24,629 cf, Atten= 67%, Lag= 16.8 min
Primary = 2.37 cfs @ 12.37 hrs, Volume= 24,629 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.33' @ 12.37 hrs Surf.Area= 4,611 sf Storage= 8,871 cf
Flood Elev= 17.00' Surf.Area= 4,882 sf Storage= 9,680 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 158.6 min (917.7 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1	11.16'	9,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

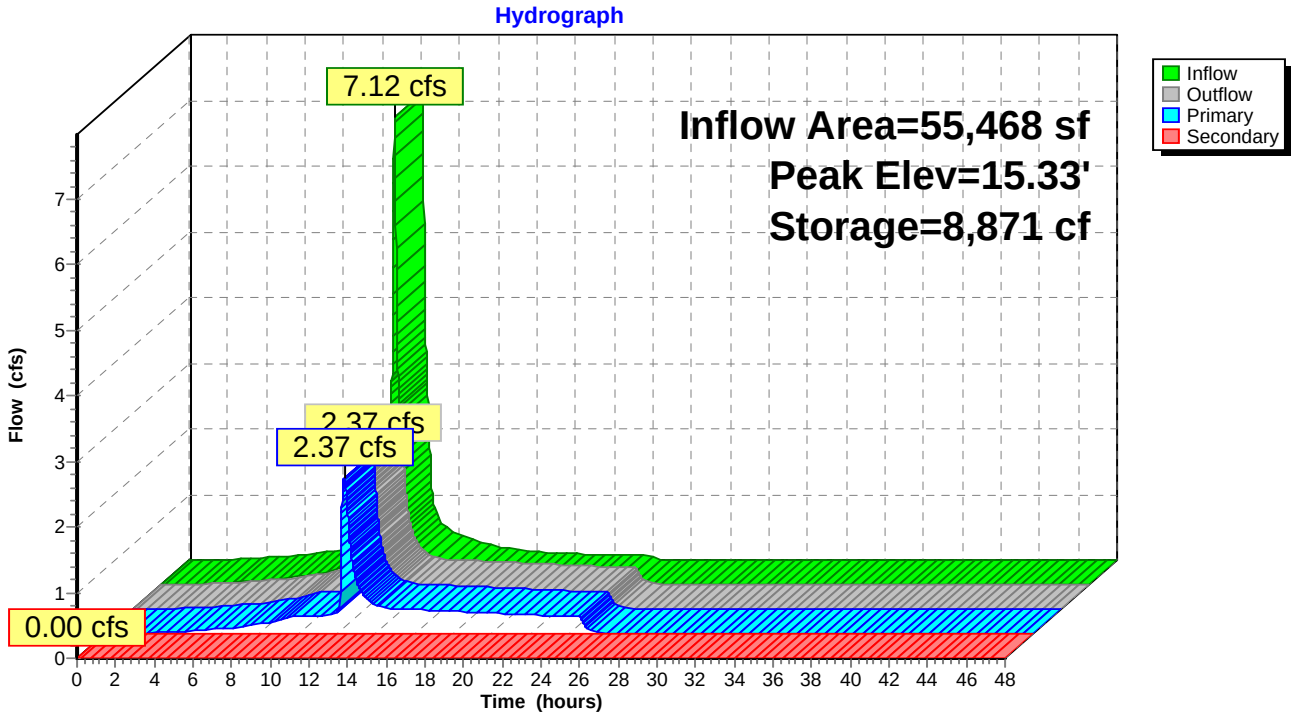
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.16	3,003	0.0	0	0
11.17	3,003	30.0	9	9
13.49	3,003	30.0	2,090	2,099
13.50	3,003	100.0	30	2,129
14.00	3,351	100.0	1,589	3,718
15.00	4,088	100.0	3,720	7,437
15.50	4,882	100.0	2,243	9,680

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**15.0" Round Outfall** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 8.50' S= 0.0893 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	11.05'	**6.0" Round UD Header** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.05' / 11.03' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	11.16'	**4.000 in/hr Filtration over Surface area**
#4	Device 1	15.00'	**12.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	15.50'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.37 cfs @ 12.37 hrs HW=15.33' TW=7.80' (Dynamic Tailwater)
└─**1=Outfall** (Passes 2.37 cfs of 8.98 cfs potential flow)
  └─**2=UD Header** (Passes 0.43 cfs of 1.50 cfs potential flow)
    └─**3=Filtration** (Exfiltration Controls 0.43 cfs)
  └─**4=Grate** (Weir Controls 1.94 cfs @ 1.88 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.16' TW=6.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10.02P: UDSF-1



Summary for Pond 10P: CB 16

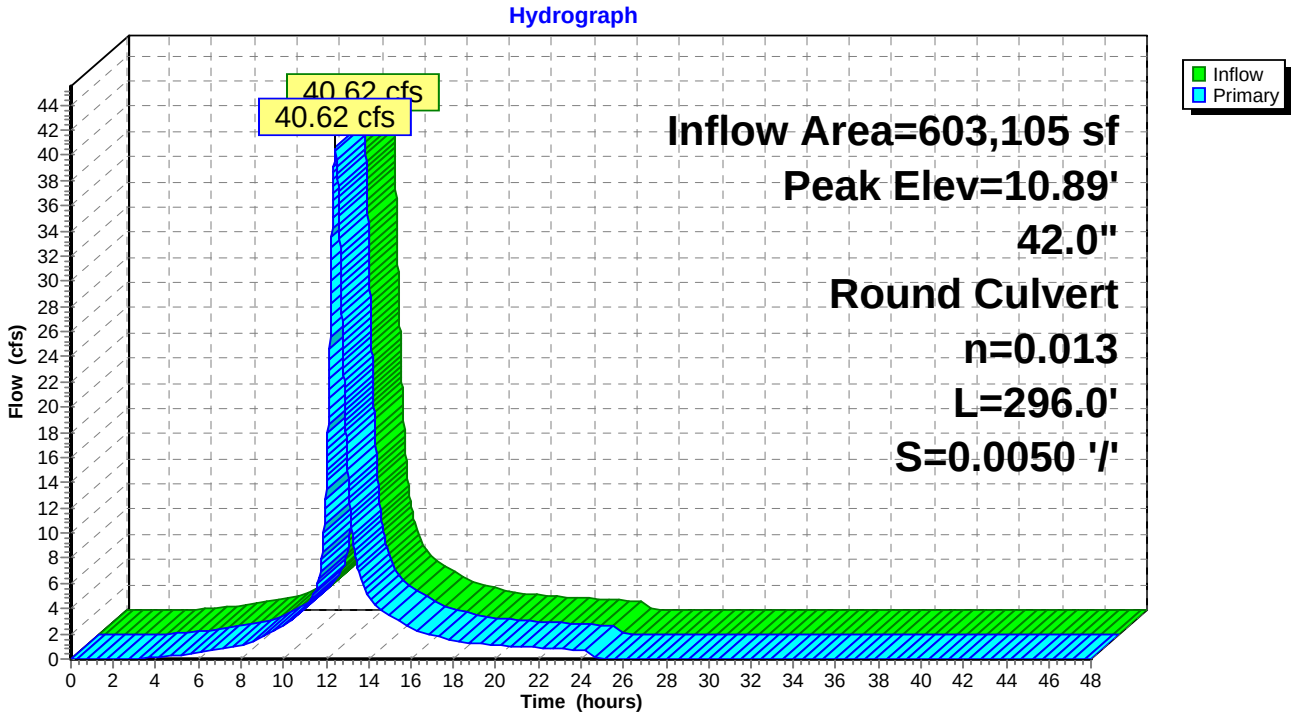
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.89' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**42.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.62 cfs @ 12.46 hrs HW=10.89' TW=9.27' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.62 cfs @ 5.63 fps)

Pond 10P: CB 16



Summary for Pond 11P: DMH 1

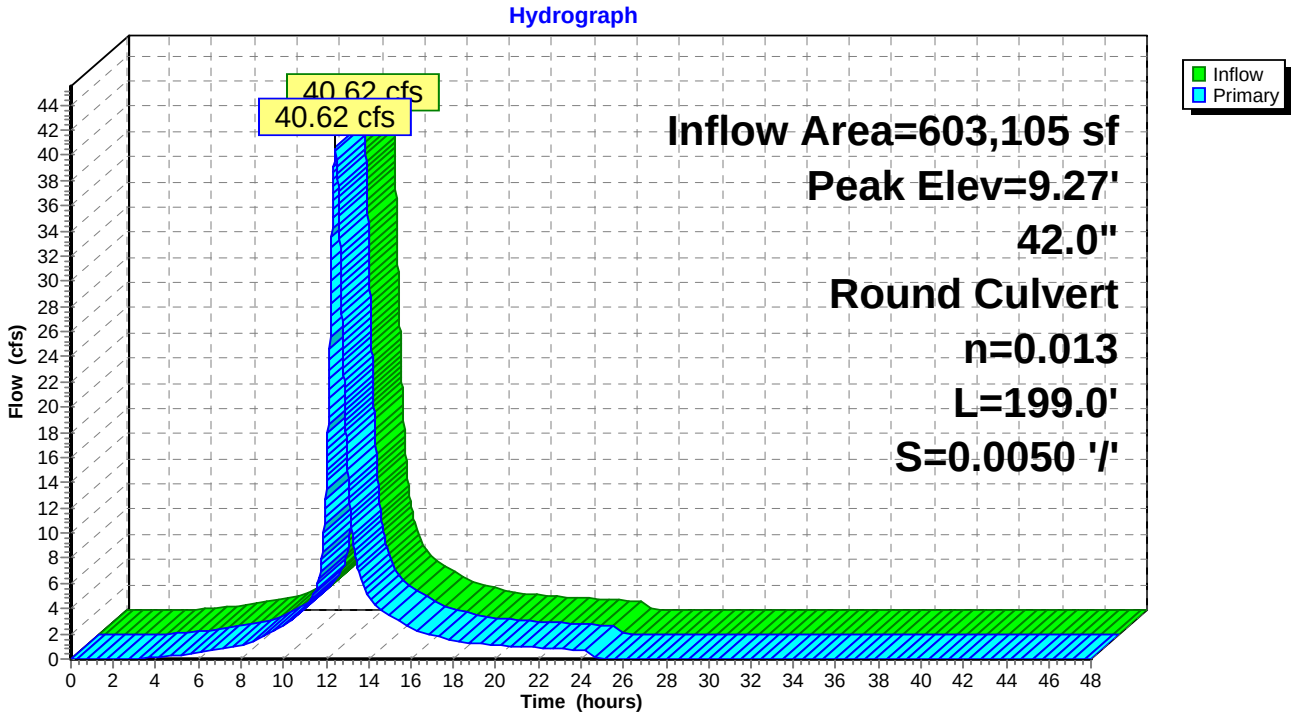
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 9.27' @ 12.46 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**42.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=9.27' TW=7.82' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.61 cfs @ 5.73 fps)

Pond 11P: DMH 1



Summary for Pond 12P: UDSF-2

Inflow Area = 73,328 sf, 0.00% Impervious, Inflow Depth = 5.21" for 25-Year event
Inflow = 9.36 cfs @ 12.08 hrs, Volume= 31,855 cf
Outflow = 2.79 cfs @ 12.40 hrs, Volume= 31,855 cf, Atten= 70%, Lag= 19.0 min
Primary = 2.79 cfs @ 12.40 hrs, Volume= 31,855 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.37' @ 12.40 hrs Surf.Area= 5,634 sf Storage= 11,917 cf
Flood Elev= 17.00' Surf.Area= 6,200 sf Storage= 15,673 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 165.9 min (930.3 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1	11.16'	15,673 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

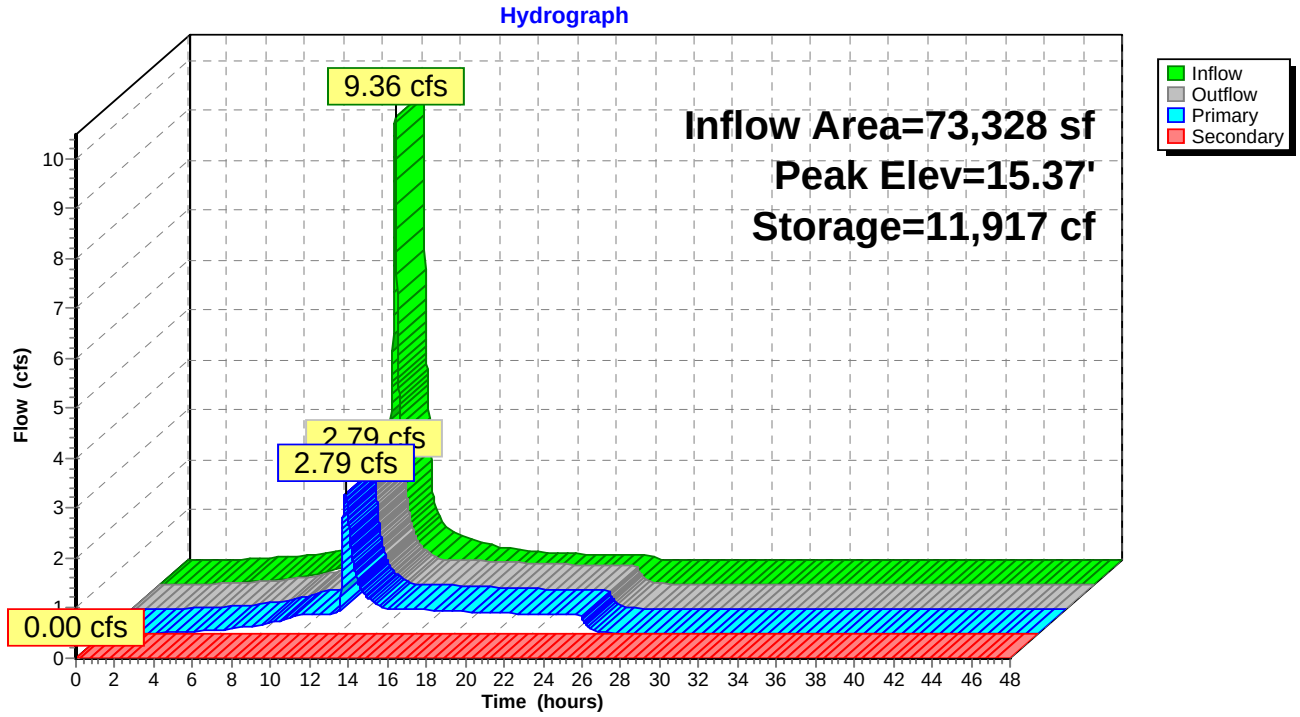
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.16	4,077	0.0	0	0
11.17	4,077	30.0	12	12
13.49	4,077	30.0	2,838	2,850
13.50	4,077	100.0	41	2,891
14.00	4,473	100.0	2,138	5,028
15.00	5,308	100.0	4,891	9,919
16.00	6,200	100.0	5,754	15,673

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**15.0" Round Outfall** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 8.50' S= 0.0962 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	11.05'	**6.0" Round UD Header** L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.05' / 11.03' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	11.16'	**4.000 in/hr Filtration over Surface area**
#4	Device 1	15.00'	**12.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	15.50'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.79 cfs @ 12.40 hrs HW=15.37' TW=7.82' (Dynamic Tailwater)
└─**1=Outfall** (Passes 2.79 cfs of 9.02 cfs potential flow)
  └─**2=UD Header** (Passes 0.52 cfs of 1.50 cfs potential flow)
    └─**3=Filtration** (Exfiltration Controls 0.52 cfs)
  └─**4=Grate** (Weir Controls 2.27 cfs @ 1.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.16' TW=6.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: UDSF-2



Summary for Pond 15P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.55" for 25-Year event
Inflow = 64.90 cfs @ 12.44 hrs, Volume= 271,041 cf
Outflow = 64.77 cfs @ 12.45 hrs, Volume= 270,325 cf, Atten= 0%, Lag= 0.8 min
Primary = 64.77 cfs @ 12.45 hrs, Volume= 270,325 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.94' @ 12.45 hrs Surf.Area= 3,143 sf Storage= 4,668 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 4.7 min calculated for 270,268 cf (100% of inflow)
Center-of-Mass det. time= 3.1 min (823.3 - 820.2)

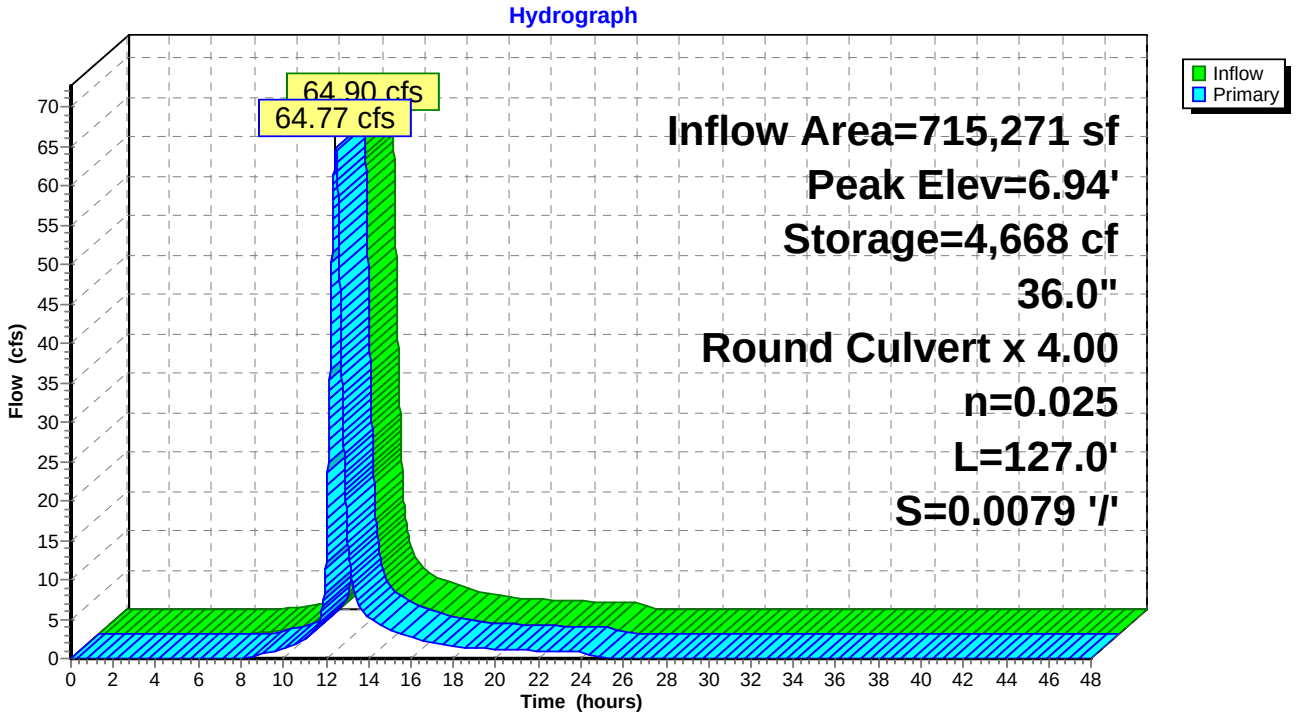
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=64.75 cfs @ 12.45 hrs HW=6.94' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 64.75 cfs @ 4.34 fps)

Pond 15P: Existing (4)-36" Culverts



Summary for Pond 25P: CB 15029

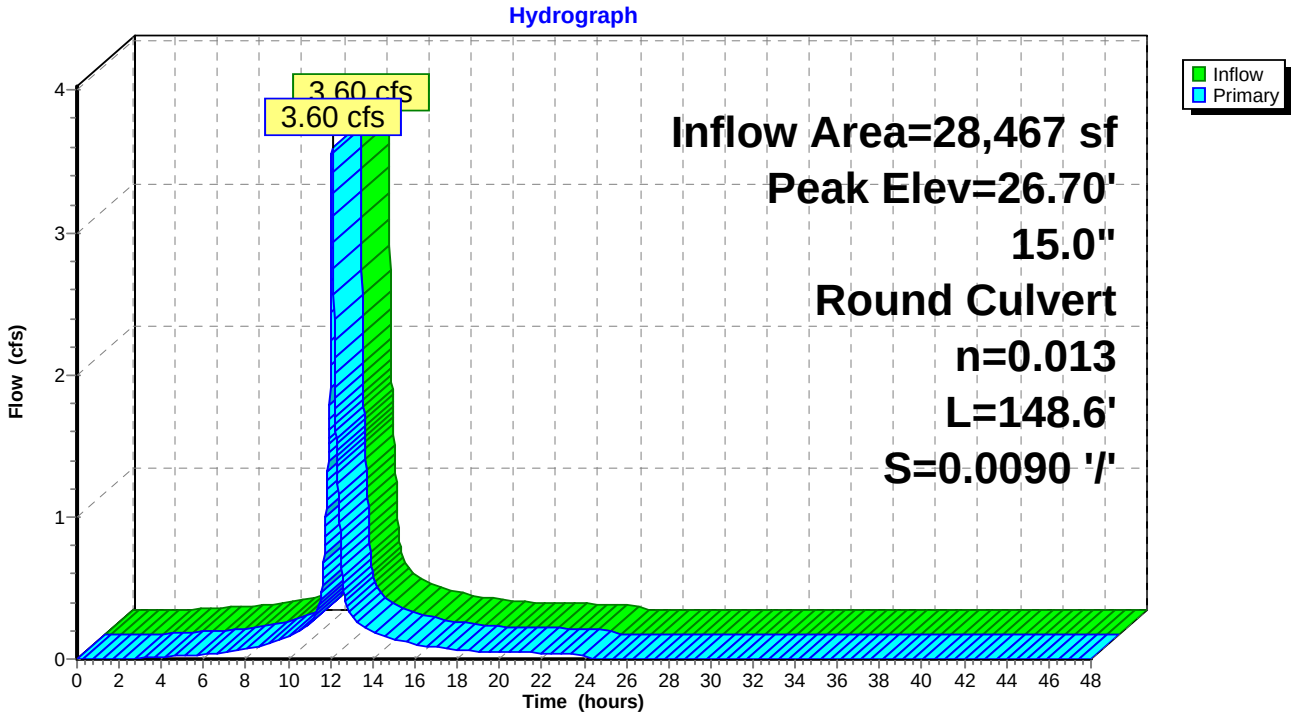
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.70' @ 12.10 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.08 cfs @ 12.08 hrs HW=26.36' TW=25.84' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.08 cfs @ 2.51 fps)

Pond 25P: CB 15029



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,351 sf, 67.87% Impervious, Inflow Depth = 4.85" for 25-Year event
Inflow = 58.56 cfs @ 12.39 hrs, Volume= 406,501 cf
Outflow = 58.27 cfs @ 12.43 hrs, Volume= 406,495 cf, Atten= 1%, Lag= 2.3 min
Primary = 32.34 cfs @ 12.43 hrs, Volume= 356,111 cf
Secondary = 25.93 cfs @ 12.43 hrs, Volume= 50,384 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.82' @ 12.43 hrs Surf.Area= 5,727 sf Storage= 6,042 cf
Flood Elev= 9.00' Surf.Area= 8,965 sf Storage= 14,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (818.8 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	14,683 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

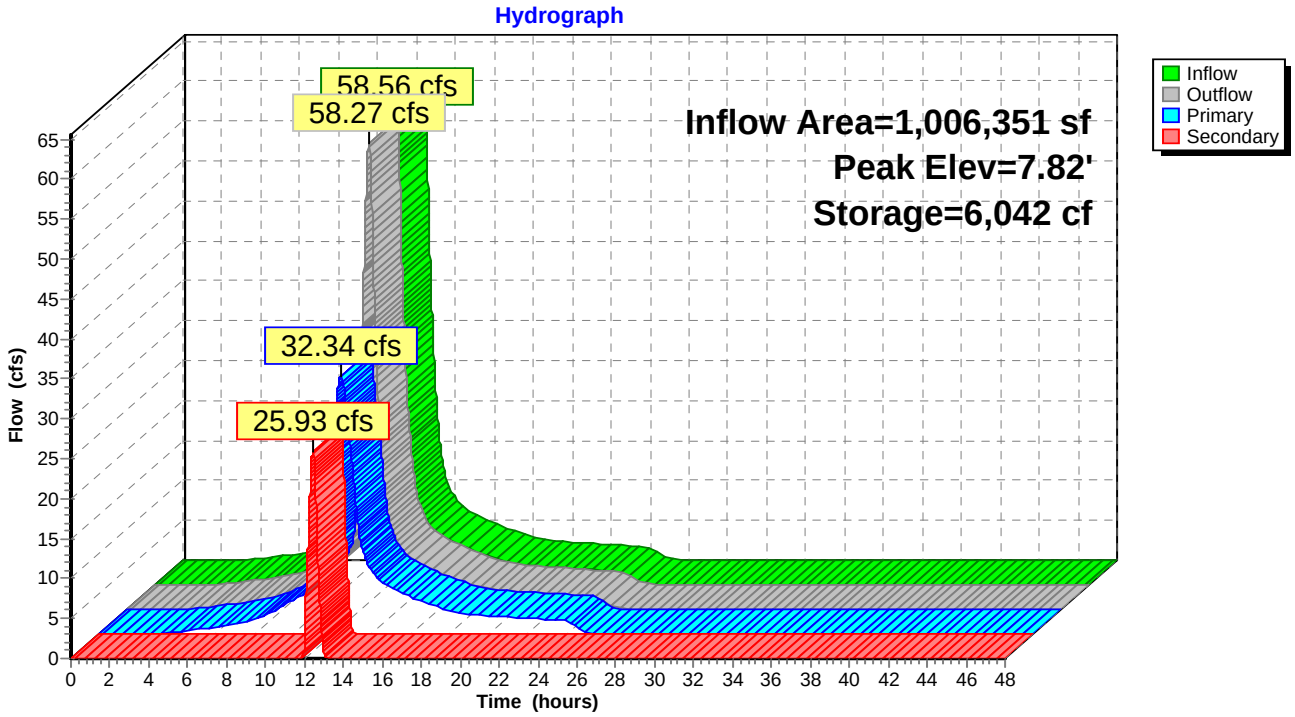
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	3,601	2,211	2,211
8.00	6,189	4,895	7,106
9.00	8,965	7,577	14,683

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=32.34 cfs @ 12.43 hrs HW=7.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 32.34 cfs @ 4.60 fps)

Secondary OutFlow Max=25.92 cfs @ 12.43 hrs HW=7.82' TW=6.93' (Dynamic Tailwater)
2=Overflow (Weir Controls 25.92 cfs @ 2.43 fps)

Pond EX WTLND: Existing Wetland

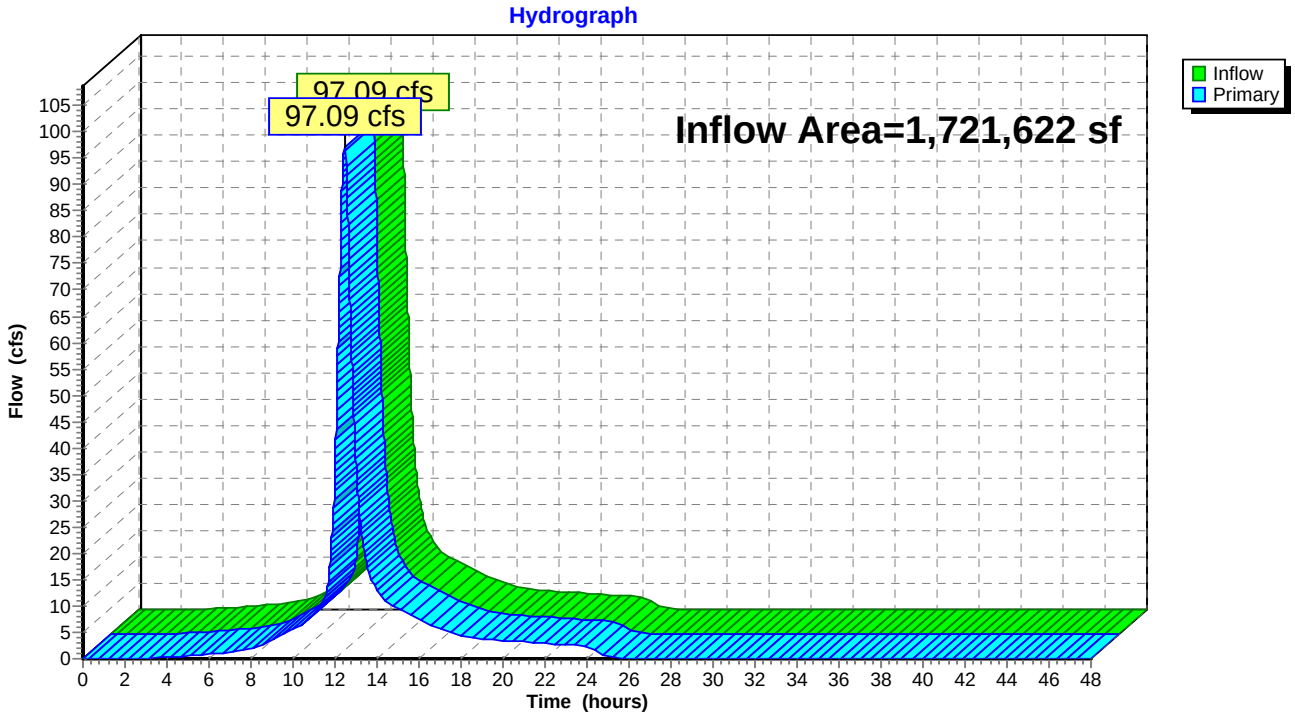


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,622 sf, 61.60% Impervious, Inflow Depth = 4.37" for 25-Year event
Inflow = 97.09 cfs @ 12.45 hrs, Volume= 626,436 cf
Primary = 97.09 cfs @ 12.45 hrs, Volume= 626,436 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

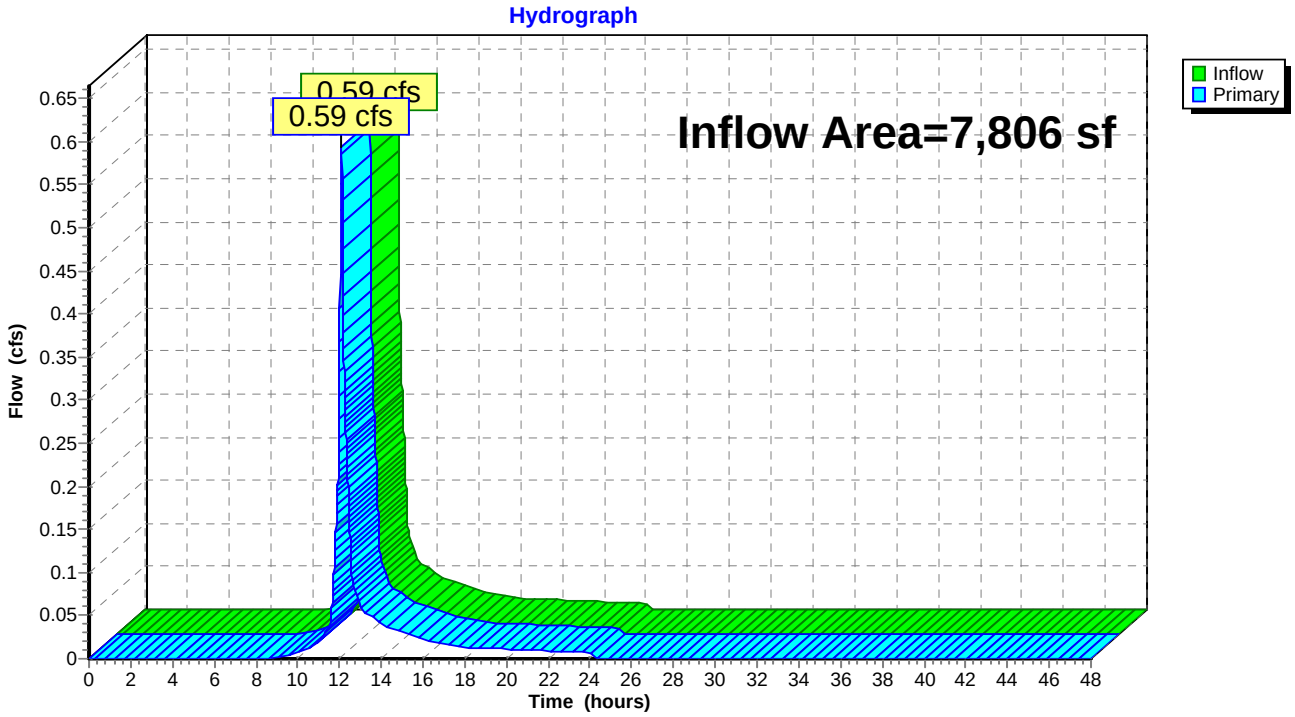


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

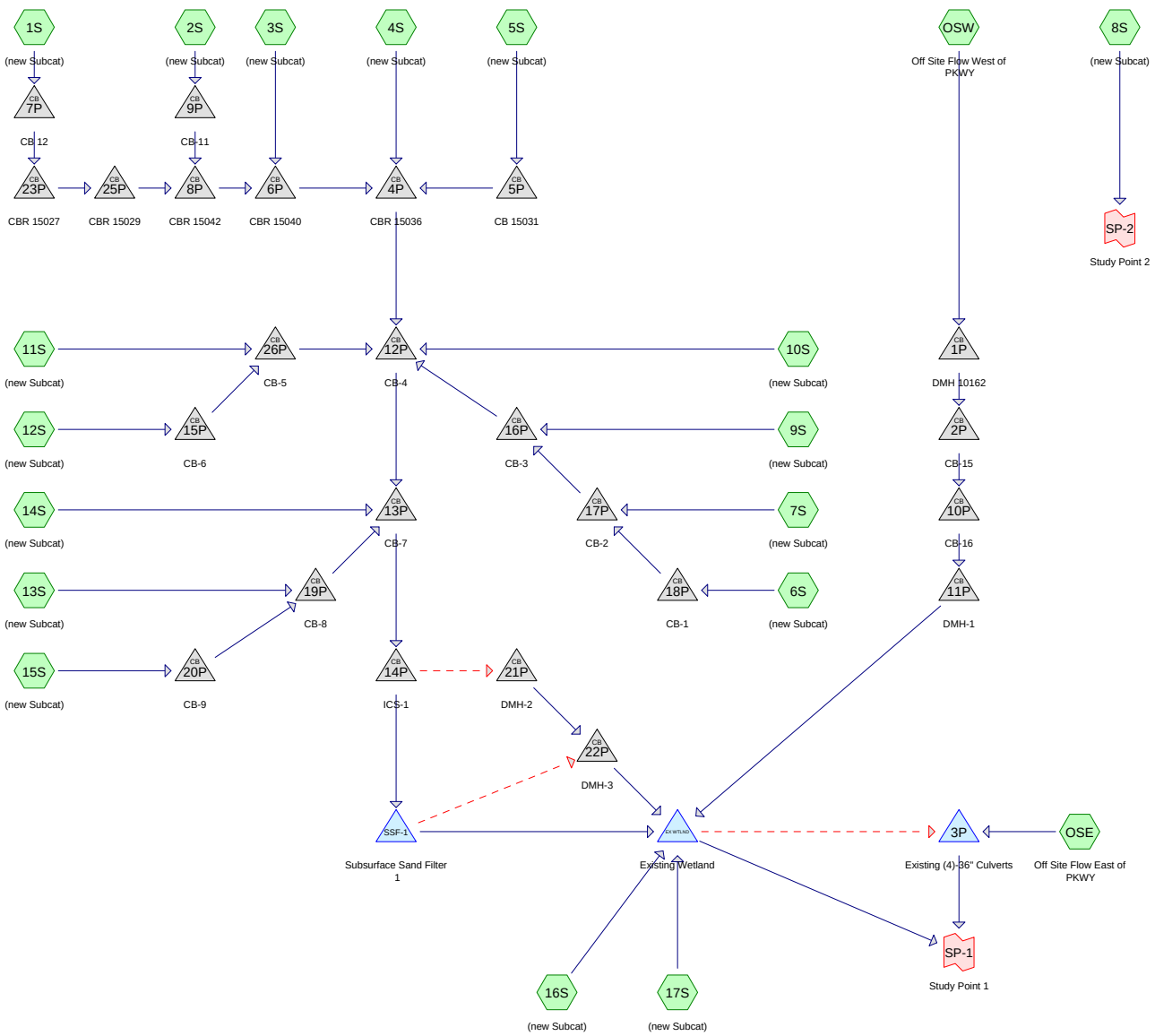
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment D

Post-Development Stormwater Modeling



Routing Diagram for 99607 Post

Prepared by Sebago Techincs, Printed 6/18/2018

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
406,625	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 16S, 17S, OSE)
66,656	80	>75% Grass cover, Good, HSG D (6S, 7S, 10S, 11S, 13S, 14S, 15S, 16S)
605,763	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 17S, OSE, OSW)
98,586	98	Paved parking, HSG D (6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
14,924	98	Roofs, HSG B (1S, 2S, 16S, 17S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
1,729,428	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 16S, 17S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=2.16"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=1.66 cfs 5,201 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=2.45"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=1.72 cfs 5,543 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=2.16"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 2,744 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=2.76"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=1.96 cfs 6,627 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=2.16"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.84 cfs 8,915 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=2.08"
Flow Length=231' Tc=6.1 min CN=90 Runoff=0.88 cfs 2,747 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=2.65"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.51 cfs 1,688 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=0.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.17 cfs 570 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=2.76"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=0.87 cfs 2,958 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=2.76"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.12 cfs 3,774 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=2.76"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.99 cfs 3,337 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=0.67 cfs 2,310 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=2.65"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=0.81 cfs 2,678 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=2.76"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.60 cfs 2,044 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=2.76"
Flow Length=331' Tc=6.0 min CN=97 Runoff=2.06 cfs 6,985 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.25 cfs 7,395 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: DMH 10162 Peak Elev=11.31' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=19.88 cfs 118,098 cf

Pond 2P: CB-15 Peak Elev=10.58' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=5.82' Storage=2,107 cf Inflow=15.83 cfs 83,772 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=15.79 cfs 83,055 cf

Pond 4P: CBR 15036 Peak Elev=17.27' Inflow=9.04 cfs 29,030 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=9.04 cfs 29,030 cf

Pond 5P: CB 15031 Peak Elev=21.17' Inflow=2.84 cfs 8,915 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.84 cfs 8,915 cf

Pond 6P: CBR 15040 Peak Elev=17.52' Inflow=4.25 cfs 13,488 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.25 cfs 13,488 cf

Pond 7P: CB 12 Peak Elev=25.48' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=1.66 cfs 5,201 cf

Pond 8P: CBR 15042 Peak Elev=17.82' Inflow=3.37 cfs 10,744 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.37 cfs 10,744 cf

Pond 9P: CB-11 Peak Elev=22.40' Inflow=1.72 cfs 5,543 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=1.72 cfs 5,543 cf

Pond 10P: CB-16 Peak Elev=9.64' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 11P: DMH-1 Peak Elev=8.17' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 12P: CB-4 Peak Elev=16.12' Inflow=14.07 cfs 45,845 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=14.07 cfs 45,845 cf

Pond 13P: CB-7 Peak Elev=13.87' Inflow=17.54 cfs 57,552 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=17.54 cfs 57,552 cf

Pond 14P: ICS-1 Peak Elev=13.18' Inflow=17.54 cfs 57,552 cf
Primary=17.54 cfs 52,367 cf Secondary=1.44 cfs 5,185 cf Outflow=17.54 cfs 57,552 cf

Pond 15P: CB-6 Peak Elev=16.47' Inflow=0.67 cfs 2,310 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=0.67 cfs 2,310 cf

Pond 16P: CB-3 Peak Elev=16.38' Inflow=2.26 cfs 7,394 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=2.26 cfs 7,394 cf

Pond 17P: CB-2 Peak Elev=16.97' Inflow=1.38 cfs 4,435 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=1.38 cfs 4,435 cf

Pond 18P: CB-1 Peak Elev=17.51' Inflow=0.88 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=0.88 cfs 2,747 cf

Pond 19P: CB-8 Peak Elev=13.93' Inflow=2.87 cfs 9,663 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.87 cfs 9,663 cf

Pond 20P: CB-9 Peak Elev=14.18' Inflow=2.06 cfs 6,985 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=2.06 cfs 6,985 cf

Pond 21P: DMH-2 Peak Elev=11.52' Inflow=1.44 cfs 5,185 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=1.44 cfs 5,185 cf

Pond 22P: DMH-3 Peak Elev=8.68' Inflow=1.94 cfs 52,489 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=1.94 cfs 52,489 cf

Pond 23P: CBR 15027 Peak Elev=24.46' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=1.66 cfs 5,201 cf

Pond 25P: CBR 15029 Peak Elev=23.52' Inflow=1.66 cfs 5,201 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.66 cfs 5,201 cf

Pond 26P: CB-5 Peak Elev=16.42' Inflow=1.65 cfs 5,647 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=1.65 cfs 5,647 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.13' Storage=2,692 cf Inflow=24.25 cfs 188,520 cf
Primary=22.53 cfs 187,648 cf Secondary=1.41 cfs 871 cf Outflow=23.94 cfs 188,519 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.17' Storage=26,505 cf Inflow=17.54 cfs 52,367 cf
Primary=1.42 cfs 5,066 cf Secondary=0.51 cfs 47,304 cf Outflow=1.92 cfs 52,371 cf

Link SP-1: Study Point 1 Inflow=38.32 cfs 270,703 cf
Primary=38.32 cfs 270,703 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 570 cf
Primary=0.17 cfs 570 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 271,987 cf Average Runoff Depth = 1.89"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=3.59"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.69 cfs 8,638 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=3.91"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=2.68 cfs 8,865 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=3.59"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.42 cfs 4,557 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=4.25"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=2.95 cfs 10,211 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=3.59"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=4.60 cfs 14,805 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=3.49"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.44 cfs 4,620 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=4.14"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.77 cfs 2,634 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=1.97"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.39 cfs 1,222 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=4.25"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.32 cfs 4,558 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=4.25"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.68 cfs 5,815 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=4.25"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.49 cfs 5,141 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.00 cfs 3,515 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=4.14"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.23 cfs 4,178 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=4.25"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.91 cfs 3,150 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=4.25"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.11 cfs 10,762 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.99 cfs 15,589 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: DMH 10162 Peak Elev=12.12' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=31.45 cfs 191,269 cf

Pond 2P: CB-15 Peak Elev=11.36' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=6.49' Storage=3,422 cf Inflow=42.61 cfs 183,755 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=42.54 cfs 183,039 cf

Pond 4P: CBR 15036 Peak Elev=18.36' Inflow=14.33 cfs 47,076 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=14.33 cfs 47,076 cf

Pond 5P: CB 15031 Peak Elev=21.43' Inflow=4.60 cfs 14,805 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.60 cfs 14,805 cf

Pond 6P: CBR 15040 Peak Elev=18.97' Inflow=6.78 cfs 22,060 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.78 cfs 22,060 cf

Pond 7P: CB 12 Peak Elev=25.81' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=2.69 cfs 8,638 cf

Pond 8P: CBR 15042 Peak Elev=19.44' Inflow=5.36 cfs 17,503 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=5.36 cfs 17,503 cf

Pond 9P: CB-11 Peak Elev=22.82' Inflow=2.68 cfs 8,865 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=2.68 cfs 8,865 cf

Pond 10P: CB-16 Peak Elev=10.35' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 11P: DMH-1 Peak Elev=8.82' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 12P: CB-4 Peak Elev=16.92' Inflow=22.03 cfs 73,359 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=22.03 cfs 73,359 cf

Pond 13P: CB-7 Peak Elev=14.54' Inflow=27.28 cfs 91,449 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=27.28 cfs 91,449 cf

Pond 14P: ICS-1 Peak Elev=13.62' Inflow=27.28 cfs 91,449 cf
Primary=21.65 cfs 71,885 cf Secondary=7.24 cfs 19,565 cf Outflow=27.28 cfs 91,449 cf

Pond 15P: CB-6 Peak Elev=17.72' Inflow=1.00 cfs 3,515 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.00 cfs 3,515 cf

Pond 16P: CB-3 Peak Elev=17.50' Inflow=3.53 cfs 11,812 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=3.53 cfs 11,812 cf

Pond 17P: CB-2 Peak Elev=18.04' Inflow=2.22 cfs 7,254 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.22 cfs 7,254 cf

Pond 18P: CB-1 Peak Elev=18.28' Inflow=1.44 cfs 4,620 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.44 cfs 4,620 cf

Pond 19P: CB-8 Peak Elev=14.68' Inflow=4.34 cfs 14,940 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.34 cfs 14,940 cf

Pond 20P: CB-9 Peak Elev=14.89' Inflow=3.11 cfs 10,762 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.11 cfs 10,762 cf

Pond 21P: DMH-2 Peak Elev=12.81' Inflow=7.24 cfs 19,565 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=7.24 cfs 19,565 cf

Pond 22P: DMH-3 Peak Elev=10.02' Inflow=7.71 cfs 72,691 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=7.71 cfs 72,691 cf

Pond 23P: CBR 15027 Peak Elev=24.78' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=2.69 cfs 8,638 cf

Pond 25P: CBR 15029 Peak Elev=23.77' Inflow=2.69 cfs 8,638 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.69 cfs 8,638 cf

Pond 26P: CB-5 Peak Elev=17.62' Inflow=2.48 cfs 8,657 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=2.48 cfs 8,657 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.58' Storage=4,716 cf Inflow=44.72 cfs 307,746 cf
Primary=29.41 cfs 281,034 cf Secondary=15.20 cfs 26,709 cf Outflow=44.61 cfs 307,743 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.57' Storage=31,040 cf Inflow=21.65 cfs 71,885 cf
Primary=8.28 cfs 18,759 cf Secondary=0.51 cfs 53,126 cf Outflow=8.75 cfs 71,885 cf

Link SP-1: Study Point 1 Inflow=71.84 cfs 464,073 cf
Primary=71.84 cfs 464,073 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,222 cf
Primary=0.39 cfs 1,222 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 466,013 cf Average Runoff Depth = 3.23"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=4.76"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=3.50 cfs 11,442 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=5.10"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=3.43 cfs 11,549 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=4.76"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.85 cfs 6,037 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=5.44"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=3.74 cfs 13,085 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=4.76"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=6.00 cfs 19,612 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=4.65"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.89 cfs 6,155 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=5.33"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.98 cfs 3,394 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=2.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.58 cfs 1,812 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=5.44"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.67 cfs 5,841 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=5.44"
Flow Length=195' Tc=6.0 min CN=97 Runoff=2.13 cfs 7,452 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=5.44"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.88 cfs 6,589 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.26 cfs 4,481 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=5.33"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.56 cfs 5,383 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=5.44"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.15 cfs 4,037 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=5.44"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.94 cfs 13,792 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.41 cfs 22,951 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: DMH 10162 Peak Elev=12.90' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=40.62 cfs 250,553 cf

Pond 2P: CB-15 Peak Elev=12.13' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=6.97' Storage=4,790 cf Inflow=66.90 cfs 277,970 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=66.78 cfs 277,253 cf

Pond 4P: CBR 15036 Peak Elev=20.42' Inflow=18.53 cfs 61,725 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=18.53 cfs 61,725 cf

Pond 5P: CB 15031 Peak Elev=21.73' Inflow=6.00 cfs 19,612 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.00 cfs 19,612 cf

Pond 6P: CBR 15040 Peak Elev=21.48' Inflow=8.79 cfs 29,027 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,027 cf

Pond 7P: CB 12 Peak Elev=26.28' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=3.50 cfs 11,442 cf

Pond 8P: CBR 15042 Peak Elev=22.20' Inflow=6.94 cfs 22,991 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.94 cfs 22,991 cf

Pond 9P: CB-11 Peak Elev=23.48' Inflow=3.43 cfs 11,549 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=3.43 cfs 11,549 cf

Pond 10P: CB-16 Peak Elev=10.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 11P: DMH-1 Peak Elev=9.28' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 12P: CB-4 Peak Elev=18.10' Inflow=28.35 cfs 95,635 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=28.35 cfs 95,635 cf

Pond 13P: CB-7 Peak Elev=15.81' Inflow=35.01 cfs 118,847 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=35.01 cfs 118,847 cf

Pond 14P: ICS-1 Peak Elev=14.29' Inflow=35.01 cfs 118,847 cf
Primary=27.28 cfs 90,264 cf Secondary=8.34 cfs 28,583 cf Outflow=35.01 cfs 118,847 cf

Pond 15P: CB-6 Peak Elev=19.34' Inflow=1.26 cfs 4,481 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.26 cfs 4,481 cf

Pond 16P: CB-3 Peak Elev=19.00' Inflow=4.55 cfs 15,389 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=4.55 cfs 15,389 cf

Pond 17P: CB-2 Peak Elev=19.93' Inflow=2.88 cfs 9,548 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.88 cfs 9,548 cf

Pond 18P: CB-1 Peak Elev=20.28' Inflow=1.89 cfs 6,155 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.89 cfs 6,155 cf

Pond 19P: CB-8 Peak Elev=16.02' Inflow=5.51 cfs 19,175 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=5.51 cfs 19,175 cf

Pond 20P: CB-9 Peak Elev=16.37' Inflow=3.94 cfs 13,792 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.94 cfs 13,792 cf

Pond 21P: DMH-2 Peak Elev=13.19' Inflow=8.34 cfs 28,583 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=8.34 cfs 28,583 cf

Pond 22P: DMH-3 Peak Elev=10.43' Inflow=8.83 cfs 85,144 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=8.83 cfs 85,144 cf

Pond 23P: CBR 15027 Peak Elev=25.42' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=3.50 cfs 11,442 cf

Pond 25P: CBR 15029 Peak Elev=23.98' Inflow=3.50 cfs 11,442 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.50 cfs 11,442 cf

Pond 26P: CB-5 Peak Elev=19.15' Inflow=3.15 cfs 11,069 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=3.15 cfs 11,069 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.87' Storage=6,314 cf Inflow=61.15 cfs 405,073 cf
Primary=32.76 cfs 347,756 cf Secondary=28.16 cfs 57,312 cf Outflow=60.91 cfs 405,068 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=14.17' Storage=36,342 cf Inflow=27.28 cfs 90,264 cf
Primary=12.93 cfs 33,708 cf Secondary=0.51 cfs 56,561 cf Outflow=13.41 cfs 90,268 cf

Link SP-1: Study Point 1 Inflow=99.49 cfs 625,009 cf
Primary=99.49 cfs 625,009 cf

Link SP-2: Study Point 2 Inflow=0.58 cfs 1,812 cf
Primary=0.58 cfs 1,812 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 627,538 cf Average Runoff Depth = 4.35"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Summary for Subcatchment 1S: (new Subcat)

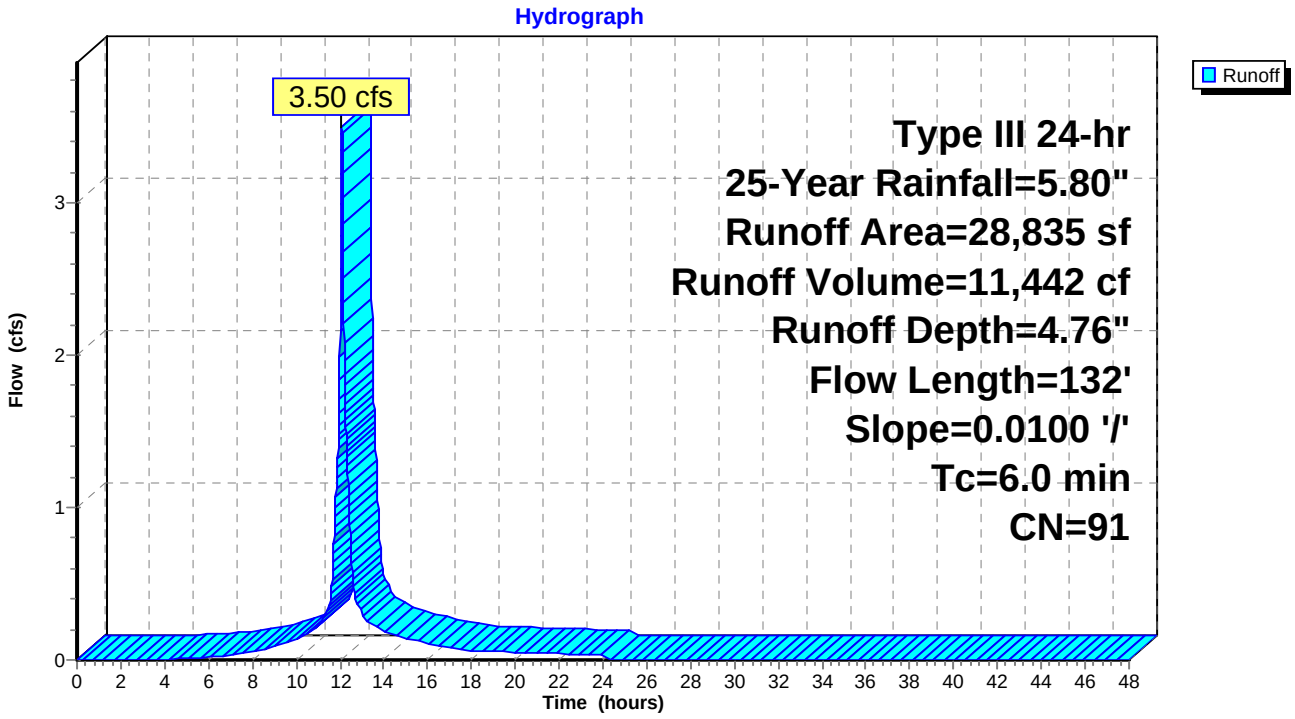
Runoff = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
19,414	98	Paved parking, HSG B
5,131	61	>75% Grass cover, Good, HSG B
28,835	91	Weighted Average
5,131		17.79% Pervious Area
23,704		82.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	58	0.0100	0.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	74	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	132	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

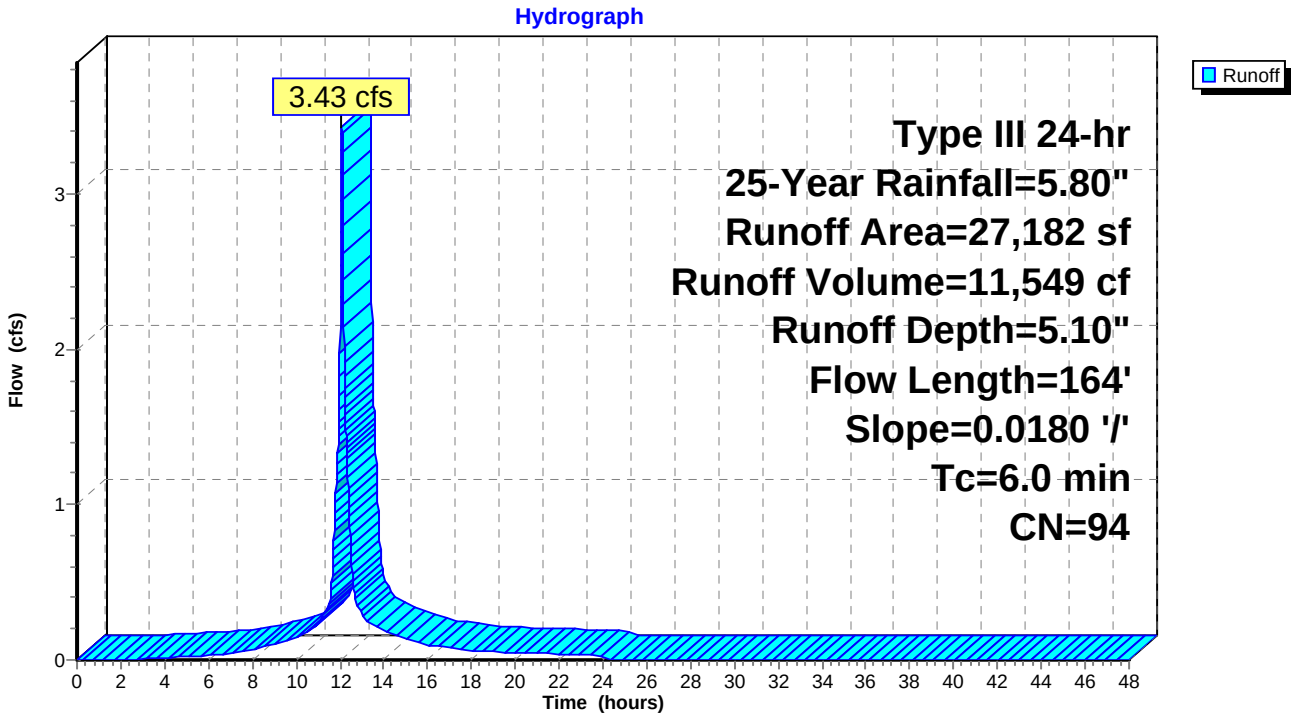
Runoff = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,939	98	Roofs, HSG B
22,074	98	Paved parking, HSG B
3,169	61	>75% Grass cover, Good, HSG B
27,182	94	Weighted Average
3,169		11.66% Pervious Area
24,013		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0180	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	64	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	164	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

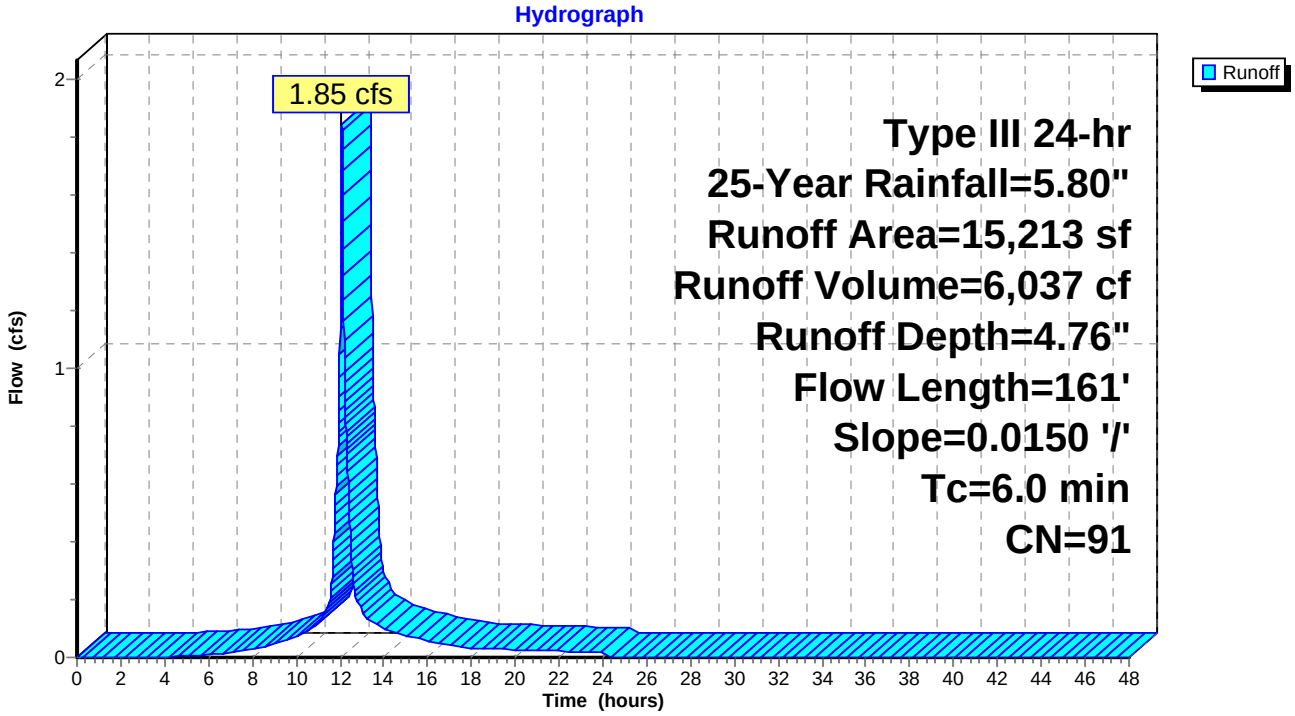
Runoff = 1.85 cfs @ 12.08 hrs, Volume= 6,037 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,202	98	Paved parking, HSG B
3,011	61	>75% Grass cover, Good, HSG B
15,213	91	Weighted Average
3,011		19.79% Pervious Area
12,202		80.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	33	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	128	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5					**Direct Entry,**
6.0	161	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

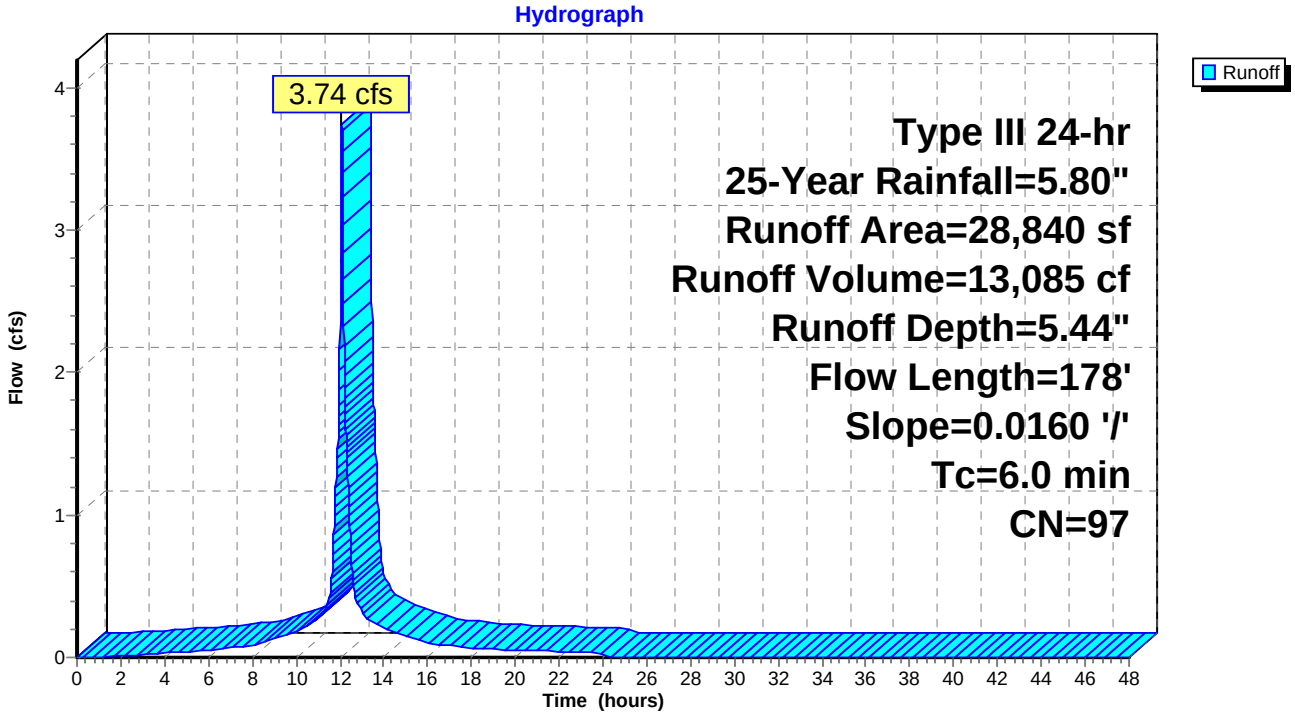
Runoff = 3.74 cfs @ 12.08 hrs, Volume= 13,085 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
27,938	98	Paved parking, HSG B
902	61	>75% Grass cover, Good, HSG B
28,840	97	Weighted Average
902		3.13% Pervious Area
27,938		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	78	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	178	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

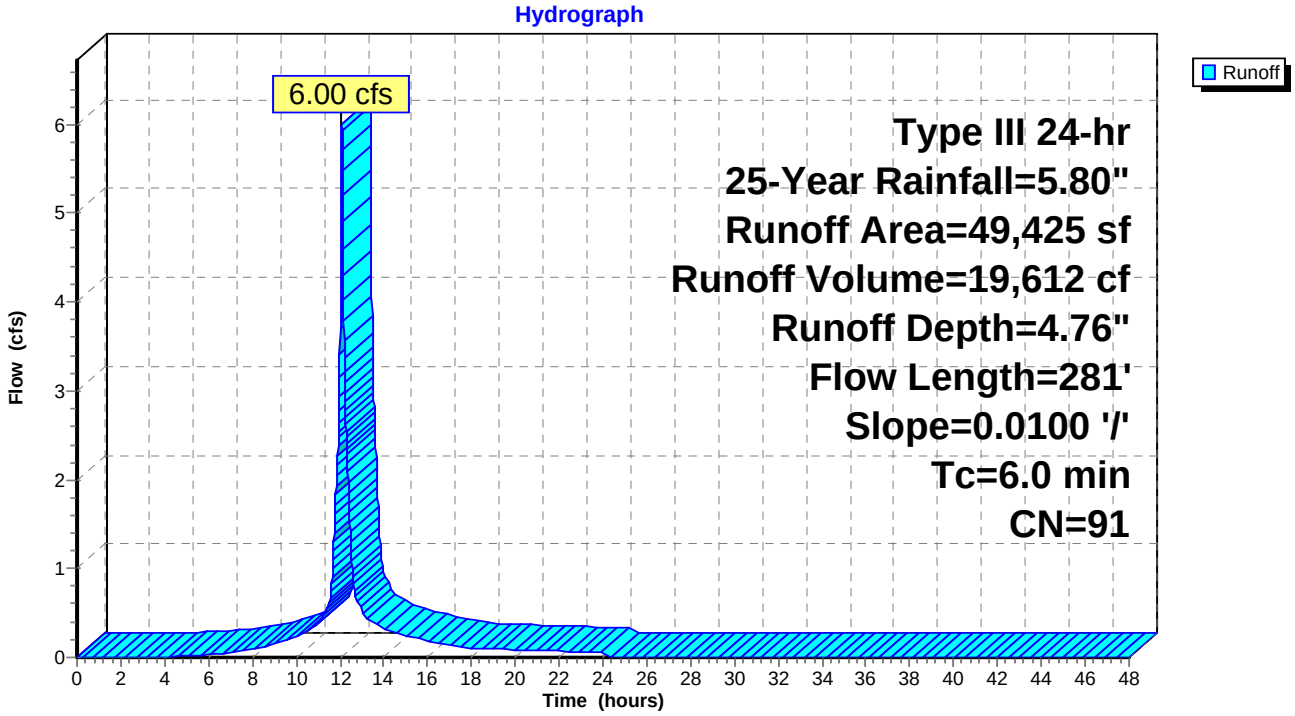
Runoff = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,650	98	Paved parking, HSG B
8,775	61	>75% Grass cover, Good, HSG B
49,425	91	Weighted Average
8,775		17.75% Pervious Area
40,650		82.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.5	181	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

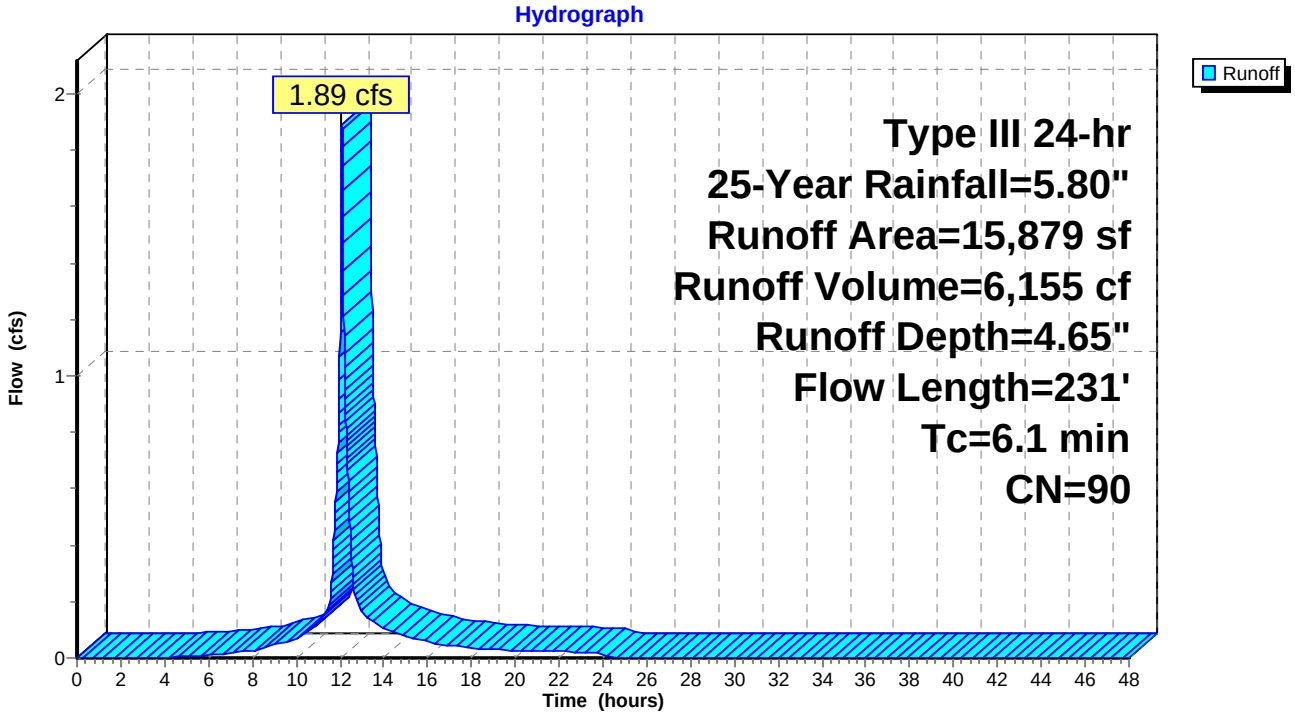
Runoff = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,219	98	Paved parking, HSG B
3,967	98	Paved parking, HSG D
3,328	61	>75% Grass cover, Good, HSG B
365	80	>75% Grass cover, Good, HSG D
15,879	90	Weighted Average
3,693		23.26% Pervious Area
12,186		76.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

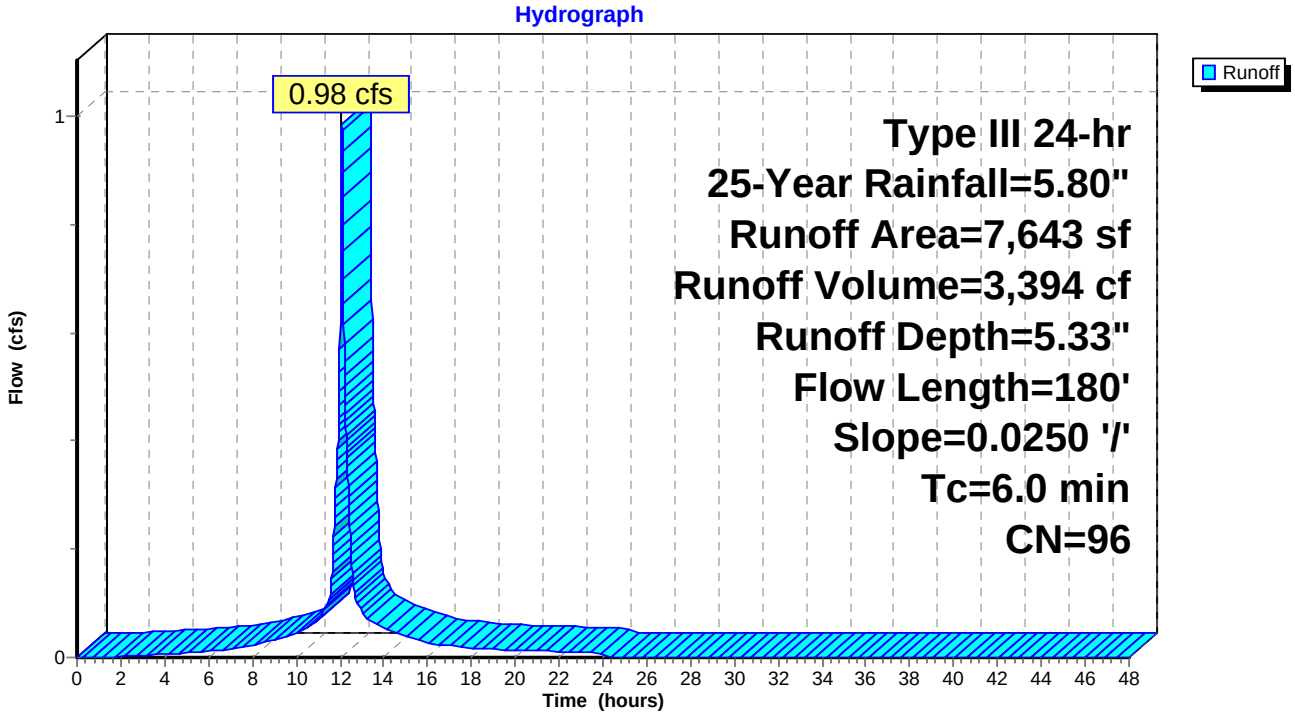
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,394 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,645	98	Paved parking, HSG B
4,421	98	Paved parking, HSG D
183	61	>75% Grass cover, Good, HSG B
394	80	>75% Grass cover, Good, HSG D
7,643	96	Weighted Average
577		7.55% Pervious Area
7,066		92.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5					**Direct Entry,**
6.0	180	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

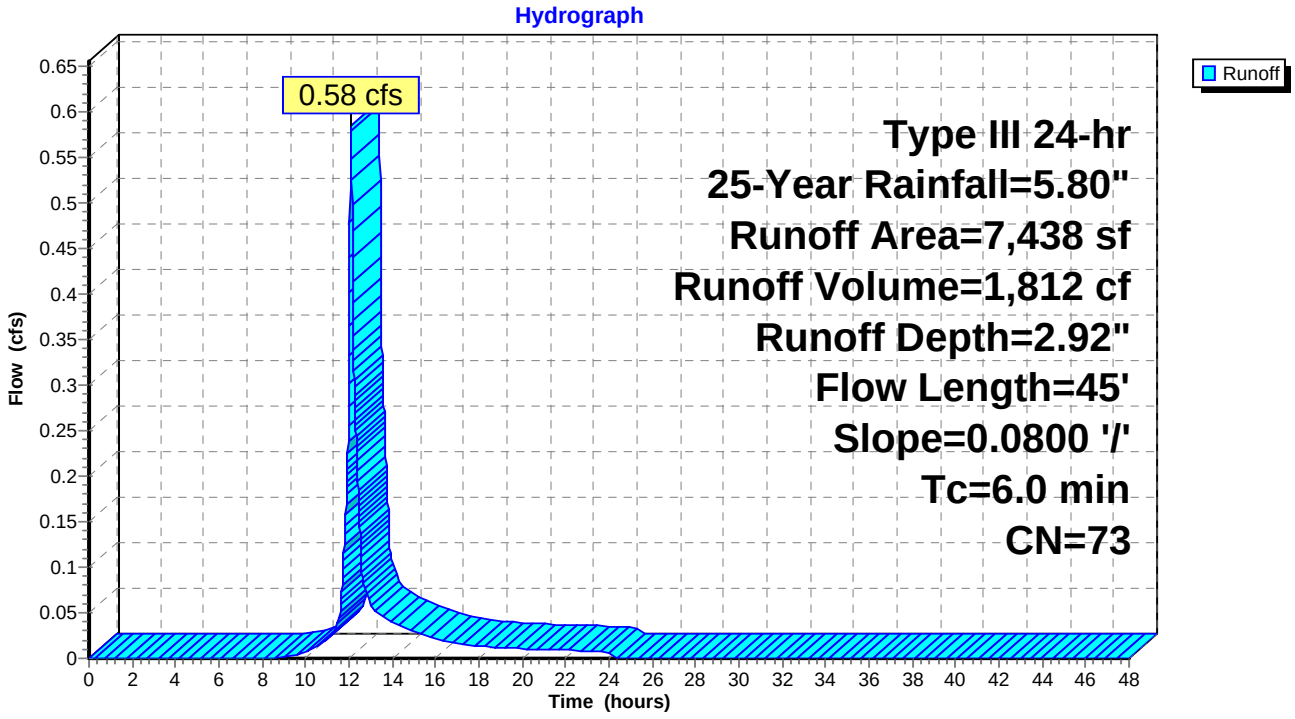
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG B
5,074	61	>75% Grass cover, Good, HSG B
7,438	73	Weighted Average
5,074		68.22% Pervious Area
2,364		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	45	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.0					**Direct Entry,**
6.0	45	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

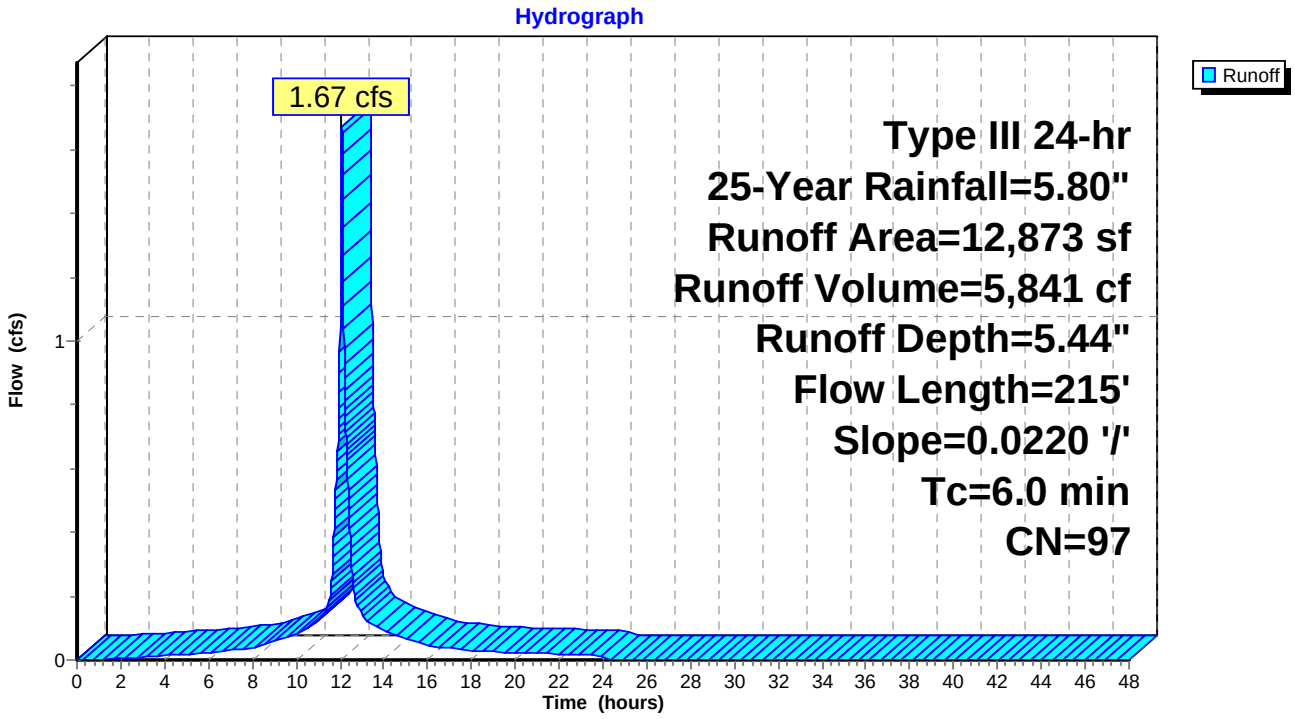
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 5,841 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,193	98	Paved parking, HSG B
10,370	98	Paved parking, HSG D
310	61	>75% Grass cover, Good, HSG B
12,873	97	Weighted Average
310		2.41% Pervious Area
12,563		97.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0220	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	115	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	215	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

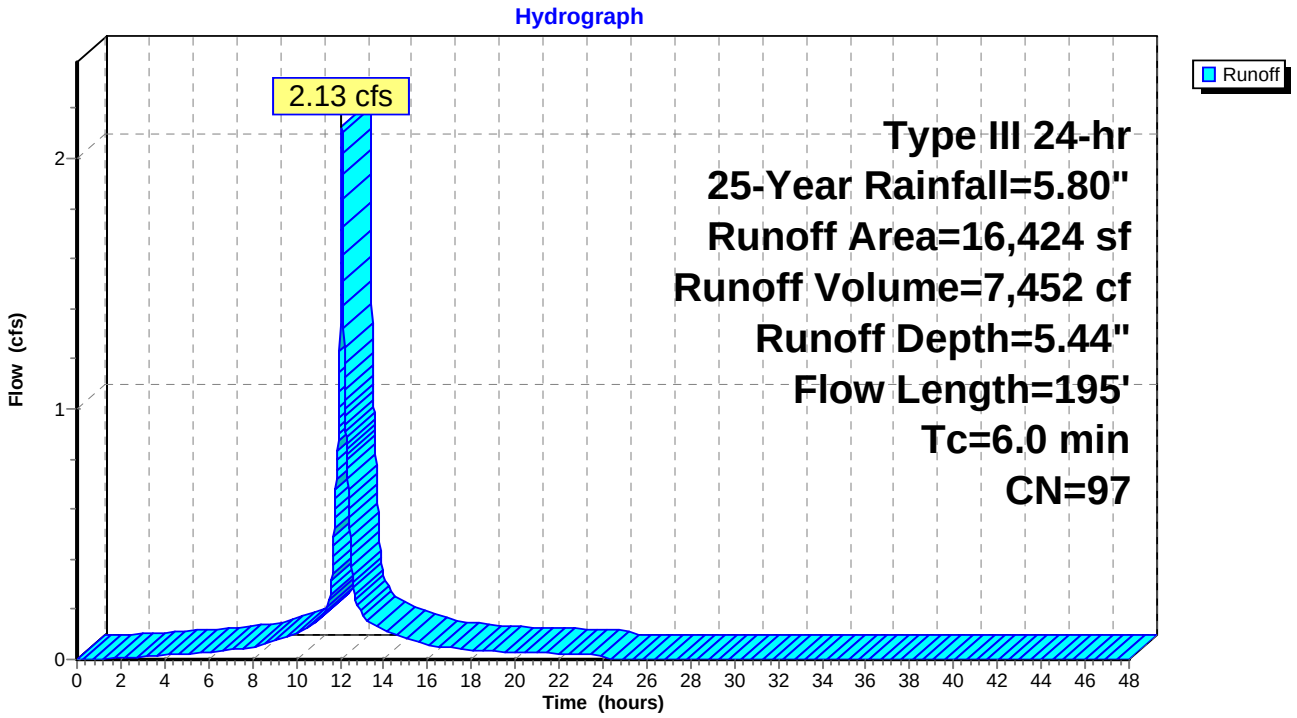
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 7,452 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,869	98	Paved parking, HSG B
13,780	98	Paved parking, HSG D
465	61	>75% Grass cover, Good, HSG B
310	80	>75% Grass cover, Good, HSG D
16,424	97	Weighted Average
775		4.72% Pervious Area
15,649		95.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0226	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	95	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	195	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment 11S: (new Subcat)

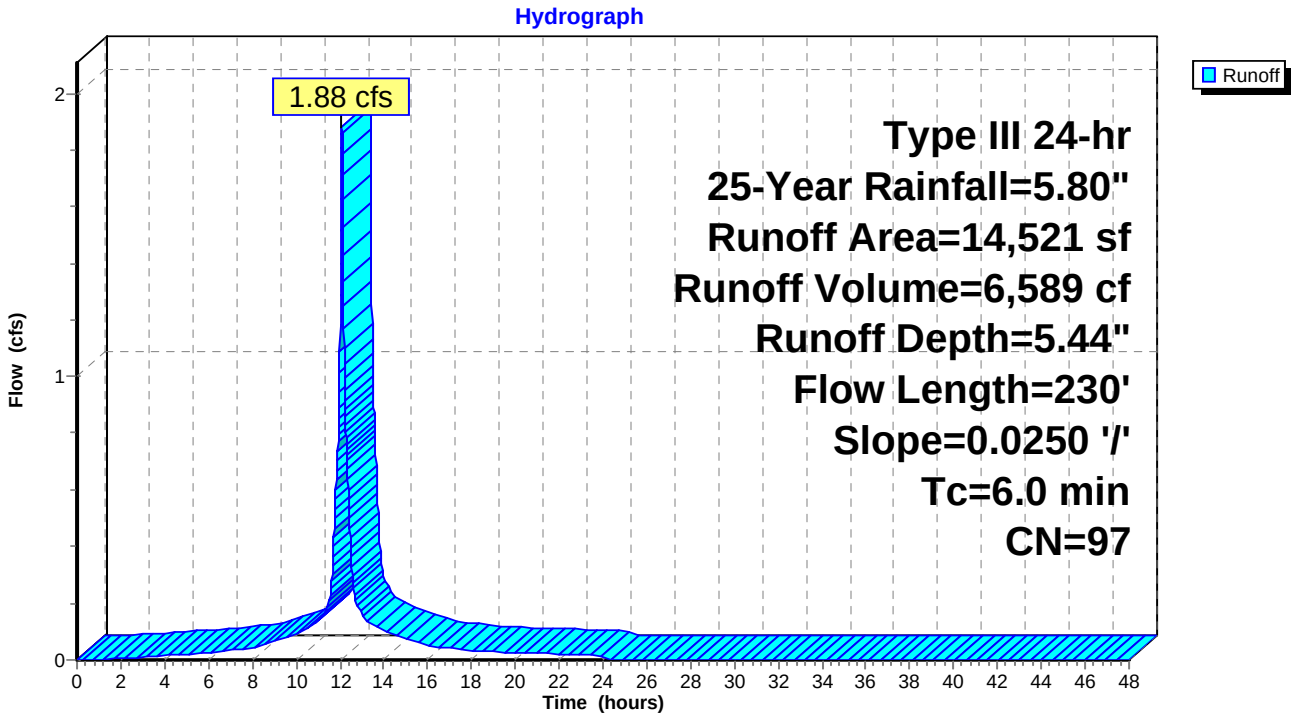
Runoff = 1.88 cfs @ 12.08 hrs, Volume= 6,589 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,962	98	Paved parking, HSG B
11,938	98	Paved parking, HSG D
621	80	>75% Grass cover, Good, HSG D
14,521	97	Weighted Average
621		4.28% Pervious Area
13,900		95.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	130	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	230	Total			

Subcatchment 11S: (new Subcat)



Summary for Subcatchment 12S: (new Subcat)

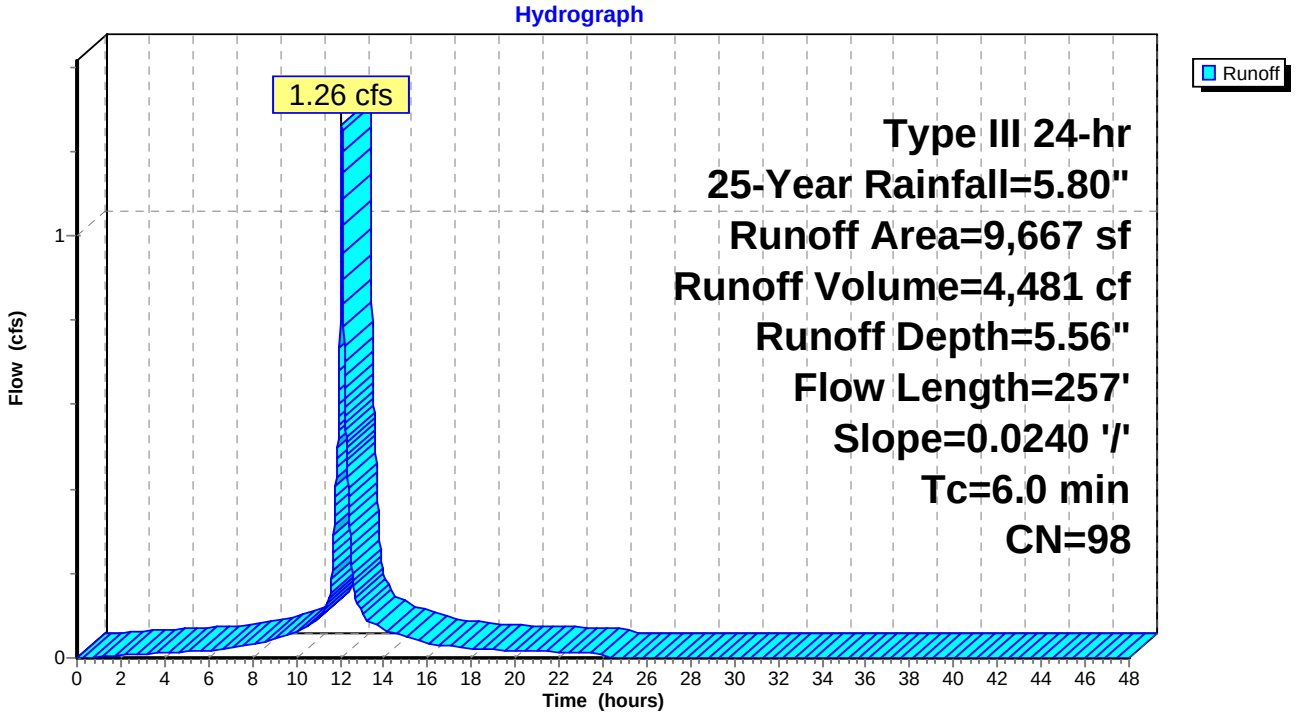
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,861	98	Paved parking, HSG B
6,806	98	Paved parking, HSG D
9,667	98	Weighted Average
9,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0240	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	157	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	257	Total			

Subcatchment 12S: (new Subcat)



Summary for Subcatchment 13S: (new Subcat)

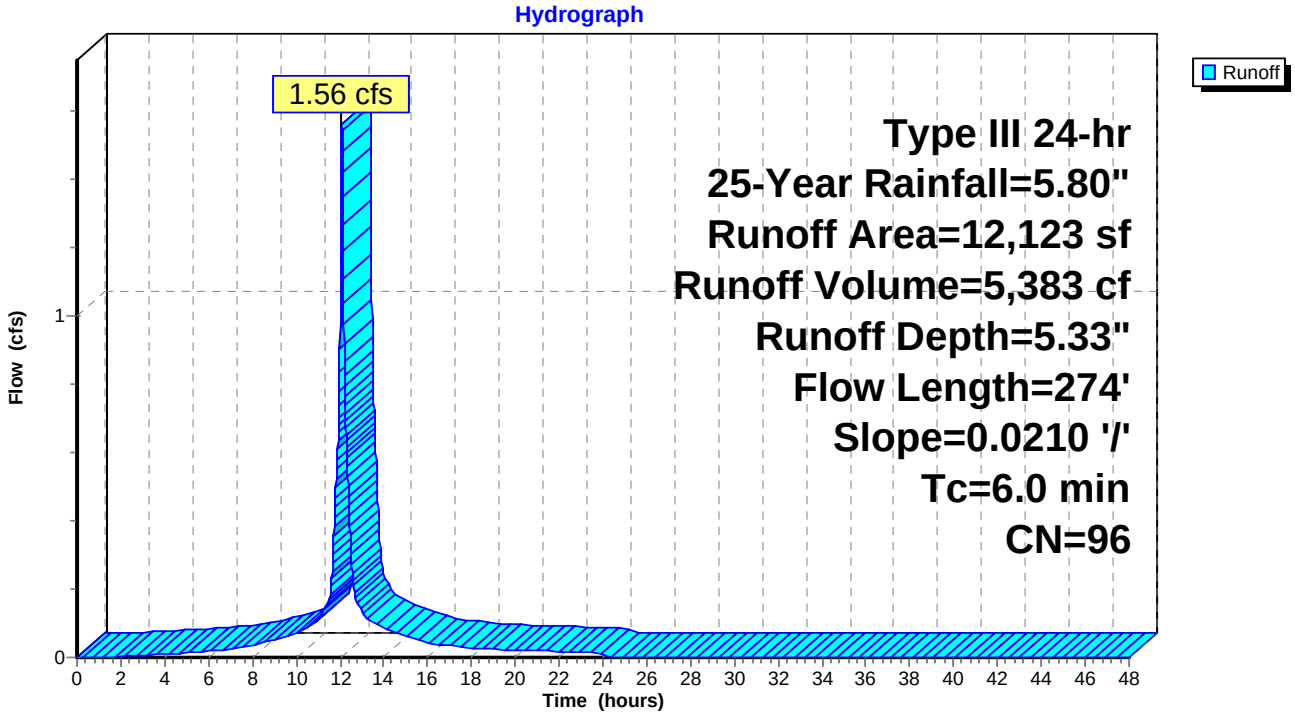
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,383 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
10,776	98	Paved parking, HSG D
1,347	80	>75% Grass cover, Good, HSG D
12,123	96	Weighted Average
1,347		11.11% Pervious Area
10,776		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0210	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.0	174	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	274	Total			

Subcatchment 13S: (new Subcat)



Summary for Subcatchment 14S: (new Subcat)

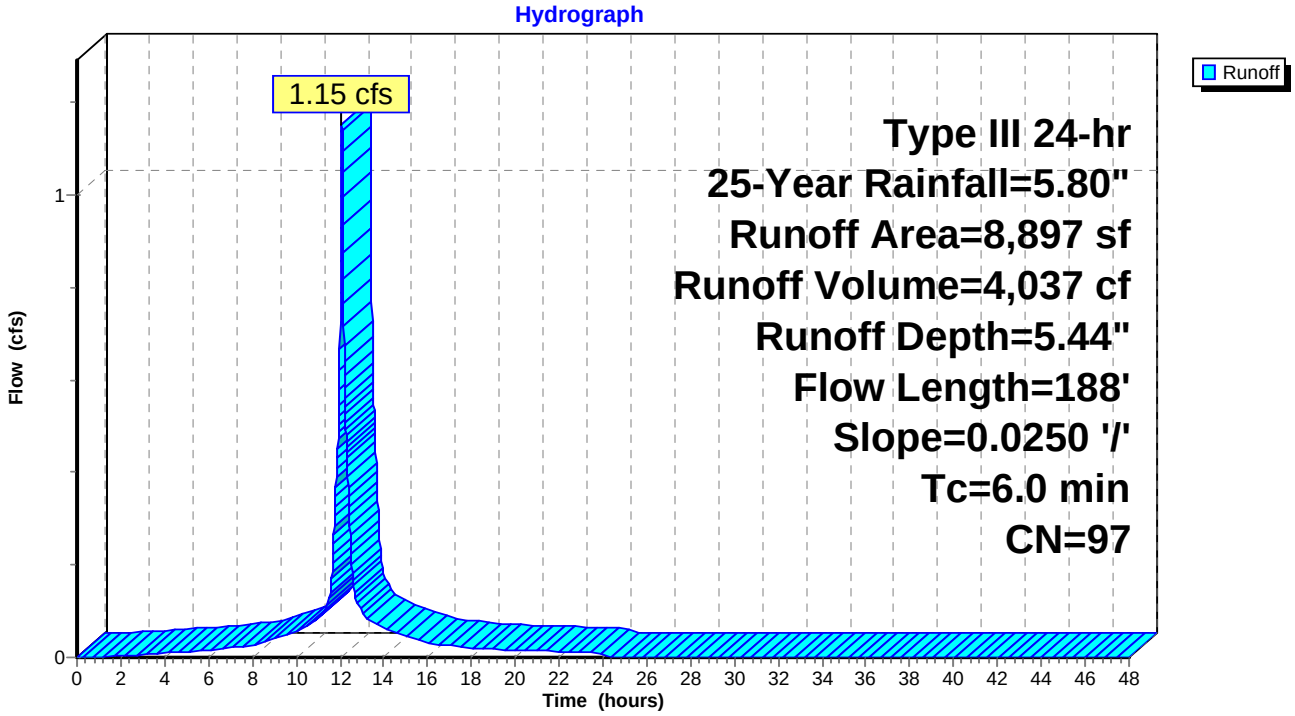
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,037 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,240	98	Paved parking, HSG D
657	80	>75% Grass cover, Good, HSG D
8,897	97	Weighted Average
657		7.38% Pervious Area
8,240		92.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	88	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	188	Total			

Subcatchment 14S: (new Subcat)



Summary for Subcatchment 15S: (new Subcat)

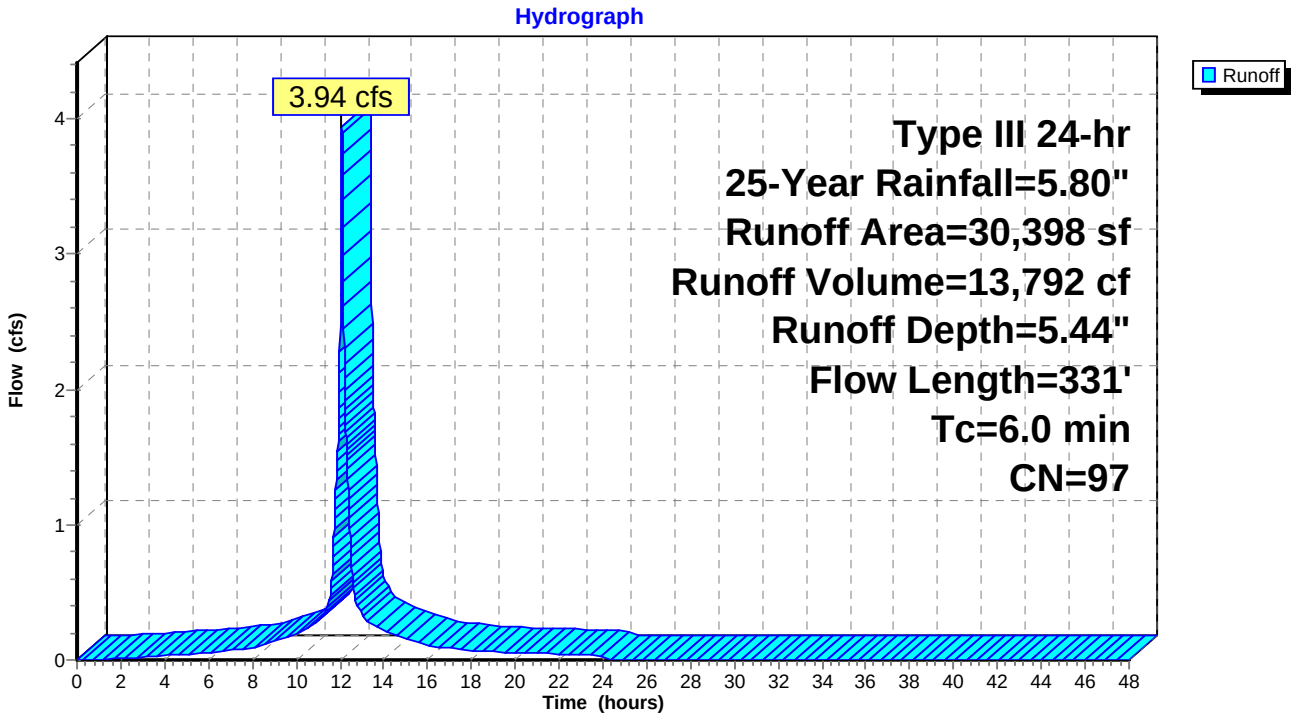
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
104	98	Paved parking, HSG B
28,288	98	Paved parking, HSG D
2,006	80	>75% Grass cover, Good, HSG D
30,398	97	Weighted Average
2,006		6.60% Pervious Area
28,392		93.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0225	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.7	231	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.1					**Direct Entry,**
6.0	331	Total			

Subcatchment 15S: (new Subcat)



Summary for Subcatchment 16S: (new Subcat)

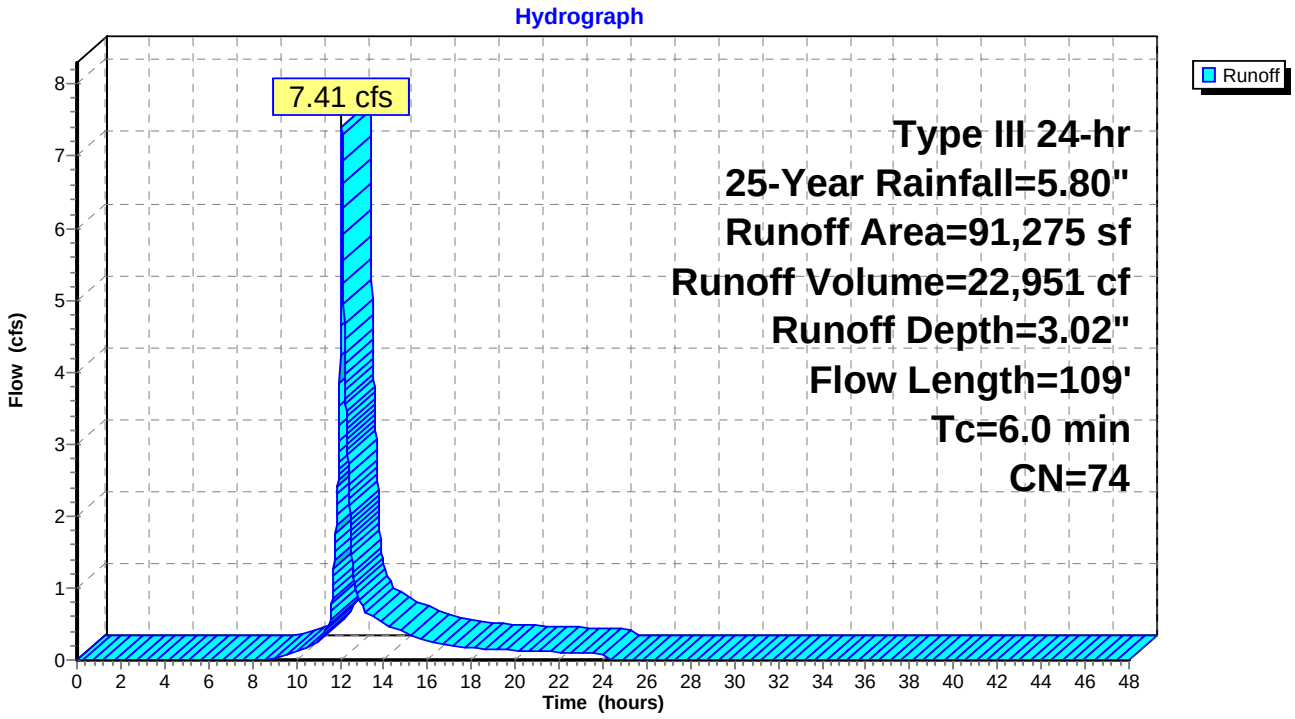
Runoff = 7.41 cfs @ 12.09 hrs, Volume= 22,951 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,956	80	>75% Grass cover, Good, HSG D
91,275	74	Weighted Average
90,383		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 16S: (new Subcat)



Summary for Subcatchment 17S: (new Subcat)

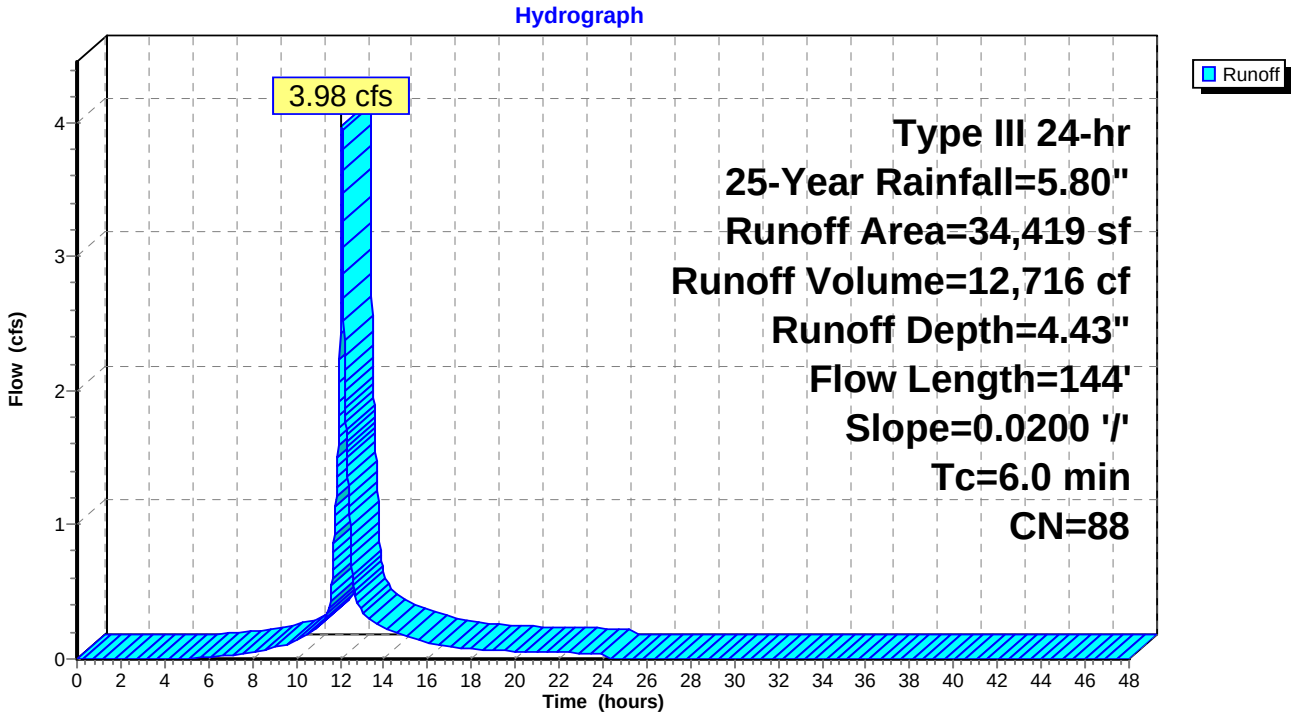
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 17S: (new Subcat)



Summary for Subcatchment OSE: Off Site Flow East of PKWY

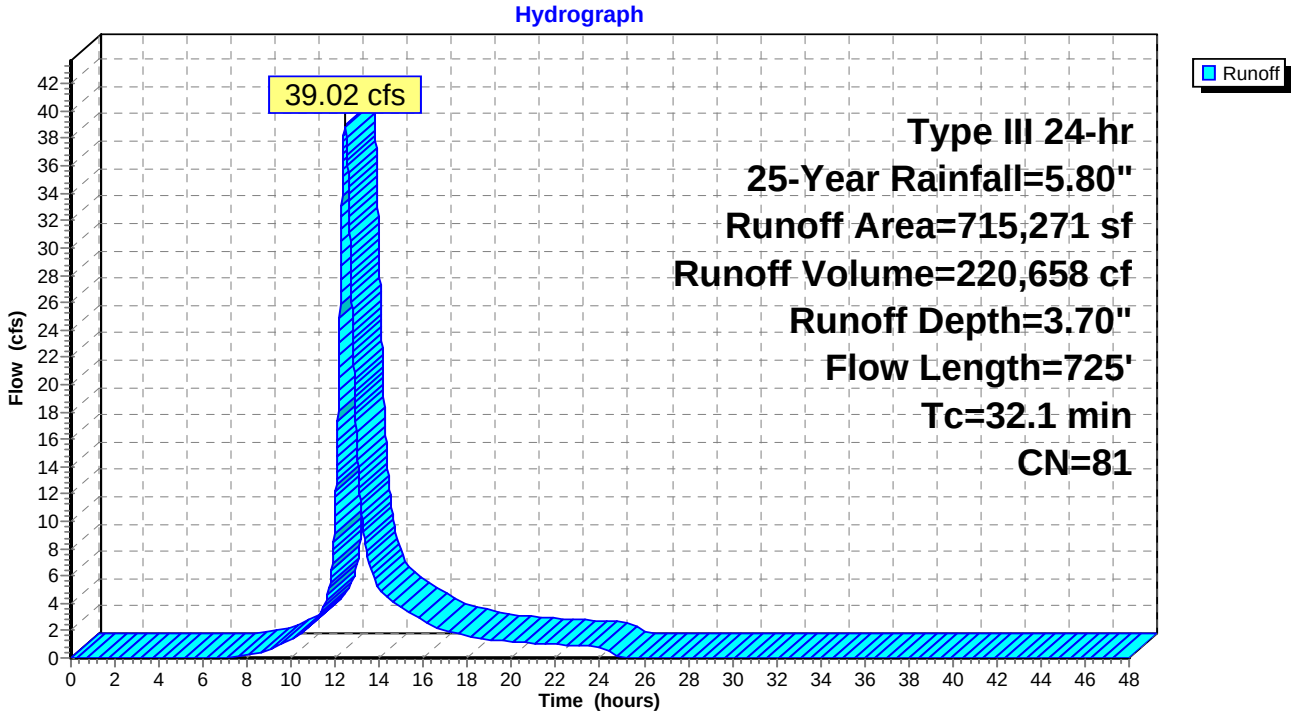
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

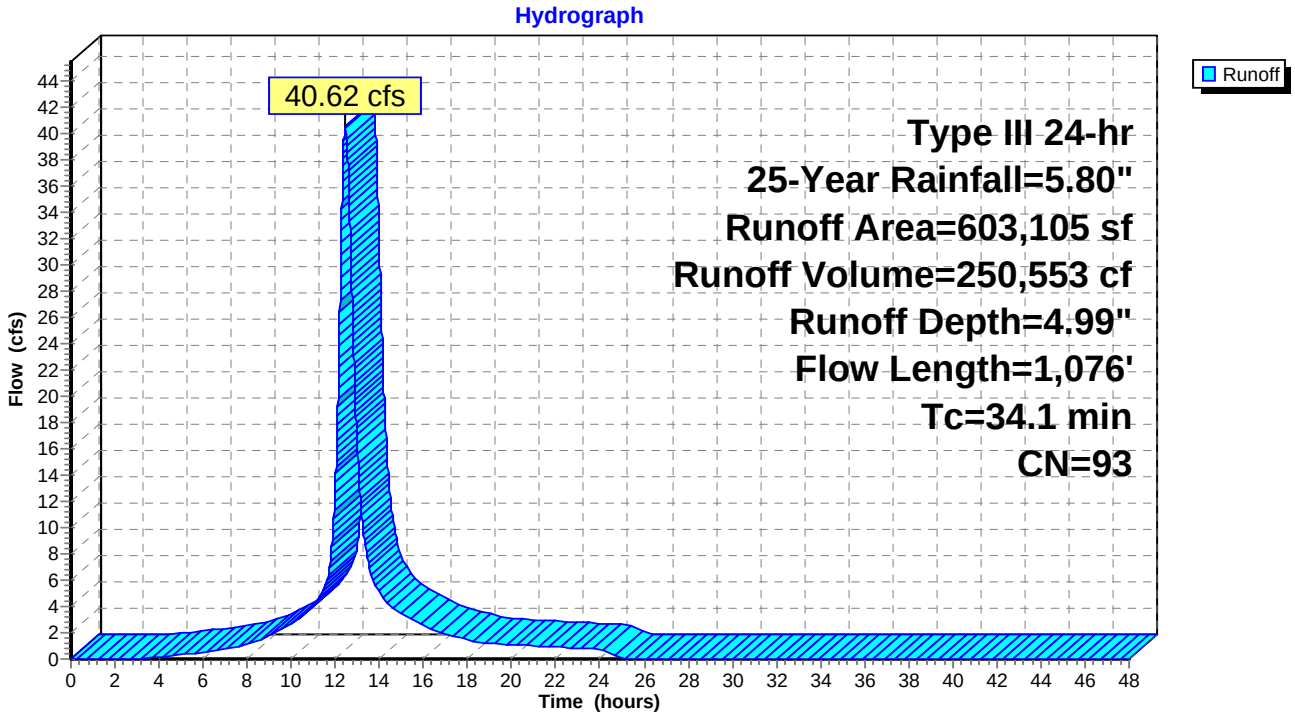
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: DMH 10162

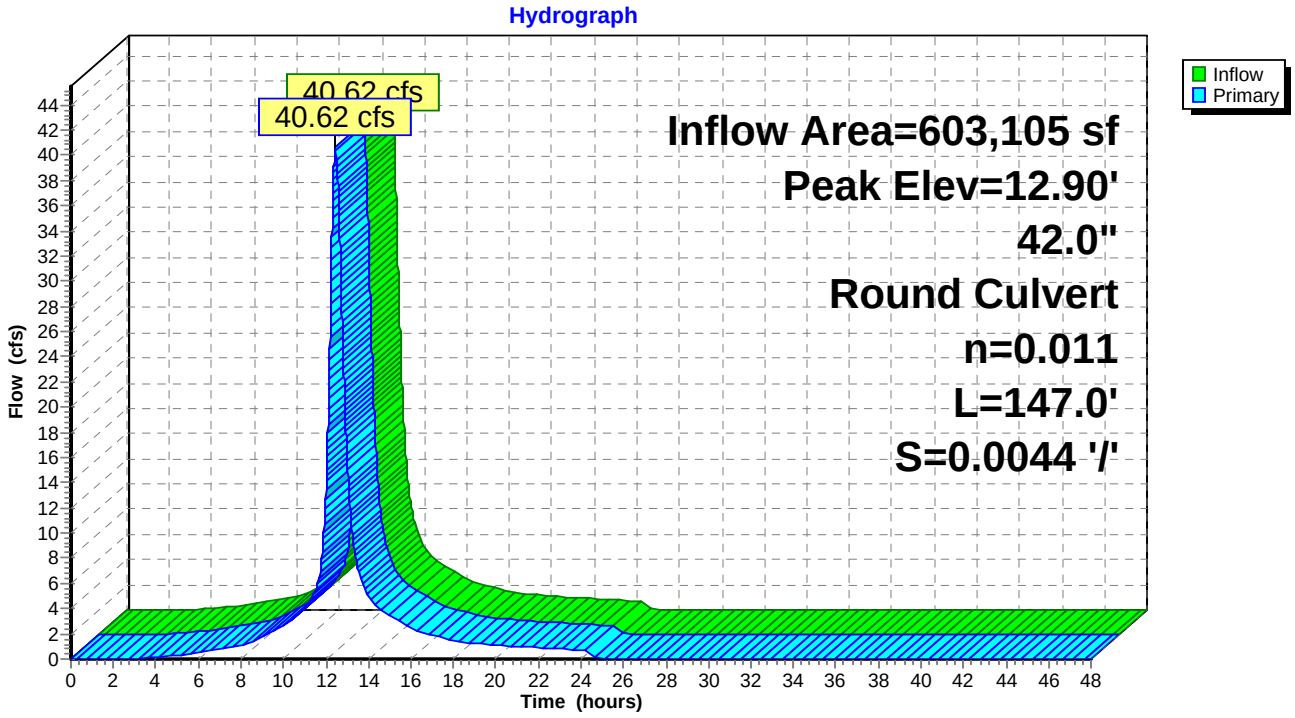
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.90' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 147.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0044 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.59 cfs @ 12.46 hrs HW=12.89' TW=12.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.59 cfs @ 4.22 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB-15

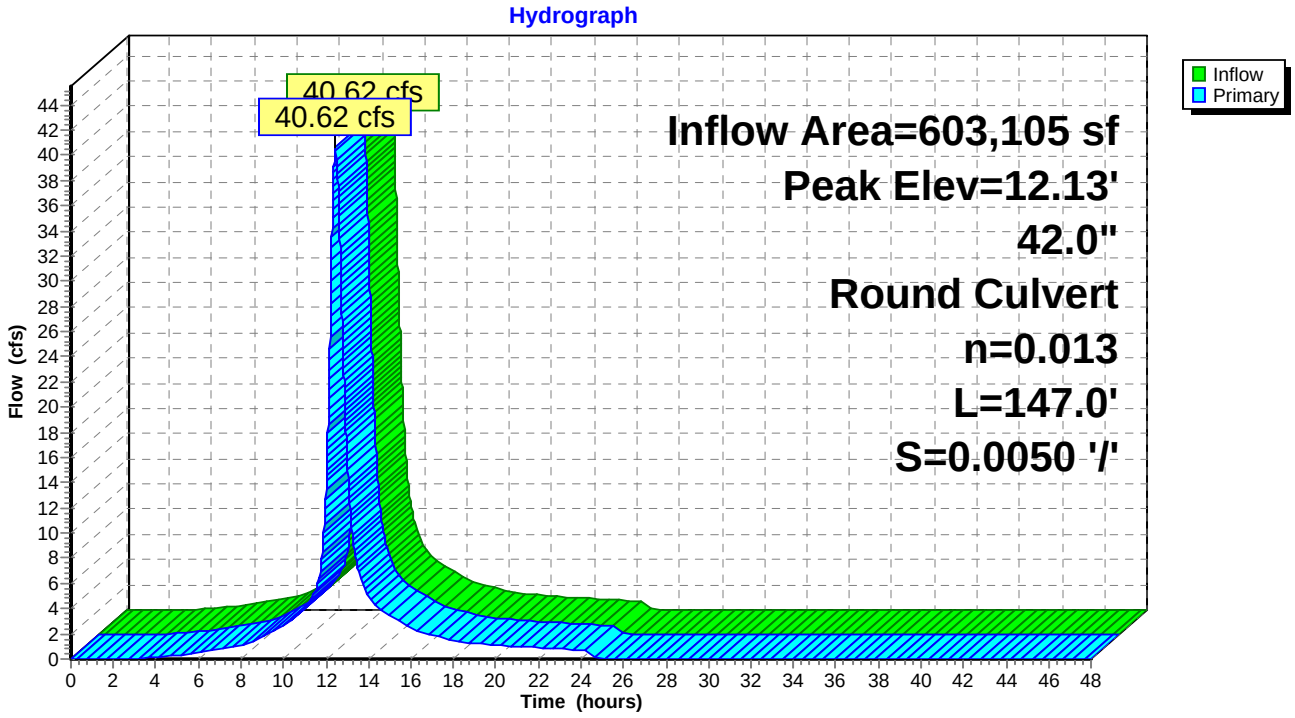
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.13' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**42.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=12.13' TW=10.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 40.61 cfs @ 4.22 fps)

Pond 2P: CB-15



Summary for Pond 3P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 66.90 cfs @ 12.42 hrs, Volume= 277,970 cf
Outflow = 66.78 cfs @ 12.44 hrs, Volume= 277,253 cf, Atten= 0%, Lag= 1.1 min
Primary = 66.78 cfs @ 12.44 hrs, Volume= 277,253 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.97' @ 12.44 hrs Surf.Area= 3,202 sf Storage= 4,790 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 4.8 min calculated for 277,253 cf (100% of inflow)
Center-of-Mass det. time= 3.0 min (821.0 - 818.0)

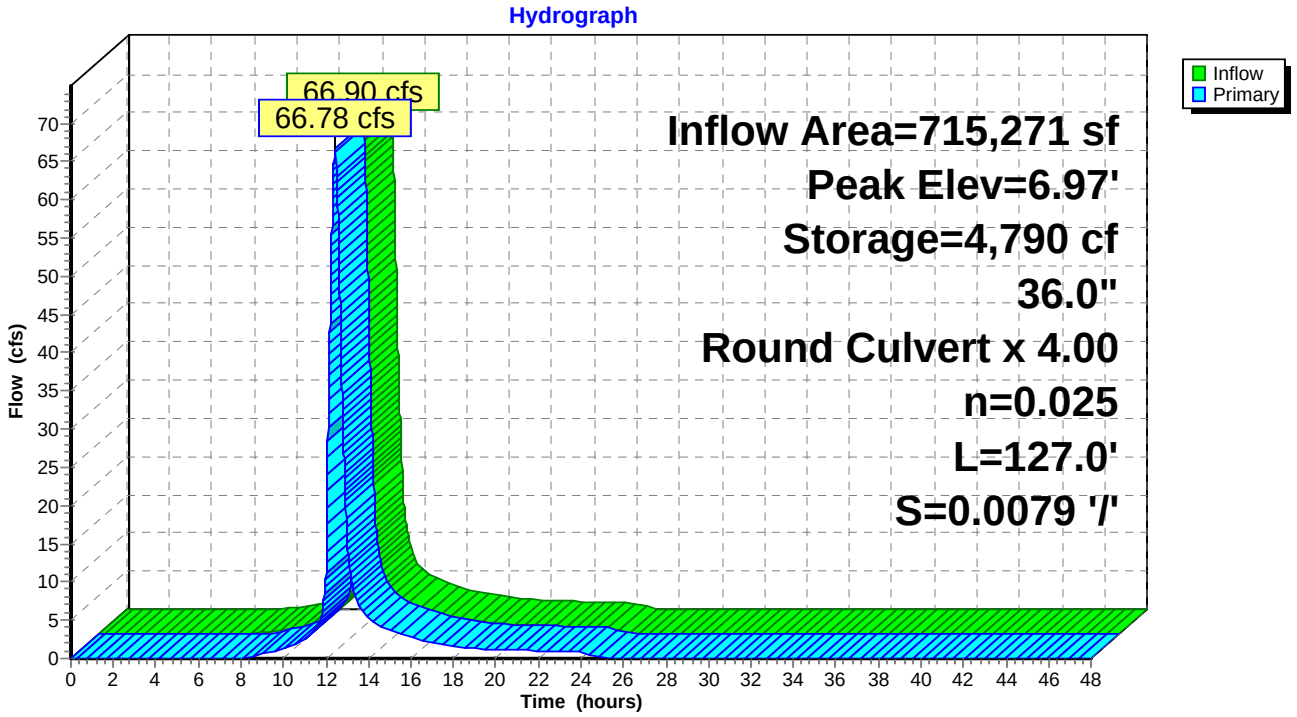
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=66.78 cfs @ 12.44 hrs HW=6.97' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 66.78 cfs @ 4.38 fps)

Pond 3P: Existing (4)-36" Culverts



Summary for Pond 4P: CBR 15036

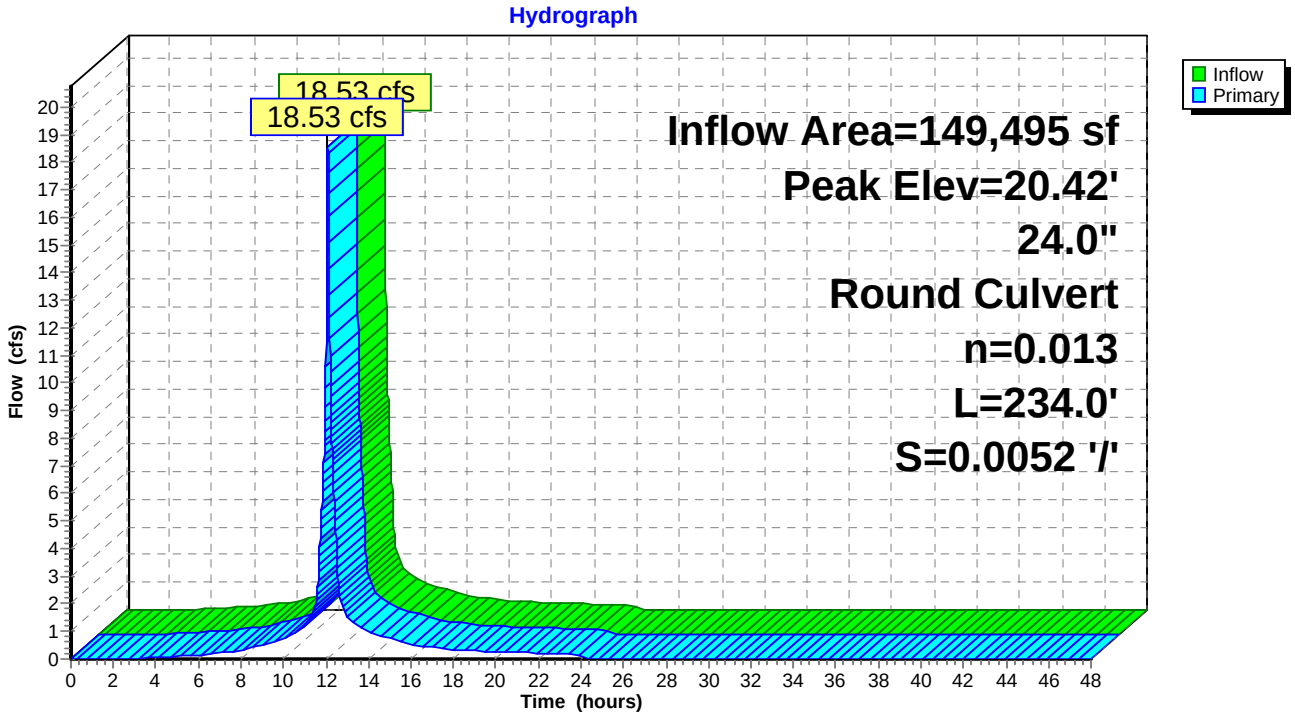
Inflow Area = 149,495 sf, 85.96% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.42' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.59'	**24.0" Round Culvert** L= 234.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.59' / 14.38' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.08 hrs HW=20.36' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 18.20 cfs @ 5.79 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

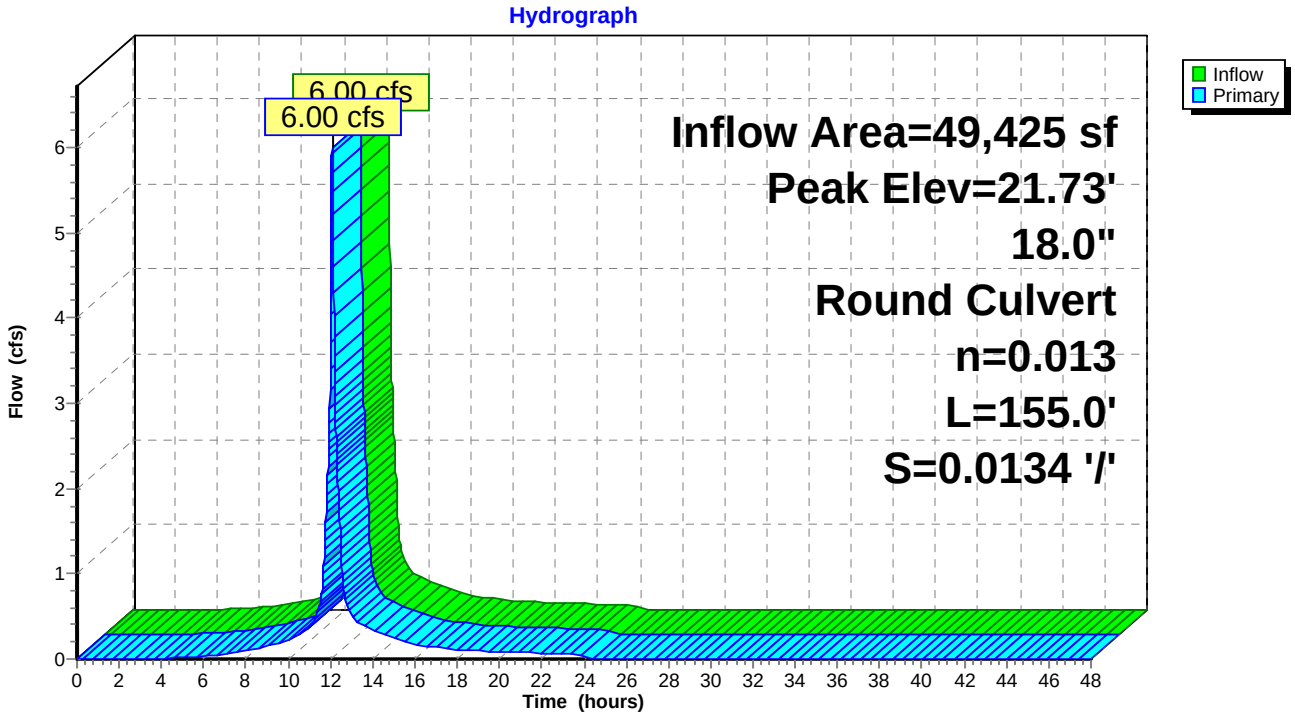
Inflow Area = 49,425 sf, 82.25% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.73' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.88 cfs @ 12.08 hrs HW=21.70' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.88 cfs @ 4.74 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

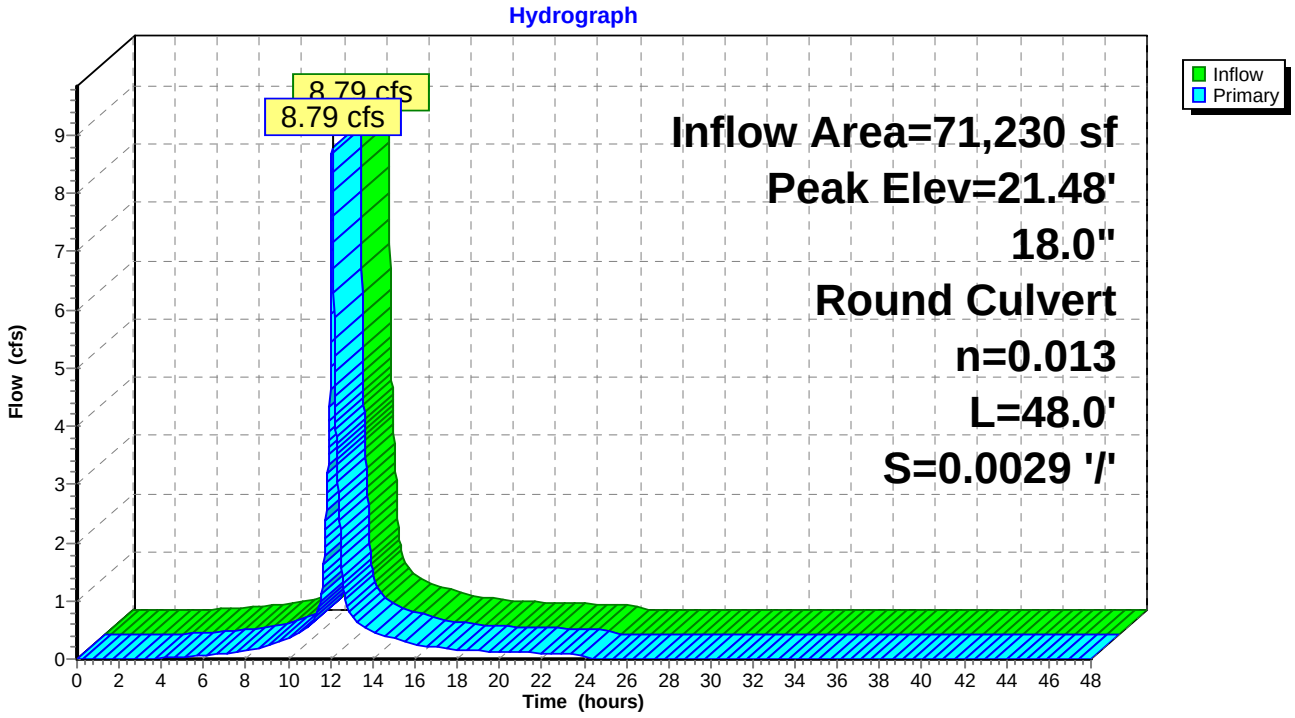
Inflow Area = 71,230 sf, 84.12% Impervious, Inflow Depth = 4.89" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.48' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.08 hrs HW=21.37' TW=20.36' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.53 cfs @ 4.83 fps)

Pond 6P: CBR 15040



Summary for Pond 7P: CB 12

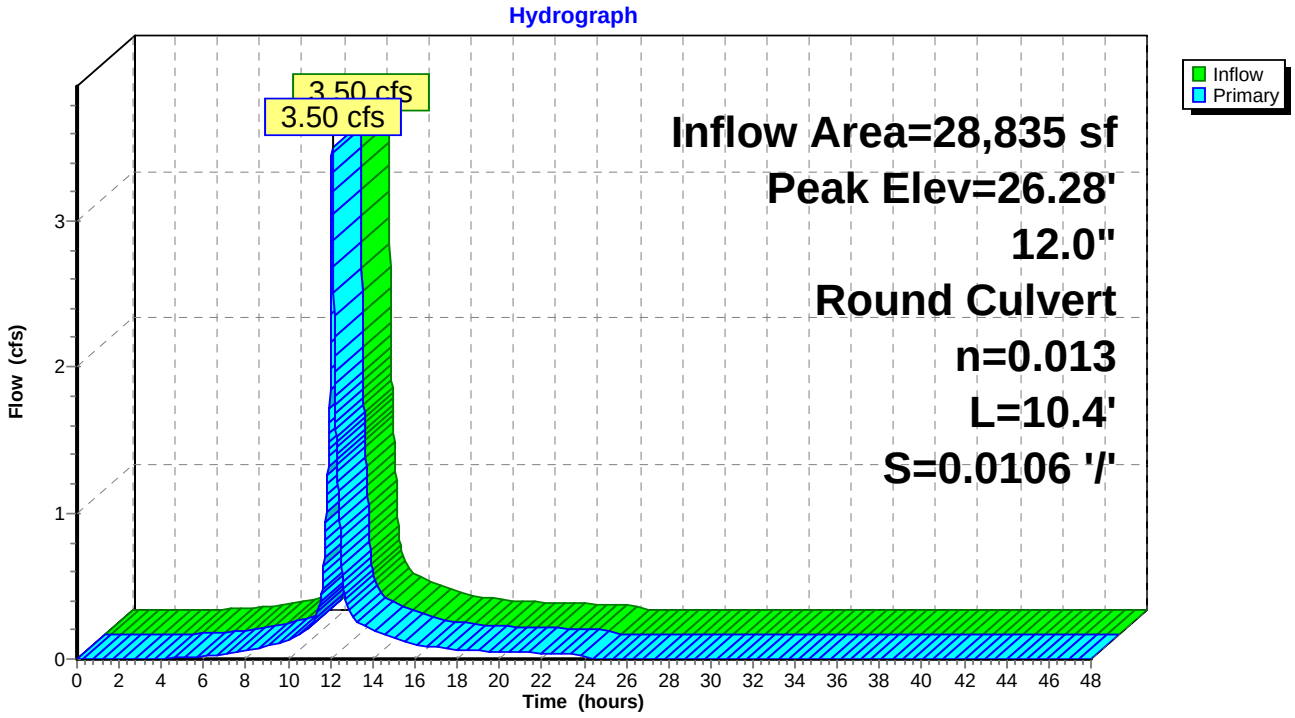
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.28' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.68'	**12.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.68' / 24.57' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=26.27' TW=25.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 4.45 fps)

Pond 7P: CB 12



Summary for Pond 8P: CBR 15042

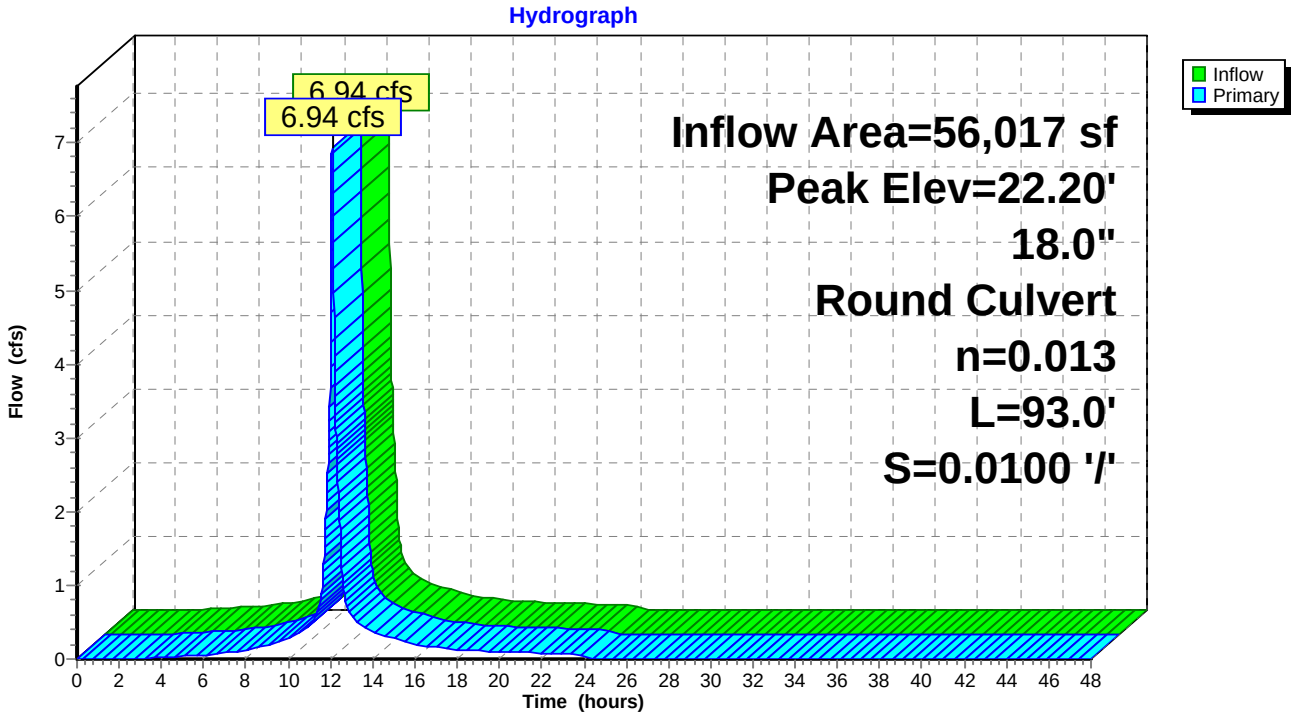
Inflow Area = 56,017 sf, 85.18% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf
Outflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.20' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.35 cfs @ 12.08 hrs HW=22.01' TW=21.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.35 cfs @ 3.60 fps)

Pond 8P: CBR 15042



Summary for Pond 9P: CB-11

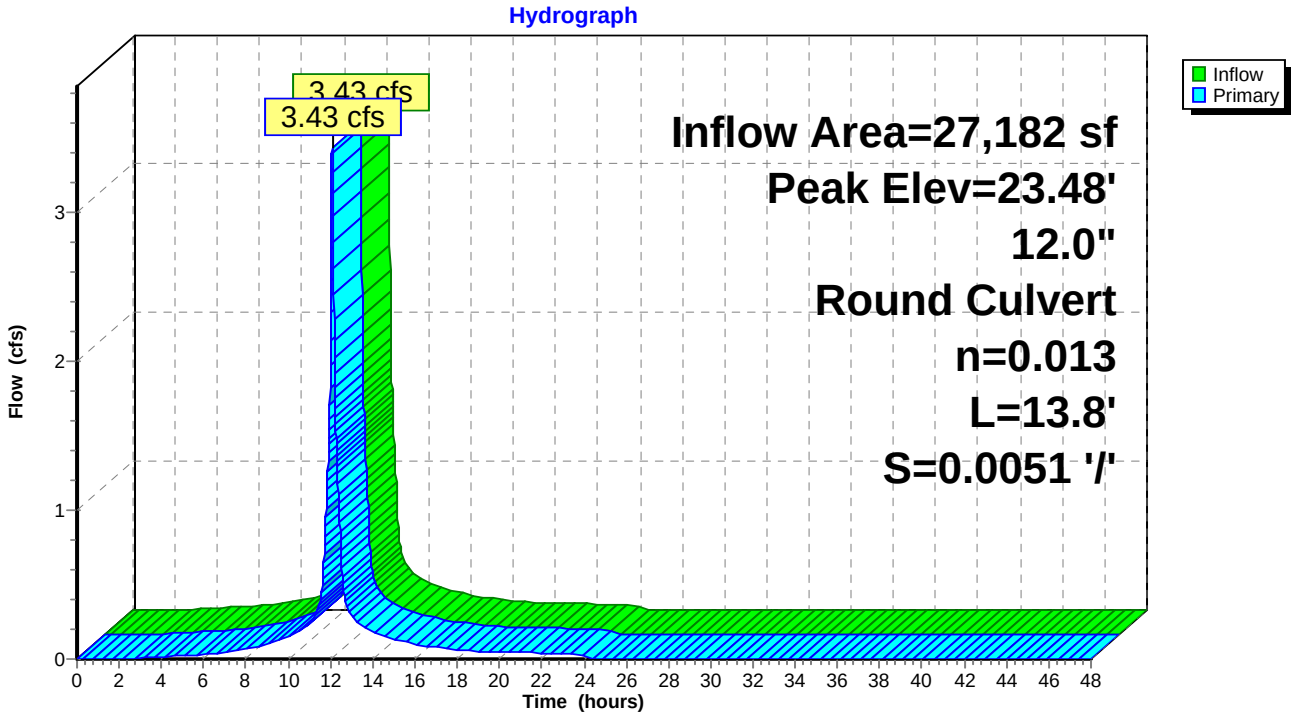
Inflow Area = 27,182 sf, 88.34% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.48' @ 12.10 hrs
Flood Elev= 27.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.47'	**12.0" Round Culvert** L= 13.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.47' / 21.40' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.43 cfs @ 12.08 hrs HW=23.32' TW=22.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.43 cfs @ 4.37 fps)

Pond 9P: CB-11



Summary for Pond 10P: CB-16

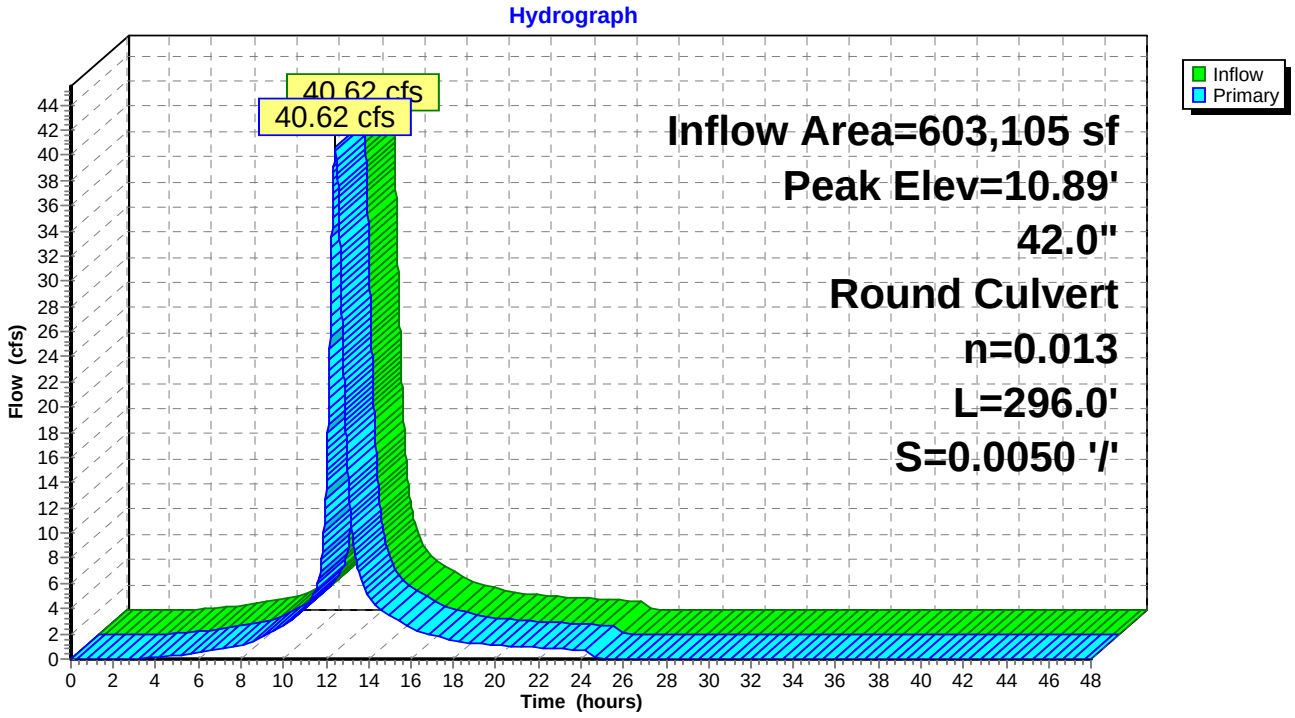
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.89' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**42.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.64 cfs @ 12.46 hrs HW=10.89' TW=9.28' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.64 cfs @ 5.62 fps)

Pond 10P: CB-16



Summary for Pond 11P: DMH-1

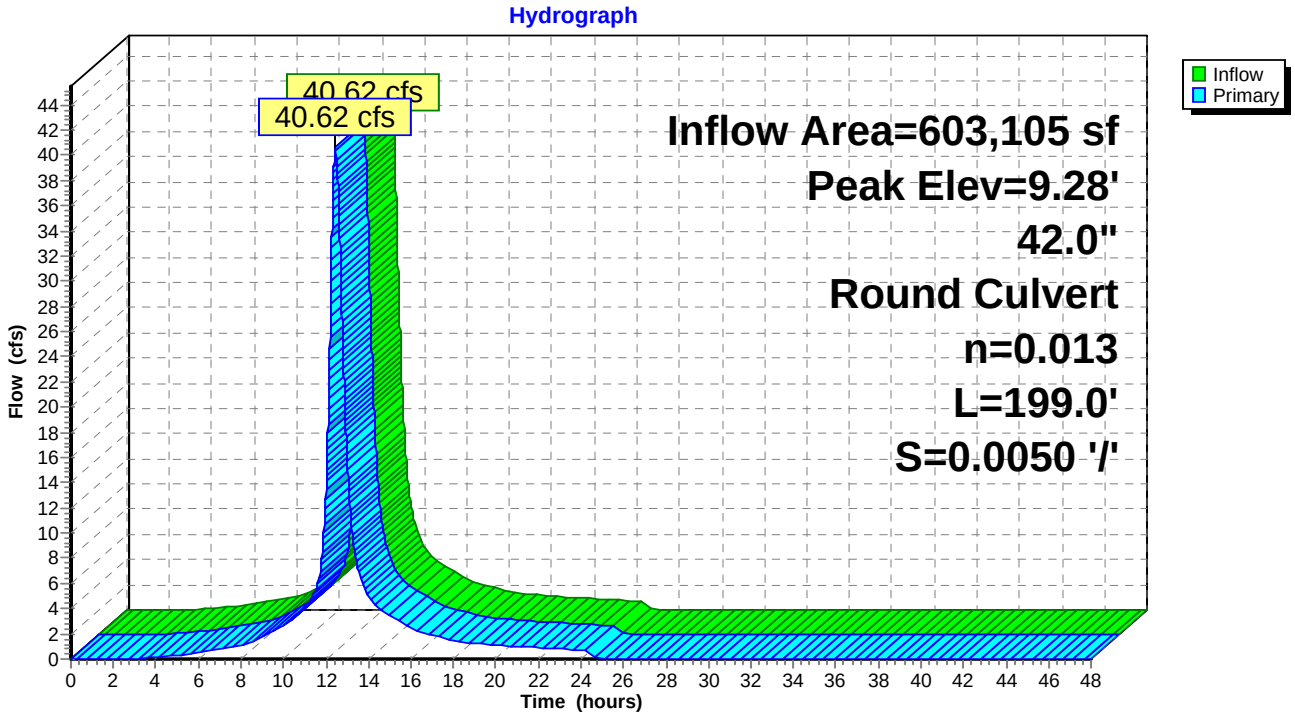
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 9.28' @ 12.44 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**42.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.64 cfs @ 12.46 hrs HW=9.28' TW=7.85' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.64 cfs @ 5.70 fps)

Pond 11P: DMH-1



Summary for Pond 12P: CB-4

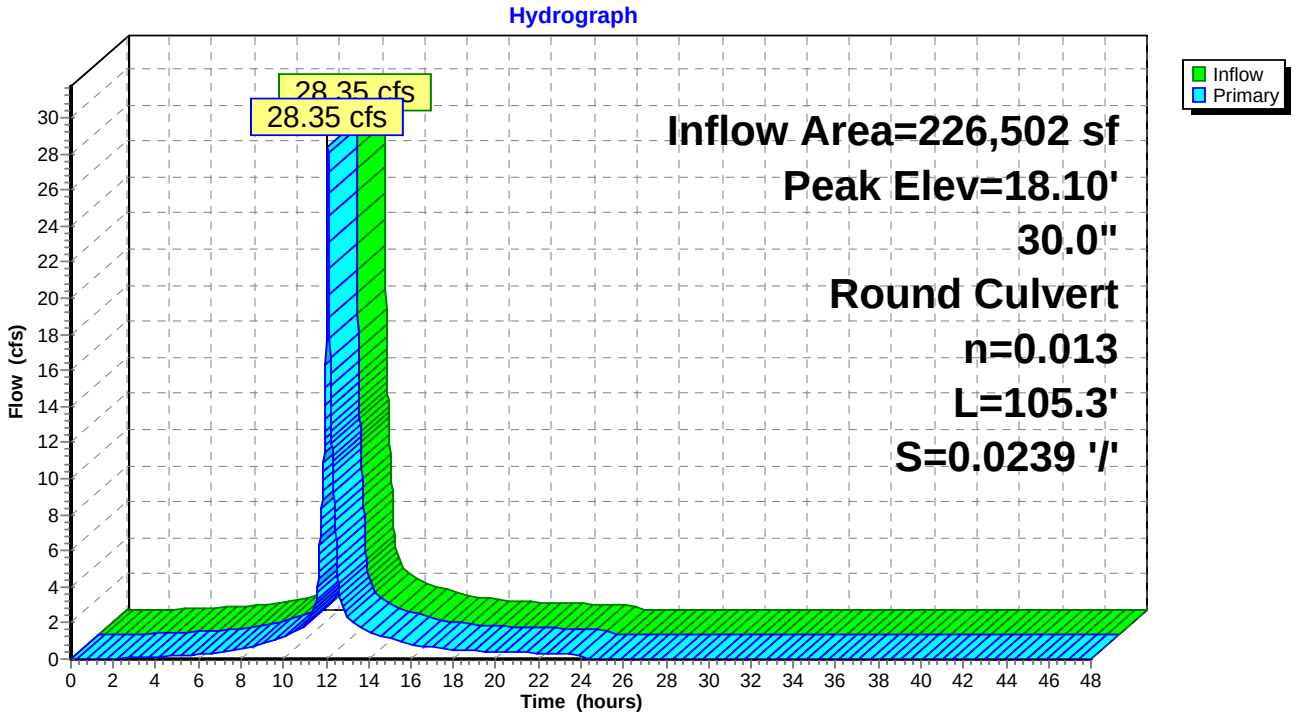
Inflow Area = 226,502 sf, 88.10% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf
Outflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.10' @ 12.09 hrs
Flood Elev= 20.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.28'	**30.0" Round Culvert** L= 105.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.28' / 11.76' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.21 cfs @ 12.08 hrs HW=18.06' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.21 cfs @ 5.75 fps)

Pond 12P: CB-4



Summary for Pond 13P: CB-7

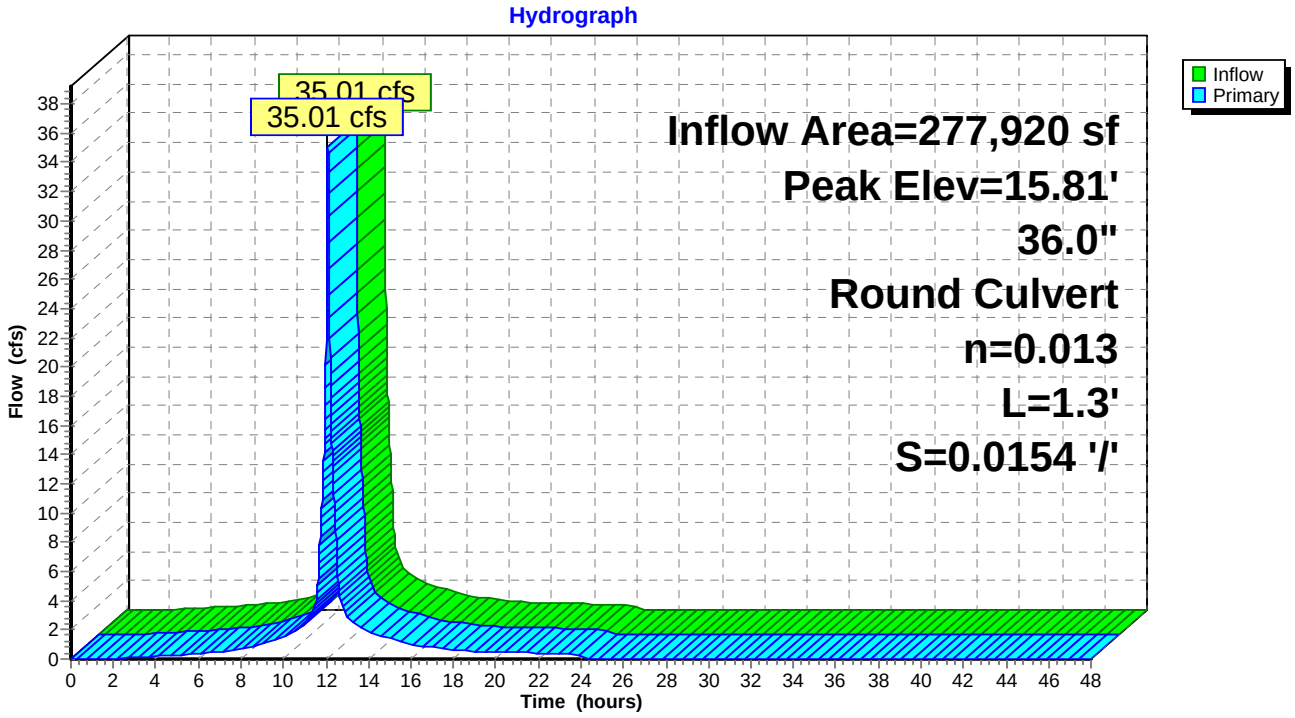
Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.81' @ 12.09 hrs
Flood Elev= 19.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.66'	**36.0" Round Culvert** L= 1.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.66' / 11.64' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=34.41 cfs @ 12.08 hrs HW=15.77' TW=14.13' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 34.41 cfs @ 4.87 fps)

Pond 13P: CB-7



Summary for Pond 14P: ICS-1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.28 cfs @ 12.08 hrs, Volume= 90,264 cf
Secondary = 8.34 cfs @ 12.16 hrs, Volume= 28,583 cf

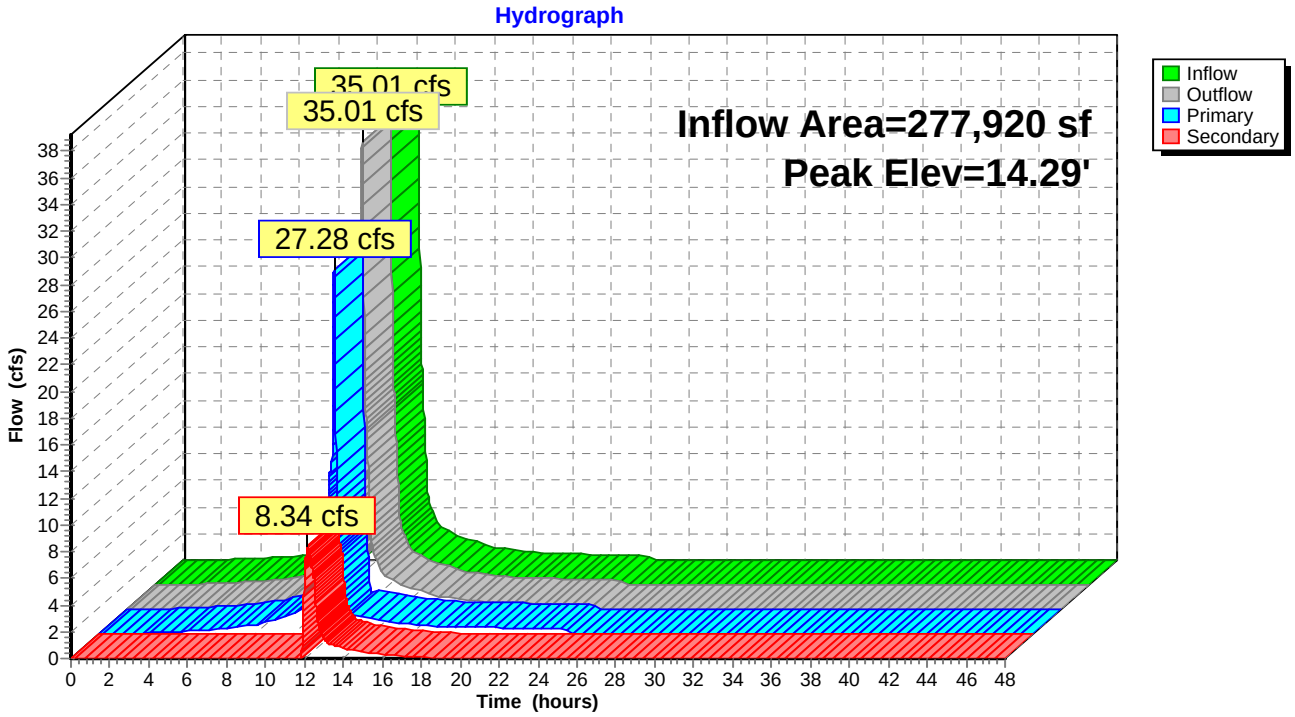
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.29' @ 12.14 hrs
Flood Elev= 19.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.54'	**24.0" Round Culvert X 4.00** L= 2.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.49' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	11.54'	**18.0" Round Bypass Culvert** L= 27.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.00' S= 0.0196 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	13.00'	**6.0' long Overflow Weir** 2 End Contraction(s)

Primary OutFlow Max=27.30 cfs @ 12.08 hrs HW=14.12' TW=13.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.30 cfs @ 2.17 fps)

Secondary OutFlow Max=7.02 cfs @ 12.16 hrs HW=14.28' TW=13.19' (Dynamic Tailwater)
└**2=Bypass Culvert** (Inlet Controls 7.02 cfs @ 3.97 fps)
└**3=Overflow Weir** (Passes 7.02 cfs of 26.65 cfs potential flow)

Pond 14P: ICS-1



Summary for Pond 15P: CB-6

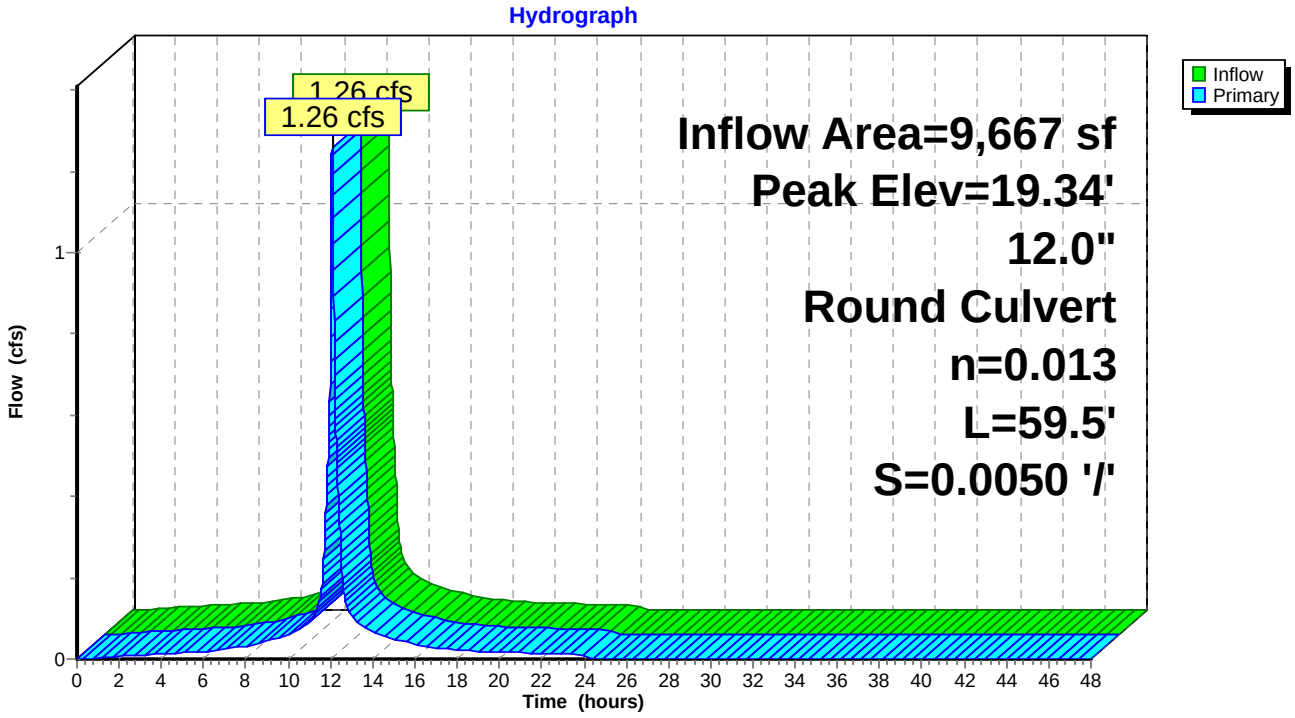
Inflow Area = 9,667 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.34' @ 12.10 hrs
Flood Elev= 20.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.06'	**12.0" Round Culvert** L= 59.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.06' / 14.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=19.20' TW=19.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.00 cfs @ 1.28 fps)

Pond 15P: CB-6



Summary for Pond 16P: CB-3

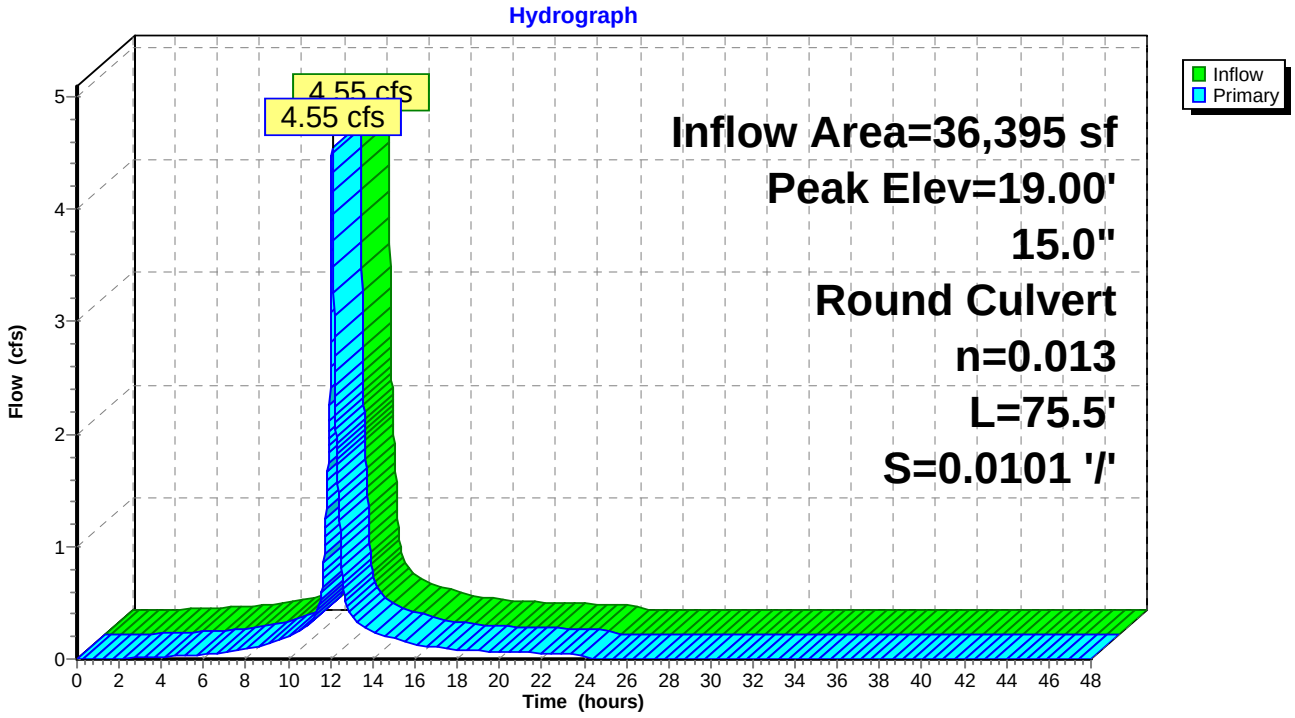
Inflow Area = 36,395 sf, 87.42% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf
Outflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.00' @ 12.09 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.14'	**15.0" Round Culvert** L= 75.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.14' / 14.38' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.36 cfs @ 12.08 hrs HW=18.94' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.36 cfs @ 3.55 fps)

Pond 16P: CB-3



Summary for Pond 17P: CB-2

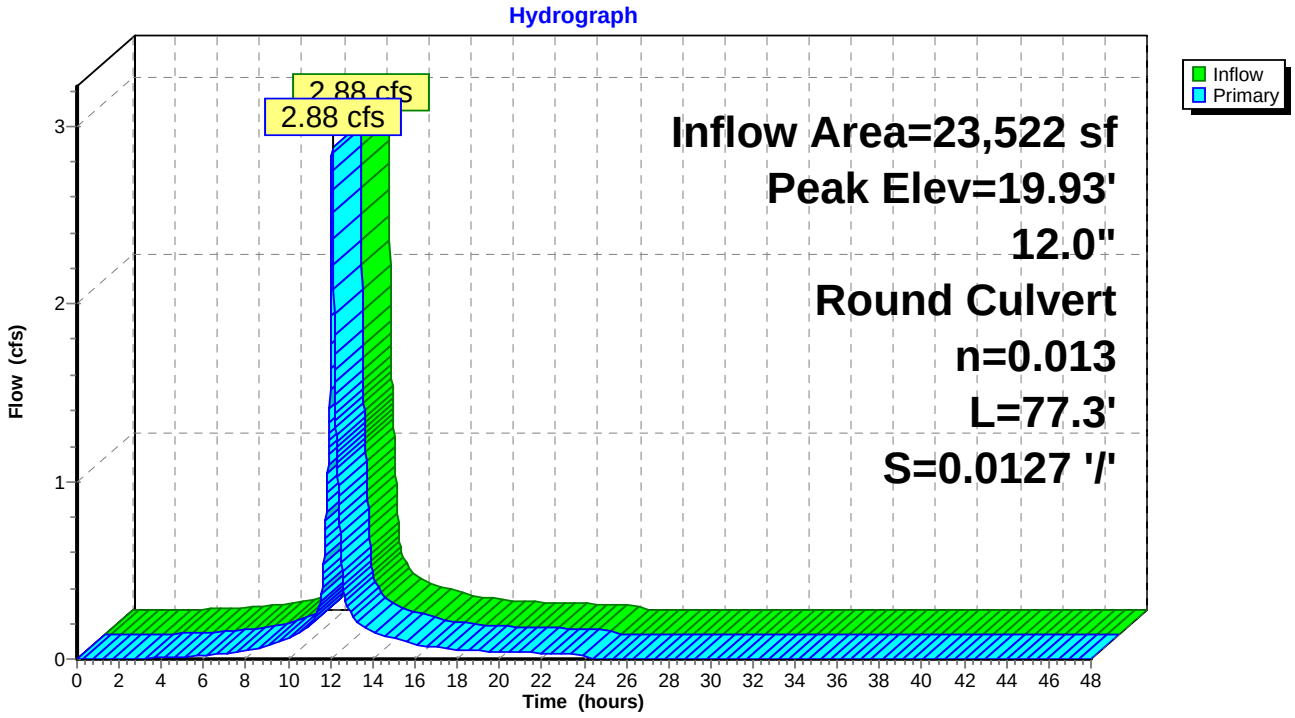
Inflow Area = 23,522 sf, 81.85% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf
Outflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.93' @ 12.10 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.22'	**12.0" Round Culvert** L= 77.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.22' / 15.24' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.08 hrs HW=19.81' TW=18.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.79 cfs @ 3.55 fps)

Pond 17P: CB-2



Summary for Pond 18P: CB-1

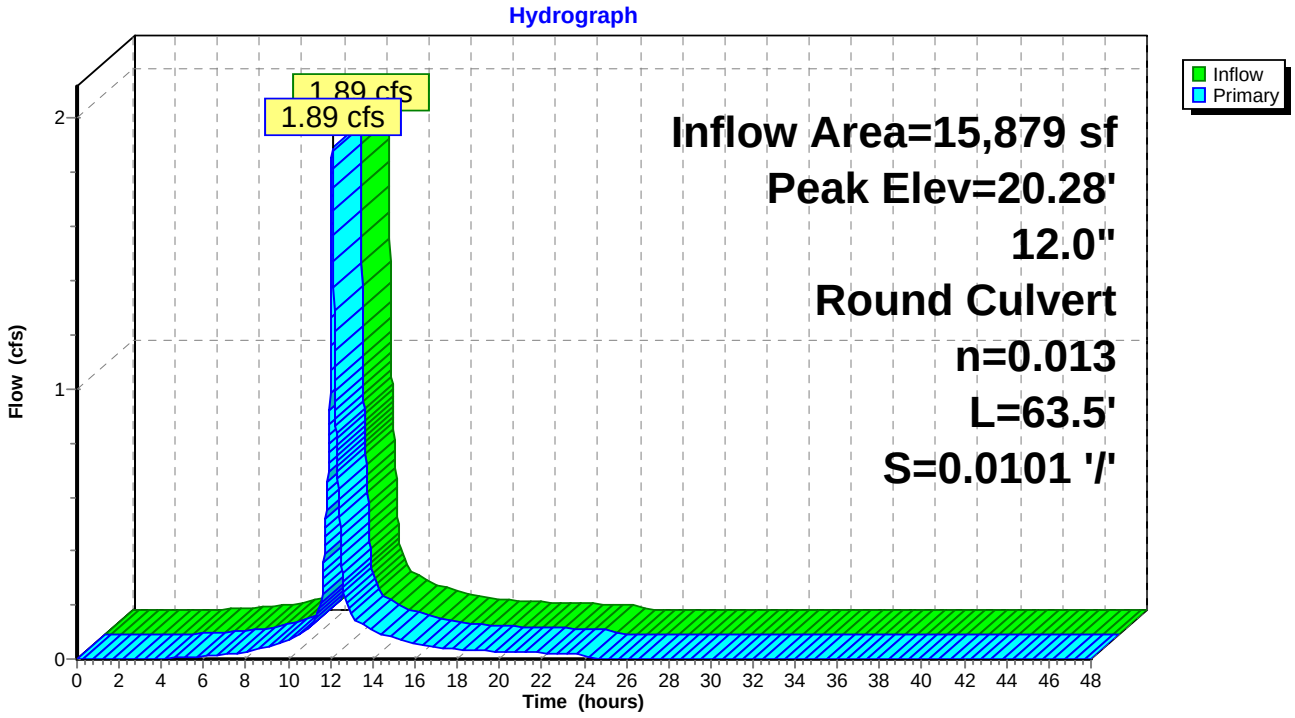
Inflow Area = 15,879 sf, 76.74% Impervious, Inflow Depth = 4.65" for 25-Year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.28' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.96'	**12.0" Round Culvert** L= 63.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.96' / 16.32' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.09 hrs HW=20.13' TW=19.83' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.64 cfs @ 2.09 fps)

Pond 18P: CB-1



Summary for Pond 19P: CB-8

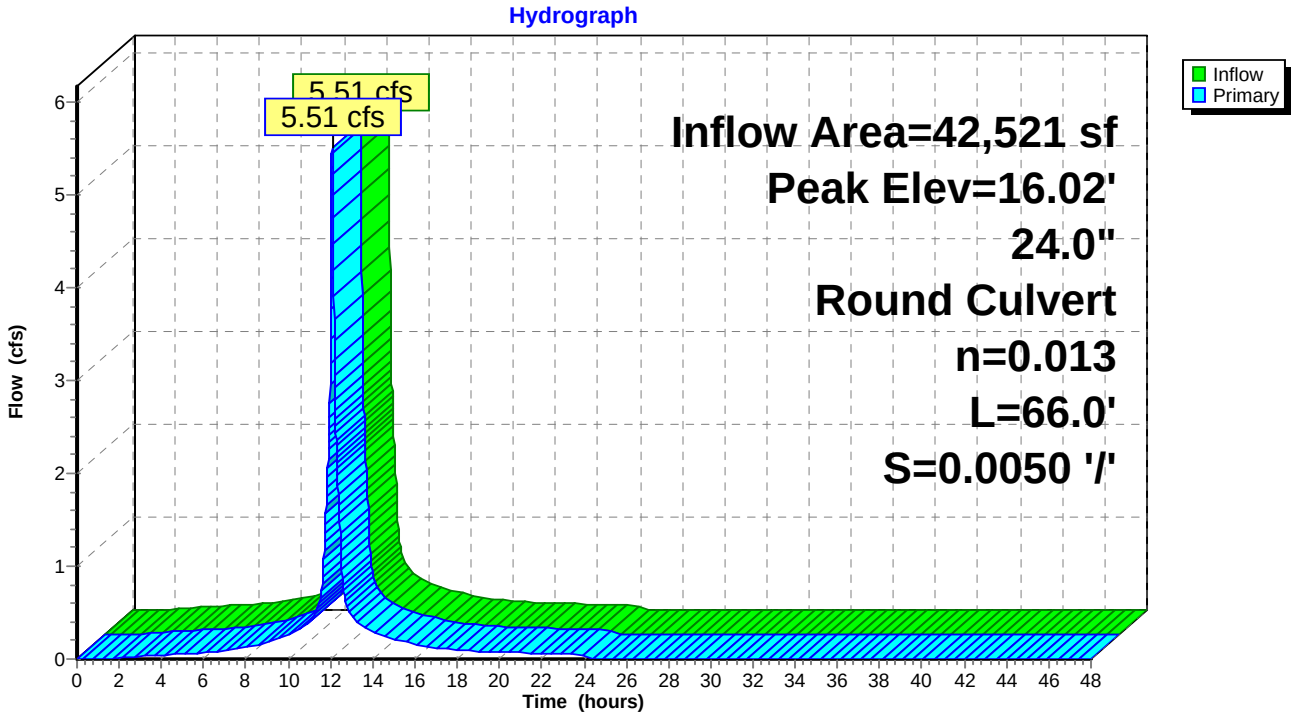
Inflow Area = 42,521 sf, 92.11% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf
Outflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.02' @ 12.09 hrs
Flood Elev= 18.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.09'	**24.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.09' / 11.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.30 cfs @ 12.08 hrs HW=15.97' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.30 cfs @ 1.69 fps)

Pond 19P: CB-8



Summary for Pond 20P: CB-9

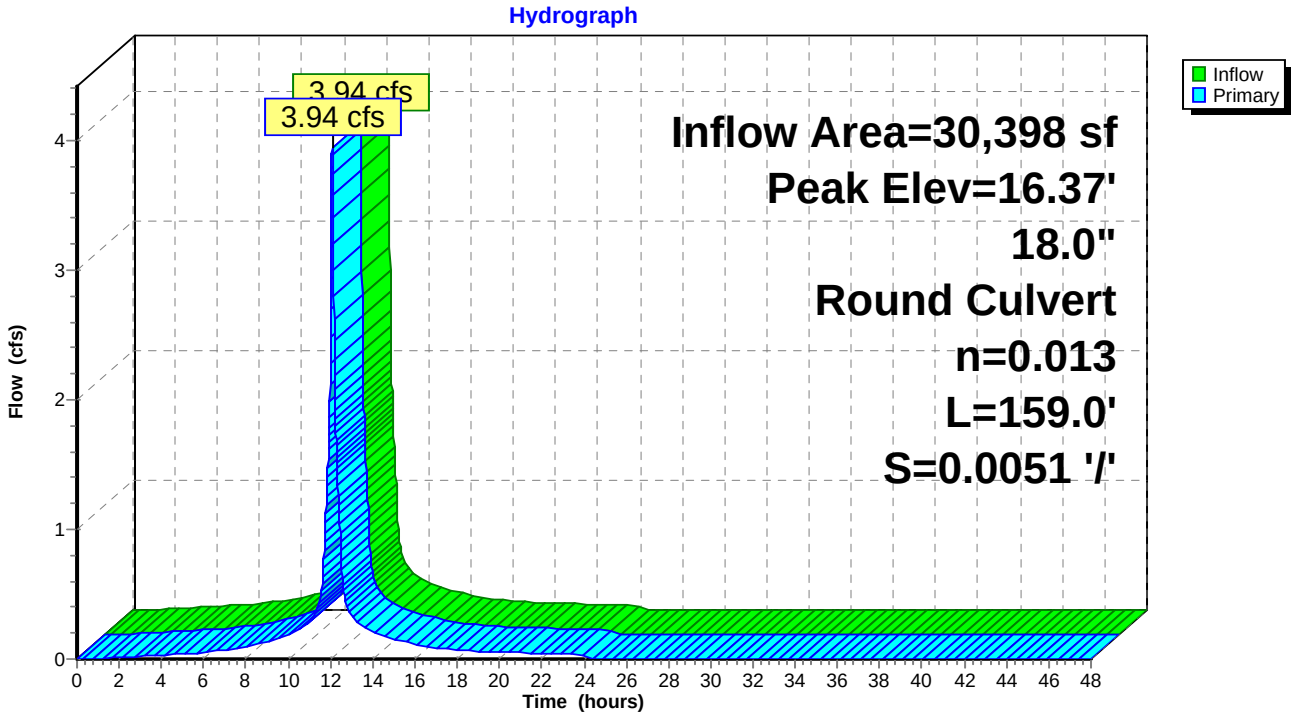
Inflow Area = 30,398 sf, 93.40% Impervious, Inflow Depth = 5.44" for 25-Year event
Inflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf
Outflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.37' @ 12.10 hrs
Flood Elev= 16.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**18.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.00' / 12.19' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.49 cfs @ 12.08 hrs HW=16.26' TW=15.97' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.49 cfs @ 1.98 fps)

Pond 20P: CB-9



Summary for Pond 21P: DMH-2

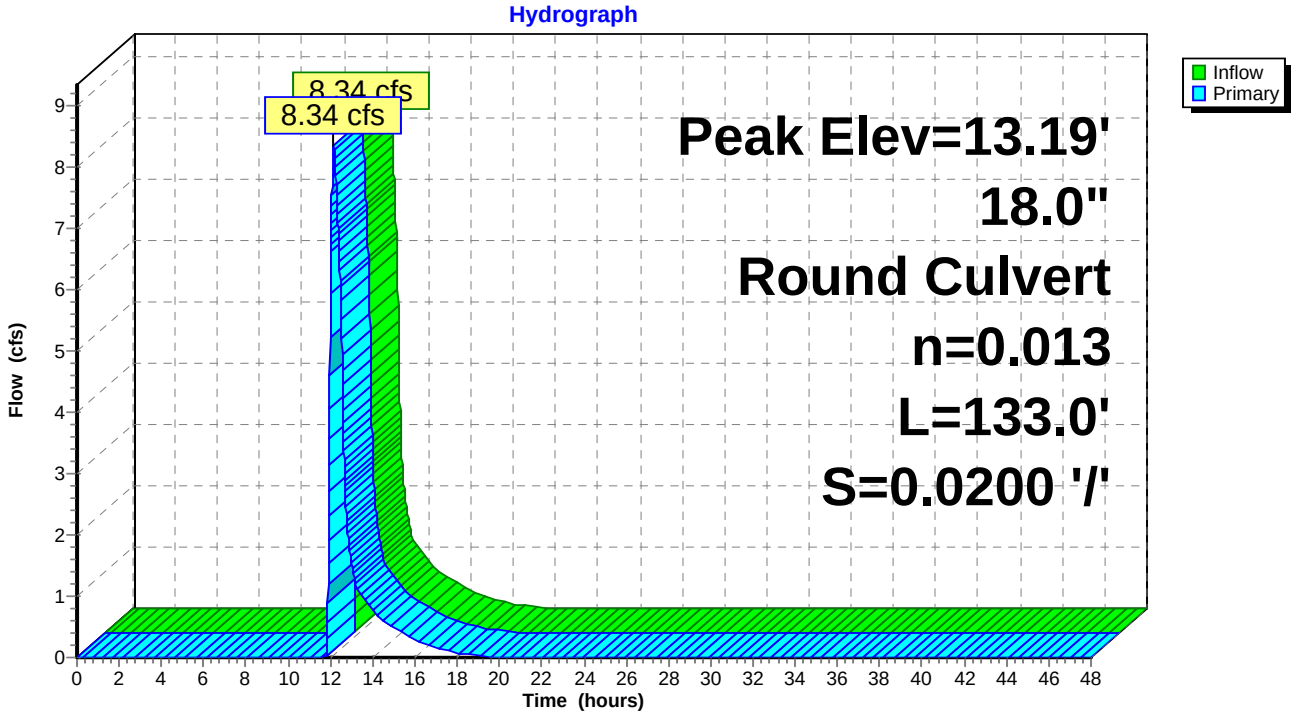
Inflow	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf
Outflow	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.19' @ 12.16 hrs
Flood Elev= 18.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.90'	**18.0" Round Culvert** L= 133.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.90' / 8.24' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.34 cfs @ 12.16 hrs HW=13.19' TW=10.43' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.34 cfs @ 4.72 fps)

Pond 21P: DMH-2



Summary for Pond 22P: DMH-3

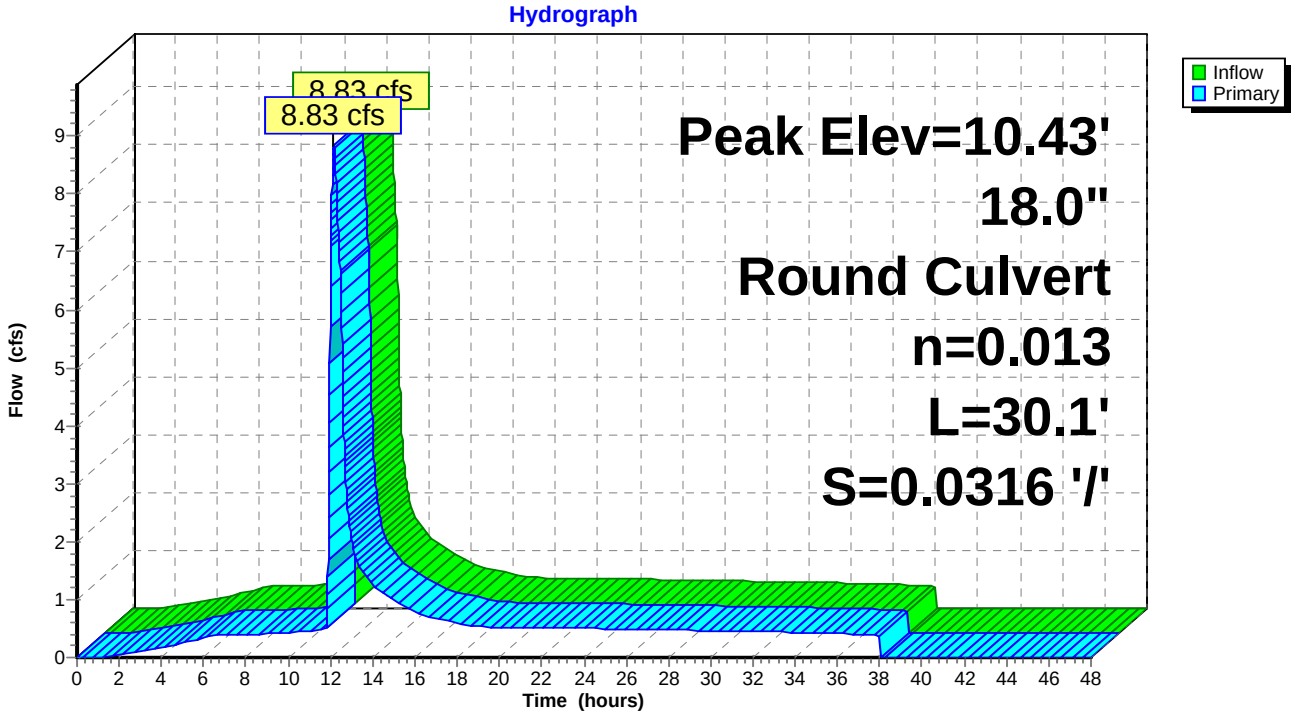
Inflow	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf
Outflow	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.43' @ 12.16 hrs
Flood Elev= 17.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**18.0" Round Culvert** L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.95' / 7.00' S= 0.0316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.83 cfs @ 12.16 hrs HW=10.43' TW=7.70' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.83 cfs @ 4.99 fps)

Pond 22P: DMH-3



Summary for Pond 23P: CBR 15027

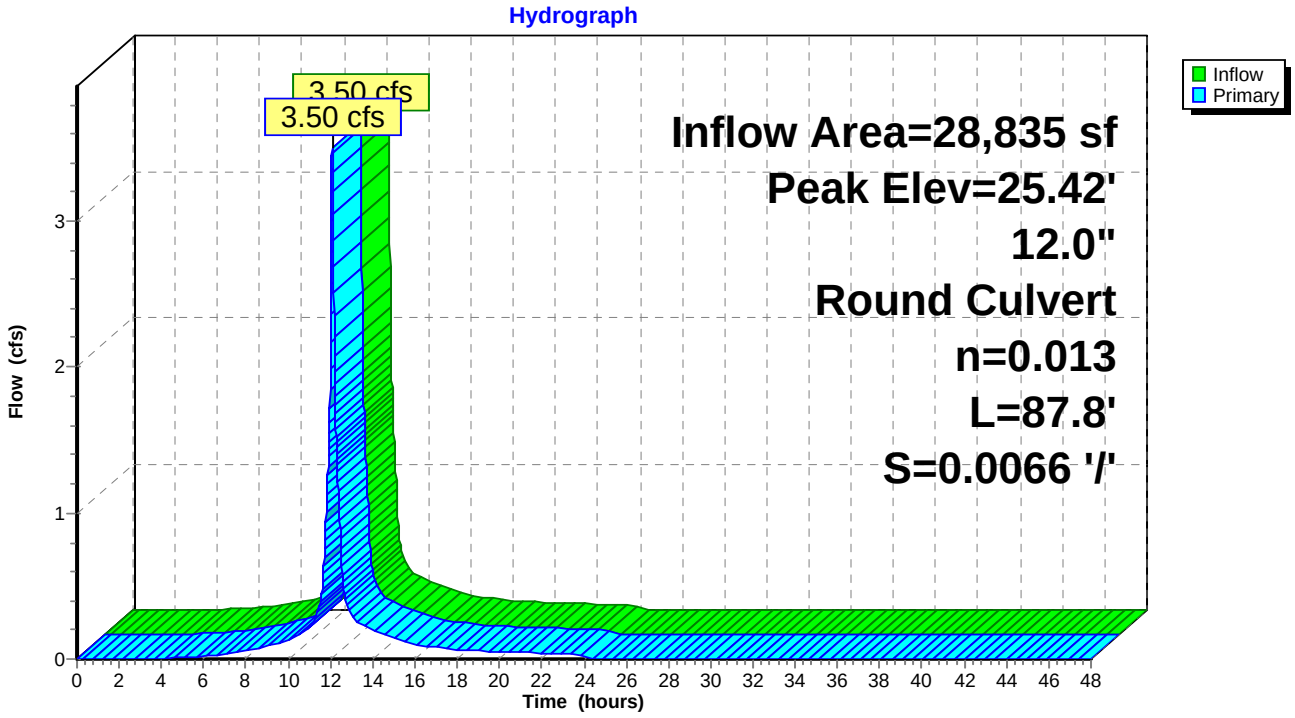
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.42' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.69'	**12.0" Round Culvert** L= 87.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.69' / 23.11' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=25.42' TW=23.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.50 cfs @ 4.45 fps)

Pond 23P: CBR 15027



Summary for Pond 25P: CBR 15029

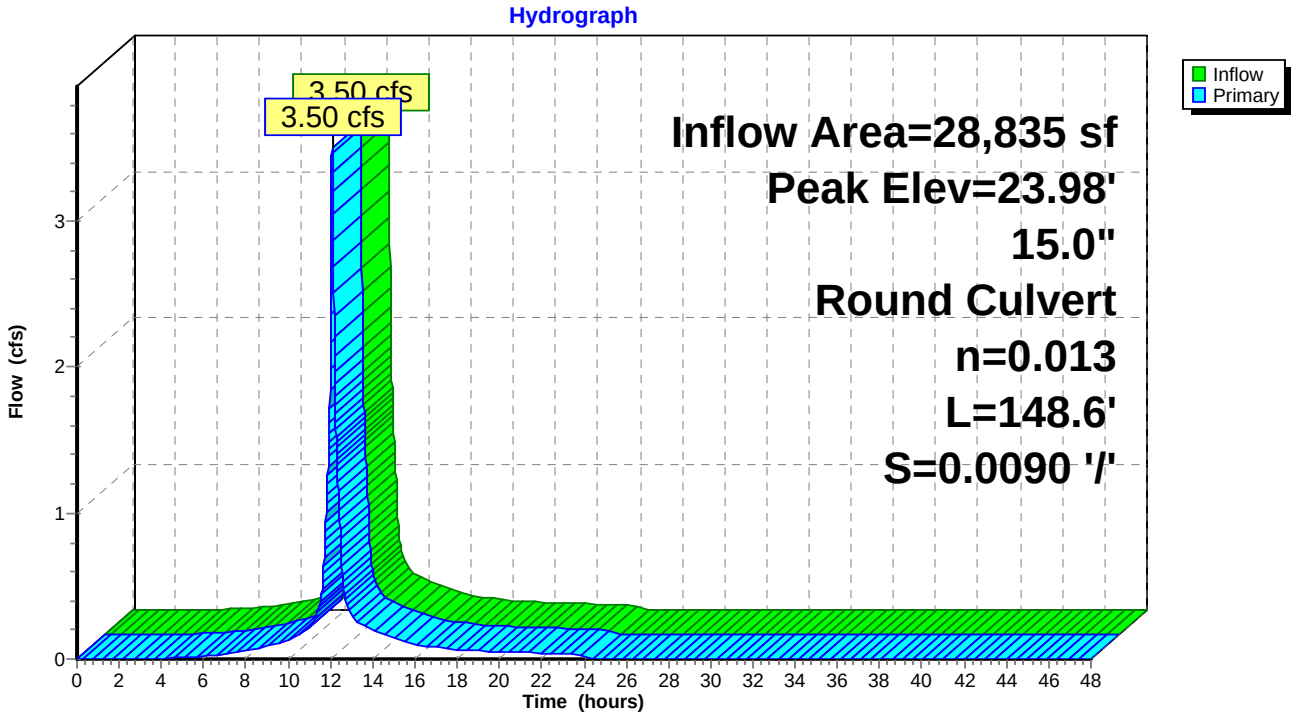
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.98' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=23.98' TW=22.02' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 3.50 cfs @ 2.92 fps)

Pond 25P: CBR 15029



Summary for Pond 26P: CB-5

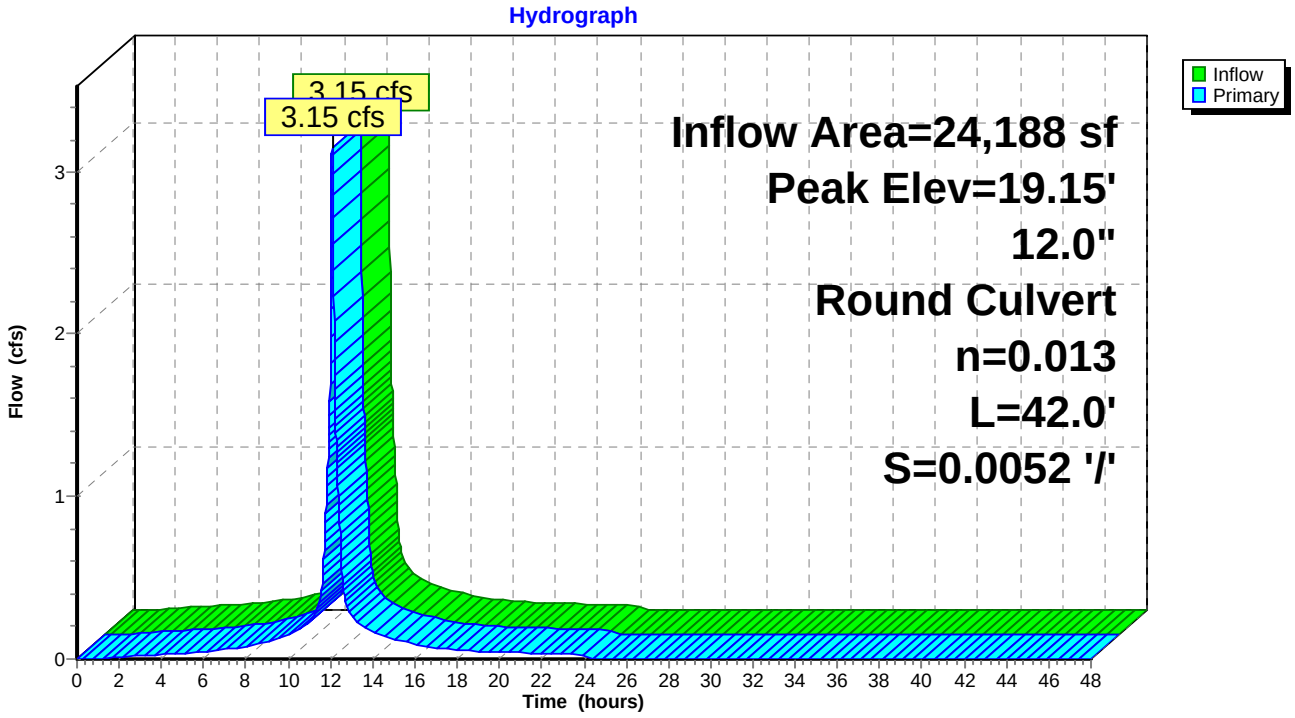
Inflow Area = 24,188 sf, 97.43% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf
Outflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.15' @ 12.09 hrs
Flood Elev= 20.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.66'	**12.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.66' / 14.44' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=19.08' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.85 fps)

Pond 26P: CB-5



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,719 sf, 79.04% Impervious, Inflow Depth = 4.83" for 25-Year event
Inflow = 61.15 cfs @ 12.39 hrs, Volume= 405,073 cf
Outflow = 60.91 cfs @ 12.40 hrs, Volume= 405,068 cf, Atten= 0%, Lag= 1.0 min
Primary = 32.76 cfs @ 12.40 hrs, Volume= 347,756 cf
Secondary = 28.16 cfs @ 12.40 hrs, Volume= 57,312 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.87' @ 12.40 hrs Surf.Area= 5,848 sf Storage= 6,314 cf
Flood Elev= 9.00' Surf.Area= 8,965 sf Storage= 14,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (864.3 - 863.5)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	14,683 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

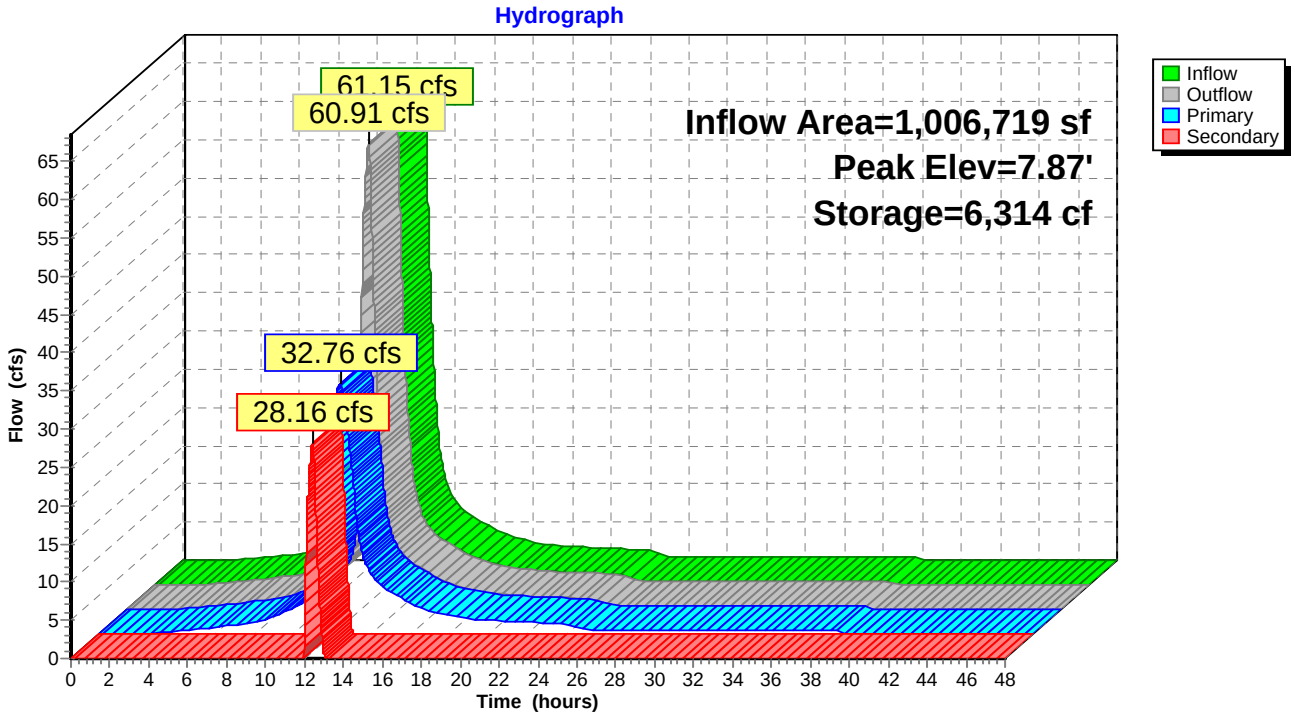
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	3,601	2,211	2,211
8.00	6,189	4,895	7,106
9.00	8,965	7,577	14,683

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=32.75 cfs @ 12.40 hrs HW=7.87' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 32.75 cfs @ 4.64 fps)

Secondary OutFlow Max=28.15 cfs @ 12.40 hrs HW=7.87' TW=6.96' (Dynamic Tailwater)
2=Overflow (Weir Controls 28.15 cfs @ 2.49 fps)

Pond EX WTLND: Existing Wetland



Summary for Pond SSF-1: Subsurface Sand Filter 1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 3.90" for 25-Year event
Inflow = 27.28 cfs @ 12.08 hrs, Volume= 90,264 cf
Outflow = 13.41 cfs @ 12.18 hrs, Volume= 90,268 cf, Atten= 51%, Lag= 6.1 min
Primary = 12.93 cfs @ 12.18 hrs, Volume= 33,708 cf
Secondary = 0.51 cfs @ 19.46 hrs, Volume= 56,561 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.17' @ 12.18 hrs Surf.Area= 20,088 sf Storage= 36,342 cf
Flood Elev= 19.43' Surf.Area= 20,269 sf Storage= 38,911 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 323.5 min (1,083.6 - 760.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.99'	19,065 cf	**133.00'W x 137.78'L x 3.50'H Field A Z=1.0** 67,509 cf Overall - 19,846 cf Embedded = 47,663 cf x 40.0% Voids
#2A	11.49'	19,846 cf	**ADS_StormTech SC-740 +Cap** x 432 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Rows of 18 Chambers
		38,911 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	10.40'	**24.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.40' / 7.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	8.15'	**3.0" Vert. UD Orifice** C= 0.600
#3	Device 2	8.15'	**6.0" Round Header Pipe** L= 3.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.10' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#4	Device 1	13.00'	**6.0' long Weir Wall** 2 End Contraction(s)
#5	Device 3	10.99'	**4.000 in/hr Filtration over Surface area**
#6	Device 4	11.49'	**24.0" Round Culvert** L= 3.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.49' / 11.44' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.92 cfs @ 12.18 hrs HW=14.17' TW=7.72' (Dynamic Tailwater)
└**1=Culvert** (Passes 12.92 cfs of 25.18 cfs potential flow)
└**4=Weir Wall** (Passes 12.92 cfs of 23.90 cfs potential flow)
└**6=Culvert** (Inlet Controls 12.92 cfs @ 4.11 fps)

Secondary OutFlow Max=0.51 cfs @ 19.46 hrs HW=13.01' TW=8.31' (Dynamic Tailwater)
└**2=UD Orifice** (Orifice Controls 0.51 cfs @ 10.44 fps)
└**3=Header Pipe** (Passes 0.51 cfs of 2.03 cfs potential flow)
└**5=Filtration** (Passes 0.51 cfs of 1.80 cfs potential flow)

Pond SSF-1: Subsurface Sand Filter 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +48.0" End Stone x 2 = 137.78' Base Length
24 Rows x 51.0" Wide + 12.0" Spacing x 23 + 48.0" Side Stone x 2 = 133.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

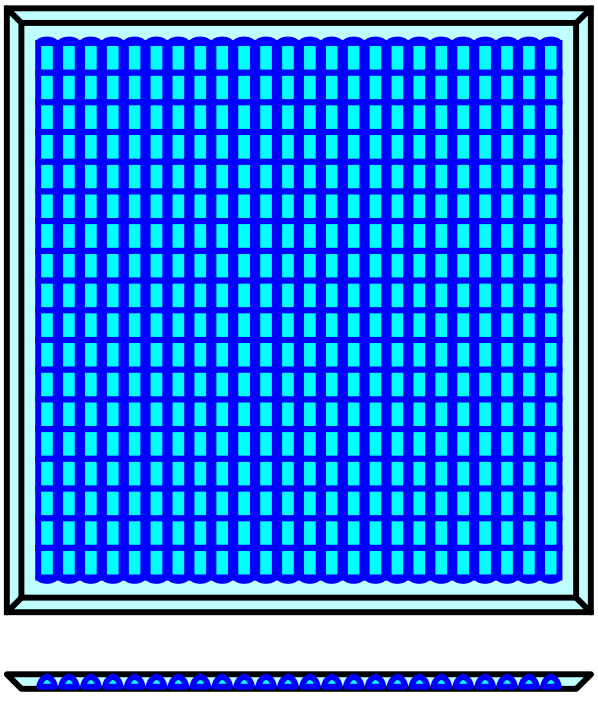
1.0 '/' Side-Z x Height = 42.0" Flare/Side
Base Length + Flare x 2 = 144.78' Top Length
Base Width + Flare x 2 = 140.00' Top Width

432 Chambers x 45.9 cf = 19,846.1 cf Chamber Storage

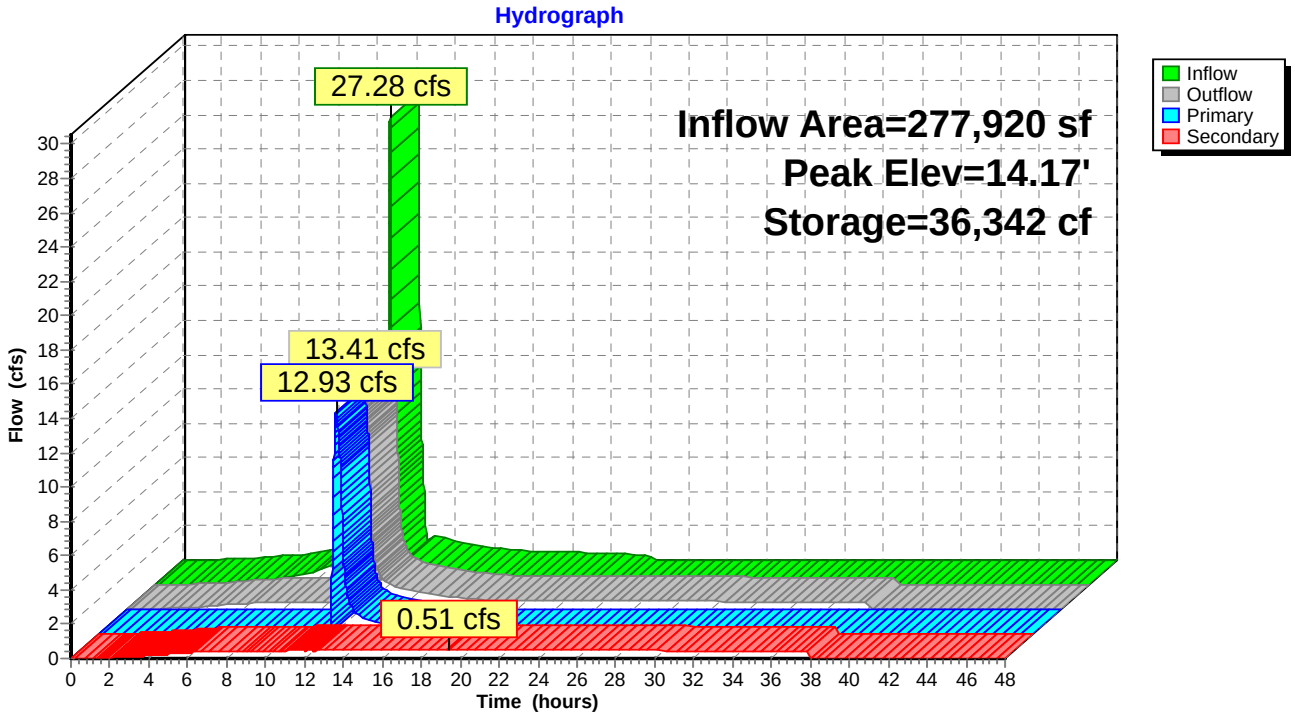
67,509.2 cf Field - 19,846.1 cf Chambers = 47,663.1 cf Stone x 40.0% Voids = 19,065.3 cf Stone Storage

Chamber Storage + Stone Storage = 38,911.3 cf = 0.893 af
Overall Storage Efficiency = 57.6%
Overall System Size = 137.78' x 133.00' x 3.50'

432 Chambers
2,500.3 cy Field
1,765.3 cy Stone



Pond SSF-1: Subsurface Sand Filter 1

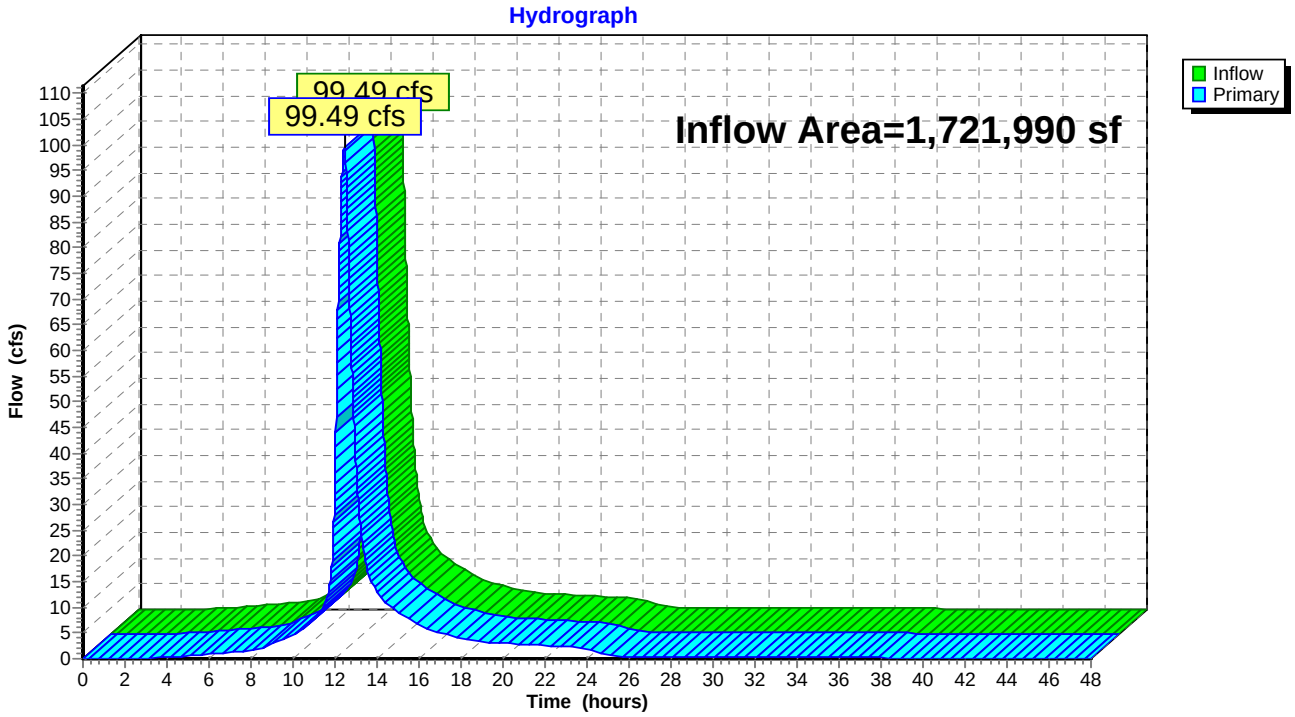


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,990 sf, 68.13% Impervious, Inflow Depth = 4.36" for 25-Year event
Inflow = 99.49 cfs @ 12.44 hrs, Volume= 625,009 cf
Primary = 99.49 cfs @ 12.44 hrs, Volume= 625,009 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

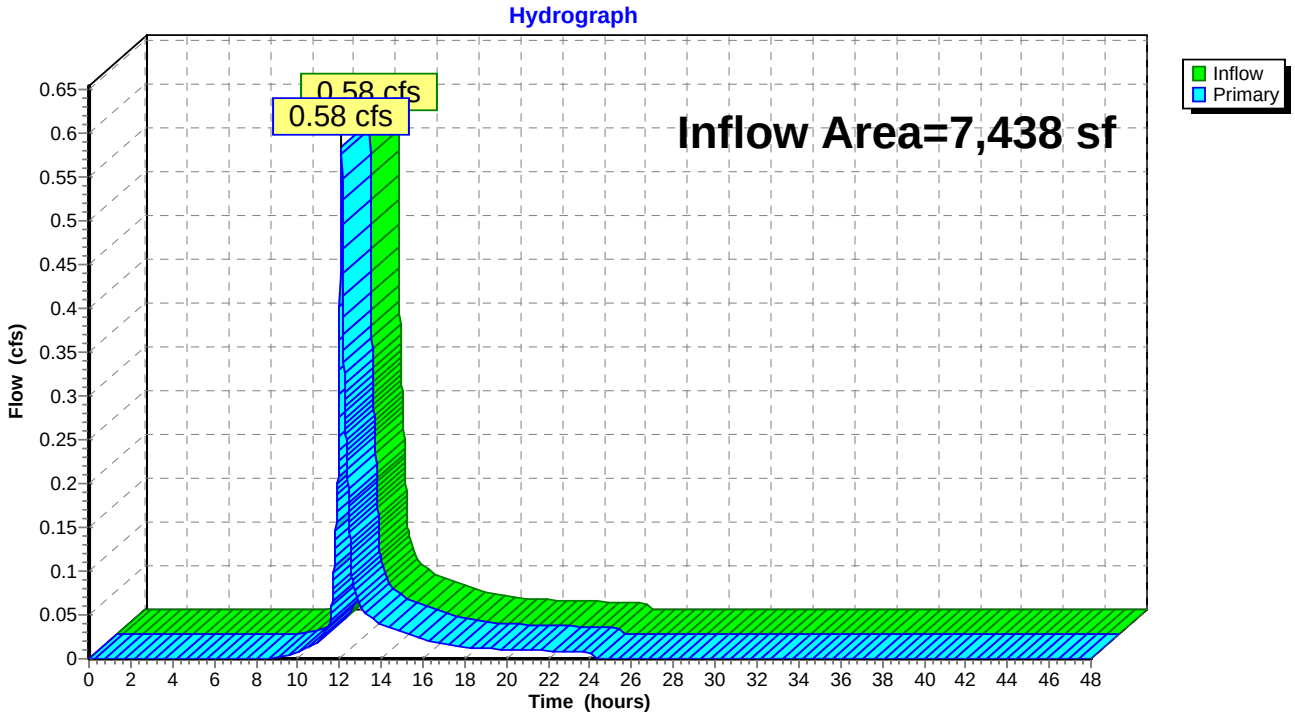


Summary for Link SP-2: Study Point 2

Inflow Area = 7,438 sf, 31.78% Impervious, Inflow Depth = 2.92" for 25-Year event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment E

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Portland Transportation Center
Thompson's Point Connector
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made

accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.

- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

During Preload Construction Phase

1. **Inspection:** During the Preload construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

   A. Filter Berms:

   - Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.

- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be

applied in bare areas.

- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

H. Reclaim Asphalt Parking Lot

- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- Parking lot surface shall be inspected after rainfall events for any erosion or channelizing or runoff.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams,

ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post- Preload Construction Phase

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:

   - Clear accumulations of winter sand along access road and parking lots at least once a year, preferably in the spring.
   - Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader

or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Subsurface Sand Filter:

- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

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4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland Transportation Center
Thompson's Point Connector
Portland, Maine

This log is intended to accompany the Inspection, Maintenance and Housekeeping Plan for the proposed Portland Transportation Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality and MDEP. Qualified personnel familiar with the onsite drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Items	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Reclaim and Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

Subsurface Sand Filter				
	Inspection of subsurface structure following major storm events			Semi-Annually (during first year)
	Inspection after major storm to ensure proper function			Bi-Annually
	Remove sediment and debris			Annually
	Clean/repair outlets and chambers			When drawdown times in filter exceed 48 hrs

STERLING

Stormwater Maintenance Services

Stormwater Compliance Proposal

Site Name: Portland Transportation Center

Location: Portland, Maine

Quote Number: 17112P

Quote Date: 6/13/2018

Contract Term: 5 Years - To Begin Once Construction Has been Completed

Stormwater Compliance Program

Item #	Description[1]	Annual Fee
1	Stormwater Compliance Service	$1,800.00

Notes:

1. Service consists of semi-annual inspection of stormwater components on the site including catch basins, drain manholes, control structures, and a subsurface stormwater facility comprised of Stormtech chambers with isolator rows. Inspection includes a thorough evaluation of each stormwater component from an operational and maintenance perspective.

   Maintenance of the stormwater components will be performed as needed with the permission of client. JetVac services will be provided at a rate of $200 per hour and $75 per ton for disposal. Other maintenance services will be quoted as needed.

   Inspection service also includes the preparation and submittal of semi-annual stormwater compliance report as well as 5-year recertification submittal for the Maine DEP..

Terms & Conditions:

1. Invoice will be sent upon completion of semi-annual inspection and will reflect ½ of total annual fee. Payment is agreed to be made within 30 days of receipt of invoice.
2. STERLING Stormwater Maintenance Services is not the manufacturer nor was it involved in the design of the above listed stormwater management systems and therefore accepts no responsibility for the actual performance of the storm water management systems.

As an authorized representative of the above referenced site, I hereby accept this contract and the associated terms and conditions:

Print Name:_____ Sign Here: _____ Date: _____

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Amendment
Site Location of Development Permit Application
Portland Transportation Center

Prepared for
Langdon Street Real Estate
7 Langdon Street
Concord, New Hampshire 03301

Prepared by
Sebago Technics
75 John Roberts Rd.
South Portland, ME 04106

February 2018
99607

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Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

FORM A PAGE 1

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.S.A. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ 20 acre development ☐ Planning Permit ☐ Metallic Mining	☐ Marine Oil Terminal ☐ Structure ☐ Subdivision	☐ Major Amendment ■ Minor Amendment

1. Name of Applicant:	Langdon Street Real Estate	**6. Name of Agent (if applicable):**	Sebago Technics, Inc
2. Applicant's Mailing Address:	7 Langdon Street Concord NH	**7. Agent's Mailing Address:**	75 John Roberts Rd, So Portland
3. Applicant's Daytime Phone #:	603-228-3535	**8. Agent's Daytime Phone # :**	207-200-2082
4. Applicant's Fax # (if available):	603-228-3524	**9. Agent's Fax # (if available):**	207-856-2206
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	bblunt@concordcoachlines.com	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	ssawyer@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	Portland Transportation Center Parking Expansion						
12. Map and Lot #'s:	**Map #:** 077	**Lot #:** A001	**13. Deed Reference #'s:**		**Book #:** 12719	**Page #:** 277	
14. Location of Project City/Town:	Portland		**15. County:**	Cumberland	**16. UTM Northing**		**17. UTM Easting**
18. Brief Description of Project including total parcel size:	The proposed project involves the expansion of an existing parking lot associated with the Portland Transportation Center. Subject Parcel size is approximately ? acres.						

19. Type of Direct Watershed: (Check all that apply)

☐ Lake not most at risk ☐ River, stream or brook ☐ Coastal wetland
☐ Lake most at risk ☐ Urban impaired stream ☐ Wellhead or public water
☐ Lake most at risk, severely blooming ☐ Freshwater wetland

20. Name of Waterbody Project Site drains to:	Fore River		
21. Amount of Developed Area:	Total acres: 7.362	Existing Developed area: 4.42 acres	New Developed area: 2.9 acres
22. Amount of Impervious Area:	Total acres: 6.326	Existing Impervious areas 3.46 acres	New Impervious area: 2.8 acres

23. Development started prior to obtaining a license?:	☐ Yes ■ No				
24. .Development or any portion of the site subject to enforcement action?	☐ Yes ■ No	**If yes,** name of enforcement staff involved?			
25. Common scheme of development?:	☐ Yes ■ No	**26. Title, Right or Interest:**	☒ own ☐ lease	☐ purchase option ☐ written agreement	
27. Natural Resources Protection Act permit required?:	■ Yes ☐ No	**If yes:**	☐ PBR	☐ Tier 1 ☐ Tier 2	☐ Full Permit
28. Existing DEP Permit number (if applicable):	number unknown				
29. Names of DEP staff person(s) present at the pre-application meeting:	City Review				
30. Does agent have an interest in project? If yes, what is the interest?	☐ Yes ■ No				

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)"..

Signed: Stephen S Sawyer Jr **Title** Senior Vice President Sebago Technics **Date:** 2/27/18

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed** Stephen S Sawyer Jr. **Date:** 2/27/18

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: Stephen S Sawyer Jr

Name (print): Stephen S. Sawyer, Jr.

Date: 2/27/18

Re/Cert/Lic No.: _____

Engineer ME PE 3736

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

CONCORD COACH LINES

February 21, 2018

To Whom It May Concern:

I hereby authorize Stephen S. Sawyer Jr. to act as the permitting agent responsible for the Natural Resources Protection Act Permit for the proposed Portland Transportation Center Parking Expansion Project located at 100 Thompsons Point Road, Portland, Maine.

I can be contacted at (603) 228-3535 if there are any questions regarding this matter.

Sincerely,

Harry W. Blunt
President

7 Langdon Street | Concord, New Hampshire 03301 | Phone: 603-228-3535 | Fax: 603-228-3524 | concordcoachlines.com

Section 1

Development Description

Section 1

Development Description

A. Narrative

The proposed development involves the construction of 127,966 s.f. addition to the existing parking at the Portland Transportation Center located at 100 Thompsons Point Road in Portland. This proposed development would result in the addition of 300 +/- parking spaces. The subject site is comprised of the existing Portland Transportation Center parcel (6.82 acres) and an adjacent MDOT parcel (1.92 acres) for an approximate total of 8.74 acres. The site is depicted on Tax Map 77 Lot A001 in the City of Portland database. The project site is located in the City of Portland's D and B5 Zoning Districts.

The proposed project seeks to address the existing parking and traffic flow constraints at the site by expanding the current parking supply in a manner which is economically feasible for the ongoing operations of this public transportation hub. As such, this project proposes to add 300+/- parking spaces and modify the existing vehicle access to the terminal entrance in a manner that meets the engineering design criteria as described below:

- The total project development cost shall not to exceed $16,000 per parking space, which would require in excess of a $5/day parking price to finance the project. Anything greater would ultimately dissuade transit users from parking and riding.
- Provide expansion and redesign of the short-term parking lot to meet current demand and avoid unsafe stacking onto the Thompson's Point Connector roadway.
- Provide additional parking for patrons so that the facility is in a better position to construct a new terminal on site or a parking garage on the MaineDOT Park-and-Ride Lot across the street from a space and economic standpoint.

The applicant has conducted a thorough alternatives analysis as part of their design development process and have concluded that the only available and practicable alternative for accomplishing the project objectives is to expand the existing parking lot adjacent to the terminal by constructing 300 +/- spaces over an existing 2.03-acre wetland. The applicant has offset these environmental impacts by constructing an extensive underground stormwater management system, and contributing to the state's In-Lieu-Fee program governing situations like this.

A Natural Resource Protection Act application has been submitted to the Maine Department of Environmental Protection for review.

Project Background

The Portland Transportation Center was constructed in 1996 with 205 long-term parking spaces and 20 short-term spaces. In 2001 the site was redesigned and expanded to serve the Downeaster Amtrak service operated by the Northern New England Passenger Rail Authority. It appears the site underwent Site Law delegated review through the City of Portland at that time.

Utilities

The proposed project site is serviced by underground electrical, telephone, and cable service. The expansion of the parking lot will result in additional light structures which are within CMP service capacity of the site.

Stormwater

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond is located. The proposed improvements will involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the impervious surface approximately 2.86 acres over the existing impervious area on the site. Stormwater BMPs (subsurface sand filter) will be constructed to treat runoff prior to entering into the existing drainage system. The proposed BMPs have been designed to conform with the Maine Department of Environmental Protection's Chapter 500 stormwater standards.

B. Topographic Map

Attached as Figure 1.

C. Construction Plan

Site improvements are scheduled to begin in June 2018 with completion by August 2019.

Given the nature of the expansion the construction will occur in three phases:

Phase 1 will be comprised of importing the fill materials in the expansion area and installing an asphalt reclaim surface. This are will be in preload condition for approximately one year and will be used for parking at the time. The perimeter landscaping buffer will be installed during this Phase as well.

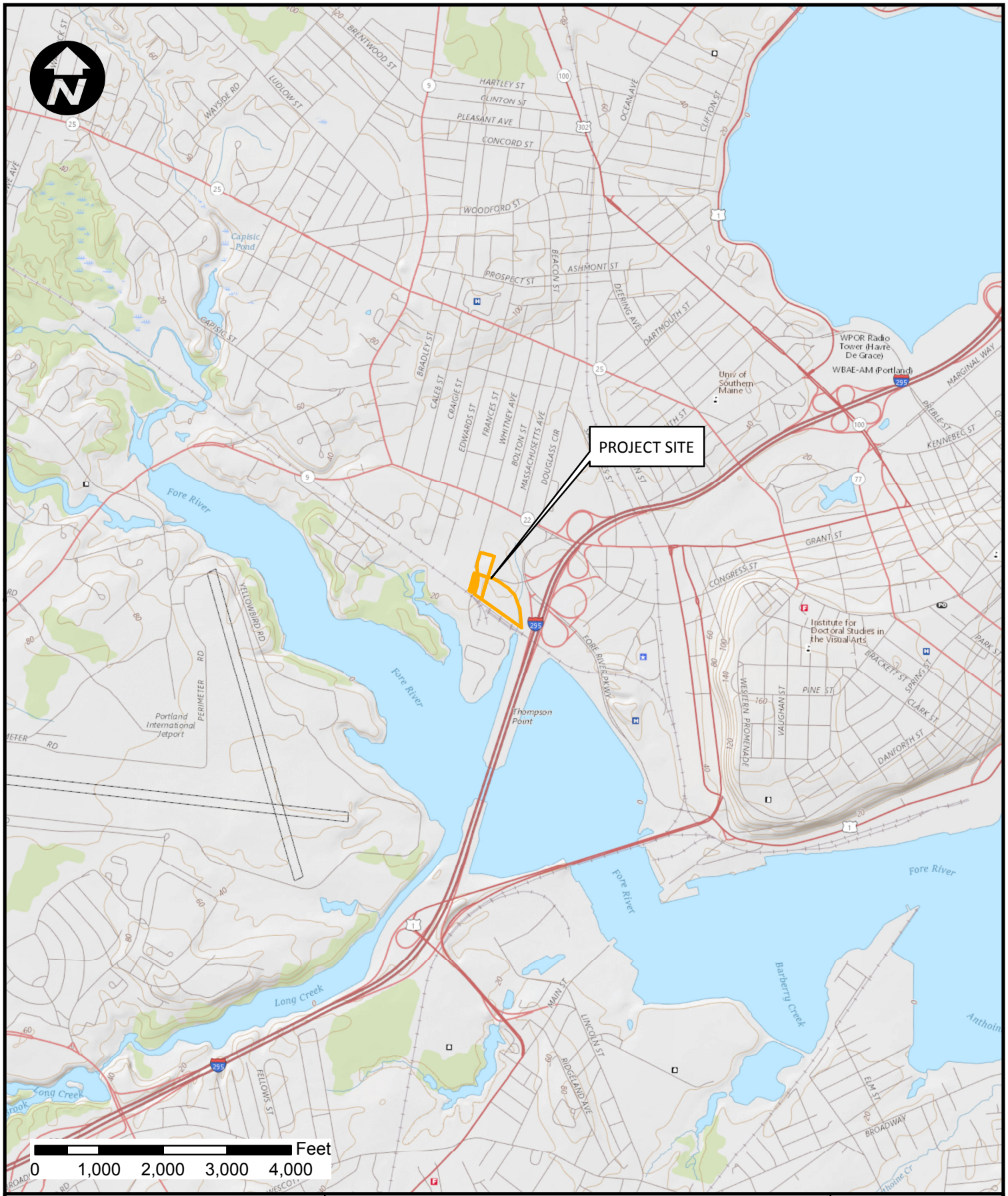
Phase 2 will involve the removal of reclaim surface in the expansion area, the installation of stormwater infrastructure, new pavement, curbing, sidewalk, landscape islands, and site lighting.

Phase 3 is to occur in the existing parking areas, reconfiguring vehicular and pedestrian circulation to match with the expansion area.

D. Drawings

All appropriate site drawings are attached. Individual plans are listed below.

Sheet Number	Sheet Title
1	Cover Sheet
2	Existing Conditions Plan
3	Demolition Plan – Part A
4	Demolition Plan – Part B
5	Overall Site Plan
6	Site Plan – Part A
7	Site Plan – Part B
8	Grading & Utility Plan – Part A
9	Grading & Utility Plan – Part B
10	Subsurface Sand Filter Plan
11	Landscape Plan – Part A
12	Landscape Plan – Part
13-16	Details
1	Pre Development Drainage Plan
2	Post Development Drainage Plan



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SITE LOCATION MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	USGS Quadrangle: Portland West

99607_LocationMap.mxd

PROJECT NUMBER: 99607

Section 2

Title, Right or Interest

Section 2

Title, Right or Interest

The record owner of the parcel is Langdon Street Real Estate, Inc by a deed recorded at the Cumberland County Registry of Deed in Book 12719, Page 277. Please see this Section for a copy of the deed.

In order to accomplish the proposed parking lot expansion, the applicant proposes to acquire approximately 1.92 acres from an adjacent parcel owned by the Maine Department of Transportation. Please see this Section for a copy of the Option Agreement.

BK12719PG277

54320

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

MAINE REAL ESTATE TAX PAID

PETERSEN CORP., a Massachusetts corporation, of Andover, Massachusetts, grants to LANGDON STREET REAL ESTATE, INC., a New Hampshire corporation with a place of business and mailing address at 7 Langdon Street, Concord, New Hampshire 03301, with quitclaim covenants, the land situated in Portland, County of Cumberland and State of Maine, with all buildings and improvements thereon, if any, being more fully described on the attached Exhibit A.

Meaning and intending to convey and hereby conveying the same premises conveyed to Petersen Corp. by deed of Glen G. Grant dated September 25, 1995 and recorded in the Cumberland County Registry of Deeds in Book 12302, Page 130.

In Witness Whereof, Petersen Corp. has caused this instrument to be executed by Glen G. Grant, its President, thereunto duly authorized, this 12th day of September, 1996.

WITNESS

PETERSEN CORP.

By: _____
Glen G. Grant
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. September 12, 1996

Personally appeared the above-named Glen G. Grant, President of Petersen Corp., and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of Petersen Corp.

Before me

_____
Notary Public/Attorney at Law

Print Name RICHARD A. SHINAY

78487.1

EXHIBIT A

Two certain lots or parcels of land, with all buildings and improvements thereon, situated in the City of Portland, Cumberland County, State of Maine, bounded and described as follows:

Parcel 1

Beginning on the east side of Sewall Street at a point on the northerly sideline and right-of-way now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.12± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04104, of Portland Terminal Company;

Thence southeasterly in said northerly sideline and right of way of Portland Terminal Company a distance of nine hundred five (905) feet, more or less, to a point;

Thence northerly in a line, along a fence, a distance of three hundred (300) feet, more or less, to a concrete monument, set in the ground;

Thence north-northwesterly in a line, along a fence, a distance of two hundred twenty (220) feet, more or less, to a concrete monument, set in the ground;

Thence northwesterly in a line, along a fence, a distance of one hundred twenty (120) feet, more or less, to a concrete monument, set in the ground;

Thence continuing northwesterly on an arc as shown on Valuation Section 1-A, Sheet 1A to the point of intersection with the southerly sideline of Hooper Street, so-called, at a point on a line perpendicular to and projected from Valuation Station 42.03±, as shown on said Valuation Plan;

Thence westerly in the southerly sideline of said Hooper Street, two hundred fifty-five (255) feet, more or less, to the point on intersection with the easterly sideline of Sewall Street;

Thence southerly in the easterly sideline of said Sewall Street to the point of beginning, said parcel containing 281,000 square feet, more or less.

Parcel 2

Beginning on the west side of Sewall Street at a point on the northerly sideline and right-of-way, now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.62± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04101, of Portland Terminal Company;

Thence northwesterly in the northerly sideline and right-of-way of Portland Terminal Company a distance of forty (40) feet, more or less, to a point;

Thence northerly in a line a distance of two hundred ninety (290) feet, more or less, to the point of intersection with the westerly sideline of said Sewall Street;

Thence southerly in the westerly sideline of said Sewall Street to the point of beginning, said parcel containing 8,900 square feet, more or less.

Further reference is made to a plan entitled "Subdivision Plan - Preliminary of Thompson's Point Subdivision, Sewall Street, Portland, Maine" made by Sebago Technics, 12 Westbrook Common, Westbrook, Maine, dated September 29, 1992, revised October 1, 1992, Project No. 92091.

Also hereby conveying all of the Grantor's right, title and interest, if any, in and to Sewall Street as it is located between Parcel 1 and Parcel 2, Sewall Street as it is located northwest of Parcel 2, and Hooper Street as it is adjacent to Parcel 1, the current location of Sewall Street and Parcel 2, but without any covenants of title with respect thereto.

78487.1

RECEIVED
RECORDED REGISTRY OF DEEDS
95 SEP 12 PM 2:43
CUMBERLAND COUNTY
John B O'Brien

OPTION AGREEMENT

This **OPTION AGREEMENT** (the "Agreement") is entered into this 29 day of January, 20 18, by and between the STATE OF MAINE, acting by and through its DEPARTMENT OF TRANSPORTATION,, an agency of the State of Maine, with headquarters at 16 State House Station, Augusta, Maine ("MaineDOT" or "Seller"), and LANGDON STREET REAL ESTATE, INC. with an address of 7 Langdon Street, Concord, New Hampshire (the "Buyer"),

RECITALS

A. Seller is the owner of a certain parcel of land located adjacent to Interstate 295 ("I-295") in Portland, County of Cumberland, State of Maine, acquired in connection with MaineDOT's construction of the Exit 6A southbound on-ramp accessing I-295.

B. Buyer is the owner of adjacent land improved with a facility commonly known as the Portland Transportation Center, having an address of 100 Thompson's Point, Portland, Maine (the "PTC"). Buyer is seeking to expand its property to allow for the development of additional parking areas to serve the PTC (the "Extended Parking Area").

C. Under the terms and conditions set out below, Seller is willing to grant to Buyer an exclusive option to purchase a portion of the Seller's property consisting of approximately 1.92± acres, as more particularly described in **Exhibit A** attached hereto and generally depicted as the orange shaded area on the plan attached hereto as **Exhibit B** (the "Premises).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants, agreements, and undertakings set out herein, the parties agree as follows:

1. **Option.** Subject to the terms and conditions set forth herein, the Seller hereby grants to the Buyer the exclusive option to purchase the Premises (the "Option") for anticipated uses associated with the development of the Extended Parking Area serving the PTC.

2. **Term.** This Option will remain in effect until five o'clock (5:00) p.m. on December 31, 2018, unless extended in writing by mutual agreement of the parties (the "Option Term") or unless previously terminated as set forth in this Agreement.

3. **Conditions.** During the Option Term, the parties shall proceed with satisfying each of the following conditions (the "Option Conditions"), which must all be completed to the satisfaction of MaineDOT prior to the parties entering into a formal Purchase and Sale Agreement and proceeding to a sale of the Premises:

    a. Buyer shall have completed, at its sole expense and to the satisfaction of the Seller, a full boundary survey and legal property description of the Premises, upon which a conveyance will be based.

b. Buyer shall have sought and secured, at its sole expense, all necessary permits and permissions from the United States Army Corps of Engineers, the Maine Department of Environmental Protection, and any applicable local entities approving the Buyer's development proposal to construct the Extended Parking Area.

c. Buyer shall have submitted to the Seller, at its sole expense, all necessary information required to support the Seller's request that the Federal Highway Administration ("FHWA") review and approve the Seller's proposal to convey the Premises to the Buyer. Required submissions shall include, but may not be limited to, the following:

   i. Identification of the party who will be responsible for developing and operating the development of the Premises;

   ii. A general statement of the proposed use;

   iii. The proposed design for the development of the Premises, including any facilities to be constructed thereon;

   iv. Maps, plans and/or sketches adequately demonstrating the relationship of the proposed use of the Premises to the adjacent I-295 highway improvements;

   v. An acceptable metes and bounds description of the Premises, as well as appropriate plans and/or cross sections clearly defining the vertical use limits of the proposed development.

d. MaineDOT shall have obtained all necessary approvals from FHWA to proceed with conveying the Premises to the Buyer;

e. Buyer shall have developed, at its sole expense and to the satisfaction of MaineDOT, a drainage design that adequately protects the adjacent I-295 highway corridor, and preserves the ability for MaineDOT to maintain, repair and replace its drainage installations serving the adjacent I-295 highway corridor. To this effect, the sale of the Premises shall be subject to the Seller's retention of any drainage easements necessary to support MaineDOT's highway maintenance needs.

f. MaineDOT shall have completed an appraisal determining the fair market value (the "FMV") of the Premises and, therefore, establishing the purchase price in accordance with FHWA's requirement that MaineDOT receive FMV for the sale of the Premises.

4. **Option Price.** Seller will waive establishing and collecting any cash Option Price for the Option Term, instead receiving consideration in the form of the engineering work

referenced herein; provided, however, that if the Option Term is extended beyond December 31, 2018, as set forth above, Seller retains the right to establish and collect an appropriate Option Price in consideration for extending Buyer's exclusive Option on the Premises.

5. **Exercise of Option and Purchase Price.** Upon satisfaction of all Option Conditions, Buyer's exercise of the Option shall be satisfied through delivery to Seller of Buyer's written intent to proceed with purchasing the Premises at the FMV determined by the Seller. Delivery of Buyer's written intent shall be made no later than the expiration of the Option Term via first class mail or hand delivery.

6. **Termination.** If Buyer does not exercise the Option by the end of the Option Term, the Option and this Agreement shall automatically terminate. Seller retains the right to terminate this Option at any time in the unlikely event that the Premises is required for transportation purposes.

7. **Purchase Agreement and Due Diligence.** Upon exercise of the Option, the parties shall promptly enter into a formal Purchase and Sale Agreement that provides for a closing to occur at a time and place mutually agreeable to the parties (the "Closing"). The Purchase and Sale Agreement shall set out the terms of Closing, including but not limited to the following: form of deed; proration of fees, if any; form of payment; appropriate due diligence periods; and conditions of Closing.

8. **Condition of and Access to Premises during Option Term.** Buyer acknowledges that Seller has made no representations or warranties of any kind whatsoever with respect to the condition of the Premises or the compliance of the Premises with any laws, rules, regulations, or ordinances, including (without limitation) any relating to zoning, the environment, or hazardous materials. During the Option Term, Seller will allow Buyer or its representatives access to the Premises upon reasonable advanced notice to MaineDOT, and Buyer or its representatives shall have the right to perform water, soil, septic system and engineering tests (including, without limitation, tests for hazardous wastes, toxic substances and for the existence of any underground tanks) on the Premises and to conduct boundary, resource and topographical surveys; provided, however, that (i) such access does not interfere with Seller's uses of the Premises; (ii) such persons enter on to the Premises at their own risk of loss or harm; and (iii) Buyer or its representatives will restore the Premises to the condition it was in prior to their inspection(s) to the extent reasonably practicable. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible. In the event Buyer is not satisfied with the results of its tests, including water quality, hazardous wastes, underground tanks, or toxic substances, Buyer may terminate and release this Option. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible.

9. **Conditions to Closing.** Buyer acknowledges that conveyance of the Premises will be conditioned on MaineDOT's retention of any drainage easements determined necessary to support MaineDOT's highway maintenance needs.

10. **No Assignment by Buyer.** Buyer may not assign the Option or this Agreement, and Buyer may not convey to any third party any rights under the Option or under this Agreement. Any such purported assignment or conveyance shall be void and of no effect.

11. **Capacity.** Each party represents to the other (a) that such party has full power and authority to perform its obligations hereunder; (b) that any person or entity executing this Agreement by or on behalf of the represented party has the authority to act on the behalf of and bind the represented party; (c) that any person or entity executing any closing documents by or on behalf of the represented party has been and will be duly authorized to act on behalf of the represented party; and, (d) that the performance of this Agreement will not be in violation of any law, ordinance, rule, regulation, order, or agreements to which the represented party is a party or by the terms of which it is bound.

12. **Governing Law.** This Agreement is made pursuant to and shall be governed in accordance with the laws of the State of Maine.

13. **Entire Agreement.** This Agreement contains the entire and only agreement between the parties, and no oral statements or representations or prior written matter not contained in this Agreement shall have any force or effect.

14. **Modification.** No provision of this Agreement may be waived, changed, or modified orally, but only by an agreement in writing signed by the parties.

15. **Notices.** Any communications, requests or notices required or appropriate to be given under this Agreement shall be in writing and mailed via U.S. Mail, Certified or Registered, Return Receipt Requested or sent via a recognized commercial carrier, such as but not limited to Federal Express, that requires a return receipt delivered to the sending party. Alternatively, communication may be sent via email and shall satisfy the delivery requirements of this section through express acknowledgement of receipt by the receiving party. Said communications, requests or notices shall be sent to the other party as follows:

Seller:	Buyer:
Maine Department of Transportation	Langdon Street Real Estate, Inc.
Toni L. Kemmerle, Chief Counsel	Attn: Ben Blunt
16 State House Station	7 Langdon St
Augusta Maine 04333-0016	Concord, NH 03301
E-mail: toni.kemmerle@maine.gov	Email: bblunt@concordcoachlines.com

IN WITNESS WHEREOF, the parties have set their hands and seals on the day and year first written above.

STATE OF MAINE
Department of Transportation

By: _____
David Bernhardt, Commissioner
Duly authorized

LANGDON STREET REAL ESTATE, INC

By: _____
Print Name: Benjamin Blunt
Its: Vice President
Duly authorized

Exhibit A
Proposed Acquisition from the State of Maine

A certain lot or parcel of land situated on the westerly side of Fore River Parkway and the southerly side of Thompson Point Connector, in the City of Portland, County of Cumberland, State of Maine, as depicted on a plan entitled "Exhibit B – Land Acquisition Sketch of Portland Transportation Center, Thompson's Point Connector, Portland, Maine For Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301" dated January 12, 2018, and revised January 23, 2018, by Sebago Technics, Inc. (project number 99607), D.O.T. File No. 3-185D, on file at the Property Office of the Maine Department of Transportation, and being more particularly bounded and described as follows:

Beginning at an existing 6-inch square concrete highway monument, being the southerly corner of land now or formerly of Langdon Street Real Estate, Inc., as described in a deed recorded at the Cumberland County Registry of Deeds (CCRD) in Book 12719, Page 277;

Thence N 05°25'20" W, along land of Langdon Street Real Estate, Inc., a distance of 303.20 feet to an existing 6-inch square concrete highway monument;

Thence N 19°32'38" W, along land of Langdon Street Real Estate, Inc., a distance of 222.25 feet to a 6-inch square concrete highway monument at a point of curvature;

Thence along a non-tangent curve concave to the southwest and land of Langdon Street Real Estate, Inc. as defined by the following curve elements: having a radius of 854.53 feet, an arc length of 35.90 feet and a chord which bears N 41°08'09" W, a distance of 35.89 feet to a point;

Thence N 27°24'28" E, along land of Langdon Street Real Estate, Inc., a distance of 53.92 feet to a point;

Thence N 04°37'26" E, along land of Langdon Street Real Estate, Inc., a distance of 64.77 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set on the southerly sideline of the Thompson's Point Connector;

Thence S 72°56'09" E, along Thompson's Point Connector and through land of the State of Maine, as described in deeds recorded at the CCRD in Book 3079, Page 336; Book 3153, Page 761 and Book 3367, Page 171, a distance of 143.69 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at the Fore River Parkway;

Thence S 06°38'37" E, along Fore River Parkway and through land of the State of Maine, a distance of 288.62 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 11°42'34" E, along Fore River Parkway and through land of the State of Maine, a distance of 226.50 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 13°20'40" W, along Fore River Parkway and through land of the State of Maine, a distance of 163.34 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at

land now or formerly of the Portland Terminal Company, as described in a deed recorded at the CCRD in Book 881, Page 318;

Thence N 54°30'09" W, along the land of the Portland Terminal Company, a distance of 101.27 feet to the Point of Beginning.

The herein described parcel contains approximately 83,608 square feet, more or less

Bearings herein are based on Grid North, Maine State Plane Coordinate System, West Zone 1802, NAD83.

Meaning and intending to convey a portion of the right of way of State Highway "295" as was acquired from the Portland Terminal Company by condemnation by the State of Maine, as described in a Notice of Layout and Taking recorded in Book 3217, Page 141.

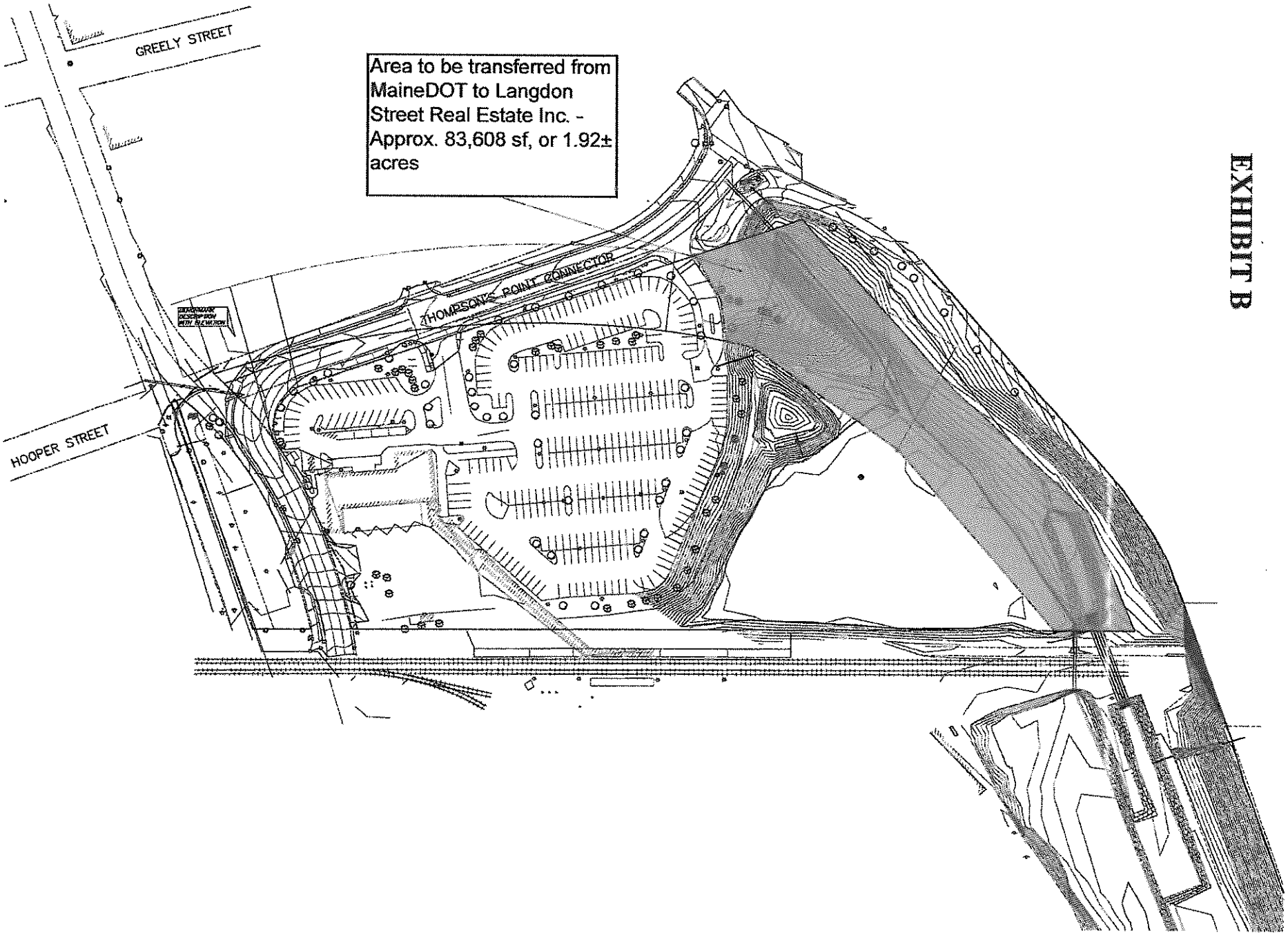

GREELY STREET
Area to be transferred from MaineDOT to Langdon Street Real Estate Inc. - Approx. 83,608 sf, or 1.92± acres
THOMPSONS POINT CONNECTOR
HOOPER STREET

EXHIBIT B

Section 3

Financial Capacity

Section 3

Financial Capacity

A. Estimated Costs

The anticipated construction cost of the proposed development is approximately $3,000,000.

B. Financing

Please see this Section for a letter of financial capacity from TD Bank.

TD Bank
America's Most Convenient Bank®
143 North Main Street
Concord, NH 03301

tdbank.com

City of Portland

January 23, 2018

To Whom it May Concern:

Per the request Langdon Street Real Estate, Inc. (LSRE) of Concord, NH, please accept this letter as confirmation that LSRE and Concord Coach Lines, Inc. (CCL) of Concord, NH have a banking relationship with TD Bank. They have multiple financings with the Bank including lines of credit with aggregate availability in the medium seven (7) figure range. Additionally, the companies maintain a depository relationship with the Bank with current available balances in the moderate seven (7) figure range.

It is my understanding is that LSRE is contemplating funding an expansion of their Portland, ME terminal facility utilizing their current resources, to include the above referenced lines of credit and deposits and without the need for additional financing. In the event that project did require additional funding TD Bank would be more than willing to review the request, subject to our normal underwriting guidelines.

TD has enjoyed a long time relationship with the companies and their obligations have always been handled in an exemplary manner. Should you require additional information I would be pleased to provide upon the request of LSRE.

Sincerely,

Thomas Potter | Vice President | Commercial Lending
TD Bank, America's Most Convenient Bank
NH1-080-000 | 143 North Main Street, Concord, NH 03301
T: 603 229 5911| F: 603 229 5949
E Mail: Thomas.Potter@td.com

Confidential

Section 4

Technical Ability

Section 4

Technical Ability

The applicant has the technical capacity to manage the planning and design of this project as they have done so with the existing facility as well as other transportation centers in New England. They had retained S.W. Cole to provide Geotechnical consulting and Sebago Technics, Inc., to provide survey, landscape architecture, civil engineering and permitting services for this project.

S.W. Cole, founded in 1979 provides services in geotechnical engineering, construction materials testing and special inspections, geo-environmental services and test boring explorations. With an employee base of more than 90 engineers, scientist and technicians they have provided services on more than 1,800 projects.

Timothy J. Boyce, P.E. is a Registered Professional Engineer in the State of Maine and has been practicing for over 21 years. Maine License #9263

Sebago Technics, Inc. (STI) is a multi-disciplinary engineering firm with over 35 years of experience that offers a wide range of services specializing in land development, planning, permitting, and engineering design services. We maintain a staff of multi-disciplinary professionals to provide services in the areas of general civil engineering, road and utility infrastructure design, construction management, permitting, landscape architecture, soil science, wetlands science, geotechnical services, land surveying, and environmental engineering. Resumes of key personnel will be provided upon request.

Section 5

Noise

Section 5

Noise

A. <u>Developments Producing a Minor Noise Impact</u>

The proposed project involves the parking lot expansion of an existing facility. It is not anticipated that the project will result in an increase of noise generated at this site. Abutting properties to the site consist of a connector to the Maine Turnpike and other commercial properties. As a result, a full noise study is not warranted. Temporary noise may arise during construction as a result of construction equipment working on the site. This noise potential is short-term and also not expected to be significant.

Chapter 30 Noise exemptions – 30-3 (u) Construction / machine overhaul noise from 7am – 9pm.

All construction activities will occur within the allowable times outlined in the City of Portland zoning ordinance.

Section 6

Visual Quality & Scenic Character

Section 6

Visual Quality

The proposed development involves a parking lot expansion of an existing facility. Given the nature of the project and the surround area, as well as the location of the subject site it is not anticipated that the parking lot expansion would result in an impact to the visual quality of the area. Please see the planset for a copy of the site plan and landscape plan.

Section 7

Wildlife and Fisheries

Section 7

Wildlife and Fisheries

Maine Inland Fisheries and Wildlife (IF&W) was contacted, and determined there would be no adverse impact to fisheries or wildlife. Please see this Section for a copy of the response letter dated October 2, 2017.

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

October 2, 2017

Erik Lema
Normandeau Associates, Inc.
550 Forest Avenue, Suite 201
Portland, ME 04101

RE: Information Request - Portland Transportation Center, Portland

Dear Erik:

Per your request received September 12, 2017, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *Portland Transportation Center Project* in Portland.

Our information indicates no locations of Endangered, Threatened, or Special Concern species within the project area that would be affected by your project. Additionally, our Department has not mapped any Essential or Significant Wildlife Habitats or fisheries habitats that would be directly affected by your project.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

John Perry
Environmental Review Coordinator

PHONE: (207) 287-5254
FISH AND WILDLIFE ON THE WEB: www.maine.gov/ifw
EMAIL ADDRESS: John.Perry@maine.gov

Section 8

Historic Sites

Section 8

Historic Sites

Maine Historic Preservation Commission (MHPC) was contacted and determined that provided no excavation was planned in the area of expansion (a wetland area) that there would be no adverse impact to any historic resources as a result of this project. There is no excavation within the wetland area proposed for this project. Please see this Section for a copy of the MHPC response letter dated November 3, 2017.

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

November 3, 2017

Mr. Erik Lema
Normandeau Associates
550 Forest Ave Suite 201
Portland, ME 04101

Project: MHPC #1410-17 Portland Transportation Center
Proposed Parking Lot Expansion

Town: Portland, ME

Dear Mr. Lema:

In response to your recent request, I have reviewed the information received October 12, 2017 to initiate consultation on the above referenced project in accordance with Maine Department of Environmental Protection.

Review of the proposed project showed that a portion of the Cumberland and Oxford Canal passed through this general area and that a water-filled estuary at the project area location and to its east likely served as a canal basin. The exact location of the canal is not known due to severe disturbance and extensive landfilling, which includes all of Thompson's Point. The most likely location for the canal bed is under the existing railroad tracks or immediately north of them within the project area. Due to this determination, a field check was conducted on October 22nd, 2017 to assess the area for potential vestiges of the canal. The project area primarily consists of wetland that drains under the railroad tracks via several large pipes at its southeastern extent. No clear remains of the canal were identified during the walkover with the possible exception of several large pieces of split granite that lay along the north side of the railroad track embankment opposite the waterway east of Thompson's Point. These stones may have been associated with a canal lock that was present in this area. It is assumed that the parking lot expansion will involve filling of the existing wetland. If the proposed project requires excavation of wetland soils prior to filling, then archaeological monitoring is recommended since the remains of canal-related features as well as canal boats could be present in this area. If the wetland is merely to be filled and left undisturbed, then no archaeological monitoring is recommended and the proposed parking lot expansion may proceed as planned. Attached is a list of approved contract archaeologists.

There will be no architectural or prehistoric archaeological resources affected by this undertaking.

If you have any questions regarding archaeology, please contact Dr. Leith Smith of this office, at Leith.Smith@maine.gov.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132

FAX: (207) 287-2335

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

Prehistoric Archaeologists Approved List: Review and Compliance Consulting/Contracting (Active)

LEVEL 1 (Phase I and reconnaissance survey only)

Dr. Christopher Donta (401-273-9900)
HRA Gray and Pape, LLC
60 Valley Street, Suite 103
Providence, RI 02909
cdonta@graypape.com

James A Clark (207-930-0543)
PO 815
Belfast, Maine 04915
clark.ja@gmail.com

Mr. Michael Brigham
P. O. Box 274
New Vineyard, ME 04956
brigham@nearchaeology.com

Ms. Sarah Haugh (207-879-9496 x238)
Tetra Tech
451 Presumpscot St
Portland ME 04103
sarah.haugh@tetratech.com

Mark Penney (518-432-9545)
The Louis Berger Group Inc.
20 Corporate Woods Blvd.
Albany, NY 12211-2370
mpenney@louisberger.com

Mr. Jacob Tumelaire
Independent Archaeological Consulting
801 Islington St. Suite 31
Portsmouth, NH 03801
jtumelaire@iac-llc.net

Mary Lynne Rainey
RGA Cultural Resource Consultants
1376 Kingstown Road
Wakefield, RI 02789
marylynne.rainey@verizon.net

Ora Elquist
Public Archaeology Laboratory
26 Main Street
Pawtucket, RI 02860
401-728-8780
oelquist@palinc.com

LEVEL 2 (Phase I, II, III, data recovery, all phases of survey)

Dr Richard Will (207-667-4055)
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
FAX: 207-667-0485
rwill@trcsolutions.com

Karen Mack (207-667-4055)
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
FAX: 207-667-0485
kemack@trcsolutions.com

Dr Stuart Eldridge (207-869-1261)
Power Engineers, Inc.
303 US Rte 1
Freeport ME 04032
Stuart.Eldridge@powereng.com

Dr Ellen Cowie (207-860-4032)
Northeast Archaeology Research Center
382 Fairbanks Rd
Farmington ME 04938
cowie@nearchaeology.com

Robert N Bartone (207-860-4032)
Northeast Archaeology Research Center
382 Fairbanks Rd
Farmington ME 04938
bartone@nearchaeology.com

Dr Victoria Bunker (603-776-4306)
PO Box 16
New Durham NH 03809-0016
vbi@worldpath.net

Dr Nathan Hamilton (207-780-5324)
Dept of Geography & Anthropology
University of Southern Maine
Gorham ME 04038
casco@usm.maine.edu

David Putnam (207-762-6078)
47 Hilltop Rd
Chapman ME 04757
putnamd@umpi.edu

Dr. Robert Goodby (603-446-2366)
Monadnock Archaeological Consulting
16 Fox Hill Rd
Stoddard NH 03464
rgoodby@monadarch.com
www.monadarch.com

Dr. Dianna Doucette
Public Archaeology Laboratory
26 Main Street
Pawtucket, RI 02860
ddoucette@palinc.com

Dr William R Belcher
US Army CILHI
310 Worchester Ave Bldg 45
Hickam AFB HI 96853-5530
wbelcher@msn.com

Mr. Jacob A. Freedman
SEARCH, INC
P.O. Box 1080
Portsmouth, NH 03802
603-319-6939
www.searchinc.com
Jacob@searchinc.com

Dr. Gemma-Jayne Hudgell
Northeast Archaeology Research Center
382 Fairbanks Road
Farmington, Maine 04938
FAX: 207-860-4031
hudgell@nearchaeology.com

Dr. Daniel F. Cassedy
AECOM
791 Corporate Center Drive
Raleigh, NC 27607
919-854-6207
Daniel.cassedy@aecom.com

PHONE: (207) 287-2132

FAX: (207) 287-2335

Section 9

Unusual Natural Areas

Section 9

Unusual Natural Areas

The Maine Natural Areas program (MNAP) was contacted, and determined there would be no adverse impact as a result of this project. Please see this Section for a copy of the MNAP response letter dated September 13, 2017.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

September 13, 2017

Erik Lema
Normandeau Associates
550 Forest Ave, Suite 201
Portland, ME 04101

Via email: elema@normandeau.com

Re: Rare and exemplary botanical features in proximity to: Portland Transportation Center Parking Lot Expansion, Portland, Maine

Dear Mr. Lema:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received September 12, 2017 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. Based on the information in our files and the landscape context of this project, there is a low probability that rare or significant botanical features occur at this project location. However, it was noted that several species of non-native invasive plants are growing through the area where the parking lot expansion is planned. MNAP recommends that the vegetation removed during the project be deposited off-site in an appropriate composting facility or landfill in order to prevent the further spread or introduction of invasive plants through plant material or propagules.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM

DEPARTMENT OF Agriculture Conservation & Forestry

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FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for usi
ng the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

Section 10

Buffers

Section 10

Buffers

No specific stormwater treatment buffers are proposed as part of the development. As the project involves the expansion of an existing parking area and the surrounding parcels all consist of commercial uses, visual buffering consists only of retained vegetation and proposed landscaping as depicted on the Landscape Plan.

Section 11

Soils

Section 11

Soils

A. Soil Survey Map and Report

A Class 'D' Medium Intensity Soil Survey published by the United States Department of Agriculture, Natural Resources Conservation Service for Cumberland County, Maine has been provided in this Section.

Please see the pre- and post-development drainage plans for the Class 'D' soil delineation.

B. Soil Survey Intensity Level by Development Type

A class 'D' medium intensity soil survey was utilized on the drainage plans and a site specific geotechnical investigation was conducted for infrastructure improvements.

C. Geotechnical Investigation

A geotechnical investigation was completed by S.W. Cole Engineering, Inc. Please see this section for a copy of the January 8, 2018 report.

D. Hydric Soils Mapping

Wetlands are depicted on the plan set as identified by Erik Lema, Certified wetland Scientist, of Normandeau Associates, Inc. in September 2017. Please see this Section for a copy of the wetlands report.

REPORT

17-0938 S

January 8, 2018

Explorations and Geotechnical Engineering Services

Proposed Amtrak-Concord Coach
Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
T: 207-657-2866

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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Appendix D Laboratory Test Results
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17-0938 S

January 8, 2018

Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Amtrak-Concord Coach Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Dear Steve:

In accordance with our Proposal, dated September 5, 2017, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included a review of available prior explorations, three test boring explorations, one hand boring exploration, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is an undeveloped, vegetated parcel located east of the existing Portland Transportation Center and west of the I-295 approach ramp in Portland, Maine. The site is principally occupied by low wet areas. We understand development plans

include a new, 507-space parking lot expansion. We understand proposed grades will roughly match that of the existing adjacent parking lot, then generally sloping down to the southeast, requiring tapered fills approaching 18 feet thick. A subsurface stormwater management gallery is proposed beneath the southern portion of the new parking lot. Proposed and existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

2.1.1 Current Explorations

Three test borings (B-101 through B-103) and one hand boring (HB-1) were made at the site on September 25 through 28, 2017 by S. W. Cole Explorations, LLC, a subsidiary of S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established in the field by S.W.COLE using measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.1.2 Prior Explorations

Five test borings (B-1 through B-5) were made on the southwest side of the rail alignment abutting the southern site boundary in 2010 as part of a prior study by S.W.COLE for a then proposed train maintenance facility. The approximate locations of these borings are shown on the "Exploration Location Plan" attached in Appendix B. Logs of these explorations are attached in Appendix C.

2.2 Field Testing

The test borings were drilled using a combination of solid stem auger and cased wash-boring techniques. The soils were sampled at 2 to 10 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. Pocket Penetrometer Testing (PPT) was performed where relatively stiff cohesive soils were encountered. Shelby tube sampling, Vane Shear Testing (VST), and rod probing were performed where softer cohesive soils were encountered. SPT blow counts, PPT and VST results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Atterberg Limits and moisture content test results are noted on the logs. The results of four, one-dimensional laboratory consolidation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Underlying pavement or surficial organics, the borings encountered a soils profile generally consisting of fill, overlying organic and bay mud deposits, overlying a relatively thick layer of glaciomarine clay, overlying glacial till and bedrock with depth. The principal soils are summarized below. Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Fill: The borings encountered fill extending to depths varying from about 4 to 23 feet. The fill consisted of very loose to medium dense sand with varying portions of silt and gravel. The fill at boring B-101 contained miscellaneous debris including brick, plastic and wood.

Organics and Bay Mud: Underlying the fill, the borings encountered deposits of organics and bay mud consisting of layered peat, relic marsh organics, and loose sands, silts and clays with shells and varying portions of organics. The bay mud varied in thickness from approximately to 3 to 27 feet, with peat layers up to about 5 feet thick.

Glaciomarine Soils: Underlying the organics and bay mud, the borings encountered glaciomarine silty clay. At several borings, the clay consists of an upper “crust” of hard to stiff brown and gray silty clay up to about 7 feet thick. The upper “crust”, where present, transitions to a relatively thick layer of softer gray silty clay extending to depths varying from about 47 to 65 feet. Vane Shear Testing performed on the gray silty clay indicates undrained shear strengths varying from approximately 490 to 1,000 psf. One-dimensional consolidation testing performed on the gray silty clay indicates the clay is overconsolidated by approximately 2 to 4 ksf. A layer of sand with varying portions of silt and gravel was present beneath the silty clay at several locations.

Glacial Till: Underlying the glaciomarine soils, several borings encountered up to about 4 feet glacial till, consisting of dense sand with varying portions of silt and gravel.

Bedrock: Underlying the glaciomarine soils and glacial till, where penetrated, the borings encountered bedrock at depths varying from about 64 to 71 feet.

3.2 Groundwater

Saturated soils and free water were encountered in the borings at depths varying from about 2 to 9 feet. Groundwater likely becomes perched on the relatively impervious silts and clays encountered at the test borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- The site is underlain by compressible relic organics, peat, bay mud and a relatively thick layer of softer gray silty clay which will settle during and after construction. To reduce post-construction settlement, we recommend the site be preloaded prior to the installation of utilities, storm water drainage systems and surface finishes including paving, landscaping and lighting. We understand a preload period of 12 to 18 months is available.

- We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material. Similarly, the rail tracks may require re-ballasting to re-level the tracks after preloading.

- We recommend the site be instrumented with settlement platforms and a vibrating wire piezometer prior to filling to help monitor and forecast settlement progress

during and after the preload period. Additionally, we recommend survey points be established along the rail alignment and monitored throughout preloading.

- Imported Gravel Borrow, Granular Borrow, Common Borrow, and pavement gravels will be needed for construction.

4.2 Settlement and Stability

4.2.1 Settlement

The bay mud, organics and softer gray silty clay underlying the site are compressible under new loading from the proposed site fills. Based on the subsurface findings and proposed construction, we estimate that settlement may approach several feet during the preload period and several inches post-construction.

4.2.2 Global Stability

We performed global stability analysis for the fill slope along the rail alignment. The stability evaluation was made using a two-dimensional stability model and SLOPE/W computer software. Our global stability analysis utilized a method of slices assuming moment equilibrium, and was based on: 1) our current understanding of the project; 2) subsurface information obtained at the explorations; and, 3) proposed and existing site grades shown on Sheet 1. Our analysis indicates a safety factor of about 1.3 during filling and post-construction. Safety factors of 1.3 are considered acceptable for slopes supporting paved areas. Based on our analysis, the factors of safety against a deep rotational failure are at or above the acceptable thresholds for the proposed construction provided the geotechnical recommendations presented herein are followed. Slope stability output graphics are attached in Appendix E.

4.3 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Prior to site filling, tree and shrub growth should be cut off at ground surface; surficial organics, wetland mat, topsoil, and grassy growth may remain in place where greater than 5 feet below proposed finished grade. Existing utilities should be removed and rerouted

from the fill area. Site filling should commence by placing a minimum of three feet of compacted MaineDOT 703.19 Granular Borrow for Underwater Backfill, or as much as required to fill one foot above free water, over the prepared subgrade. Above this elevation, MaineDOT 703.18 Common Borrow may be used to construct the fill embankment up to one-foot below pavement subgrade. The embankment should be capped with at least one-foot of MaineDOT 703.20 Gravel Borrow prior to placing pavement subbase and base gravels.

We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material prior to paving. Similarly, the railroad tracks may require re-ballasting to re-level the tracks during fill placement and after preloading.

Instrumentation and Monitoring: We recommend settlement plates and a vibrating-wire piezometer be installed after the initial lift of Granular Borrow is installed. We recommend the contractor furnish and install the settlement plates. Survey readings on the settlement plates should be obtained by the contractor on installation and weekly during filling. The settlement plates must be referenced to a benchmark established at least 100 feet away from the fill area. The piezometer should be installed by S.W.COLE and monitored weekly during filling. After site is filled, the settlement plates and piezometer should be read monthly and reviewed by S.W.COLE to monitor preload progress and assess appropriate complete dates and remaining post-construction settlement. Details of the geotechnical instruments (settlement monitoring plates and piezometer) are illustrated on Sheets 1 and 2 in Appendix B.

Preload Duration: At this time, we estimate a preload duration of 12 to 18 months will be required to consolidate the compressible soils beneath the site. The final determination of completion of the preload period should be made by S.W.COLE based upon readings from the geotechnical instruments (settlement monitoring plates and piezometers).

4.4 Excavation and Dewatering

Excavation work will generally encounter surficial organics and fills. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and

grading activities should ideally occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the wetland mat or native silt and clays. Low ground pressure tracked equipment will be needed and temporary haul roads overlying geotextile fabric may be necessary.

Groundwater and free standing should be anticipated in the wetland areas. Dewatering prior to filling is not anticipated, as the site is proposed to be raised above free standing water. The contractor should anticipate temporary dewatering for utilities installed below the level of the existing wetlands.

Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Granular Borrow: The initial lifts of fill to raise grades in the wetland area should consist of at least 3 feet, and at least 1 foot above free water, of sand meeting the requirements of 2014 MaineDOT Standard Specification 703.19 Granular Borrow for Underwater Backfill.

Common Borrow: Fill to raise grades above the Granular Borrow and up to one-foot from bottom of pavement subbase should be non-organic compactable earth meeting the requirements of 2014 MaineDOT Standard Specification 703.18 Common Borrow.

Gravel Borrow: Fill to raise grades within one foot of pavement subbase should be sand and gravel meeting the requirements of 2014 MaineDOT Standard Specification 703.20 Gravel Borrow.

Structural Fill: Backfill for structures, such as light pole bases, should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 6

Reuse of Site Soils: The non-organic on-site soils may be suitable for reuse as Common Borrow, provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not generally exceed 12 inches. We recommend that fill be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Fill must not be placed on frozen soil; and once placed, soil must be protected from freezing.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light service truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2014 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 19.0 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	15 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. If embankments are not constructed using non-frost susceptible fill or in the absence full depth excavation of frost susceptible soils and replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, as well as to provide testing services for soils, concrete, and asphalt construction materials.

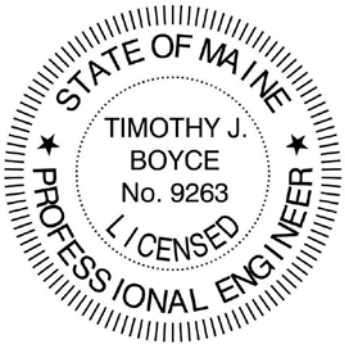
5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed Amtrak-Concord Coach Parking Lot Expansion at the Portland Transportation Center at 100 Thompsons Point Road in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures

LEGEND:

- APPROXIMATE BORING LOCATION
- PROPOSED SETTLEMENT MONITORING PLATFORMS
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED SURVEY MONITOR POINTS

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALED PLAN OF THE SITE ENTITLED "PRELIMINARY SITE LAYOUT AND GRADING PLAN," PREPARED BY SEBAGO TECHNICS, INC., DATED OCTOBER 2017.
2. BORINGS B-101 THROUGH B-103 AND HB-1 WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. BORINGS B-1 THROUGH B-5 WERE PERFORMED UNDER THE DIRECTION OF S. W. COLE ENGINEERING, INC. IN 2010.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 80 160 Feet

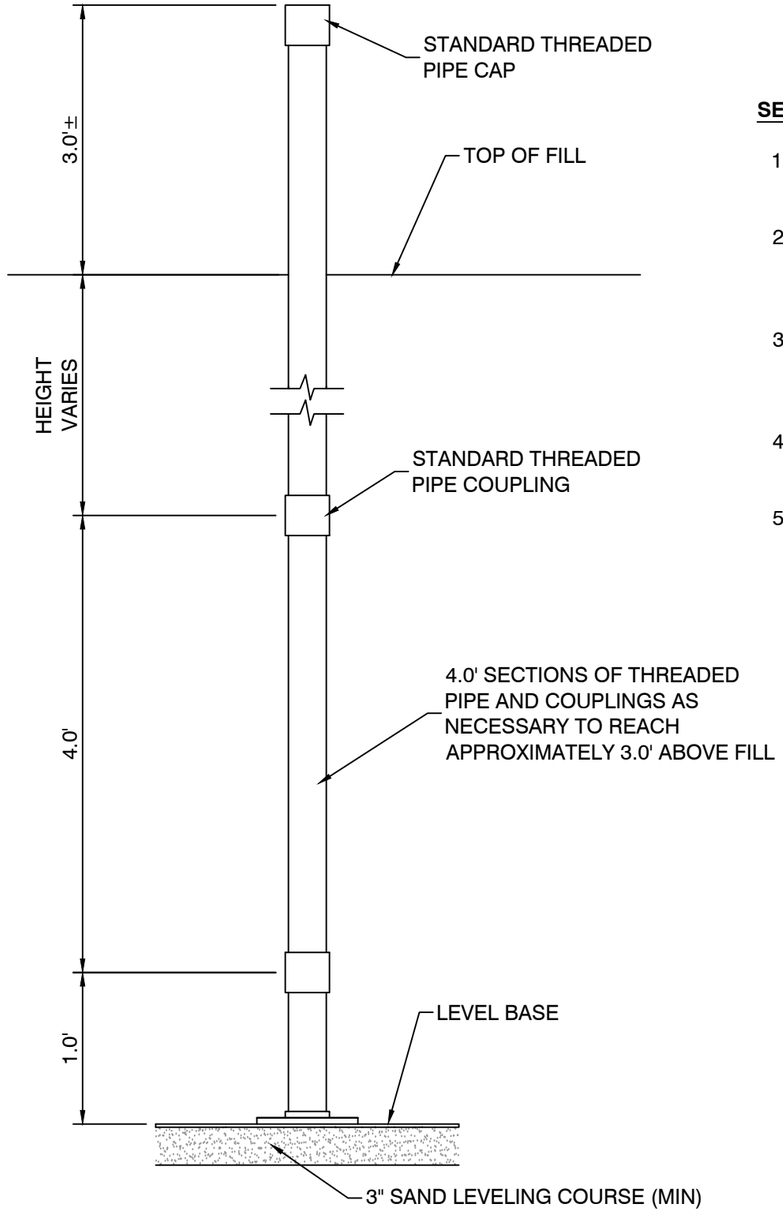
S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

EXPLORATION LOCATION PLAN

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	1" = 80'
Date :	12/01/2017	Sheet:	1

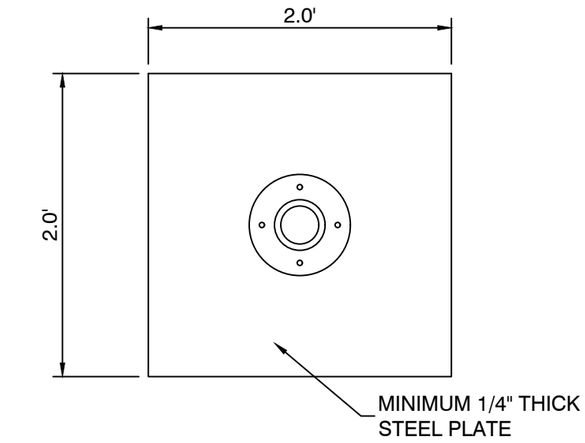


SETTLEMENT MONITORING PLATFORM INSTALLATION AND DETAIL

NOT TO SCALE

SETTLEMENT MONITORING PLATFORM NOTES:

1. SEE SHEET 1 FOR SETTLEMENT MONITORING PLATFORM LOCATIONS.
2. A COMPACTED 3" SAND LEVELING COURSE SHALL BE CONSTRUCTED UNDERNEATH BASES OF SETTLEMENT PLATES.
3. RECORD ELEVATION OF BASE AND TOP OF RISER AT TIME OF INSTALLATION, RECORD ELEVATION OF RISE AT EACH EXTENSION
4. AFFIX PLATE NUMBERS TO RISER PIPES AS SP-1 THROUGH SP-4.
5. CONTRACTOR SHALL TAKE CARE NOT TO DISTURB SETTLEMENT PLATES AFTER THEY HAVE BEEN INSTALLED. DISTURBED PLATES SHALL BE REPLACED.



SETTLEMENT PLATE - STEEL BASE CONSTRUCTION

NOT TO SCALE

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

INSTRUMENTATION DETAILS

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	As Noted
Date :	12/01/2017	Sheet:	2

APPENDIX C

Exploration Logs and Key

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 26' +/- | **TOTAL DEPTH (FT):** 67.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
25			1D		0-2	24/15	7-14-8-5			0.5 6"+/- ASPHALT Medium dense, brown SAND and gravel, some silt (FILL) 1.8 Loose, gray gravelly silty SAND with shells, brick, plastic, wood fragments (FILL)		
20	5		2D		5-7	24/15	3-3-6-5				▽	
15	10		3D		10-12	24/15	6-4-2-3					
10	15		4D		15-17	24/4	2-1-3-4					
5	20		5D		20-22	24/0	2-2-5-5			23.0 Loose, dark brown PEAT (Relic Wetland Deposit)		
0	25		6D		25-27	24/12	2-3-4-7					
			7D		27-29	24/24	10-15-23-26			27.2 Medium dense, gray clayey SAND and silt with organics 28.0 Hard, gray-brown sandy SILT and CLAY		
-5	30		8D		30-32	24/20	8-16-20-25	q_P=9 ksf				
										33.5 Medium, olive-brown silty CLAY		
-10	35		9D		35-37	24/6	4-4-6-7	q_P=1 ksf				
										38.5 Medium to soft, gray silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
-15			10D		40-42	24/24	WOH-WOH-1-2					
	45		1V		45-45.8	9		S_V=0.86/0.05ksf		Medium to soft, gray silty CLAY		
-20			1V'		45.8-46.6	9		S_V=1.08/0.17ksf				
	50											
-25												
	55		2V		55-55.8	9		S_V=0.49/0.03ksf				
-30			2V'		55.8-56.6	9						No Vane Rotation @ 2V'
										56.5 Probable gray silty CLAY with frequent SAND layers		
	60											
-35												
										63.0 Dense, gray silty SAND and GRAVEL		
	65		11D		65-67	24/11	30-25-23-31					
-40										67.0 Bottom of Exploration at 67.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 14' +/- | **TOTAL DEPTH (FT):** 49.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1D		0-2	24/10	2-4-7-14			Loose, brown SAND and silt with rootlets		
										1.5 Very loose to loose, brown SAND, some silt, trace gravel (FILL)		
10	5		2D		5-7	24/14	4-3-3-2					
5	10		3D		10-12	24/16	2-1-1-2				▽	
										13.0 Loose, dark gray clayey SILT with organics		
0	15		4D		15-17	24/16	1-3-6-6	q_P=5 - 6.5 ksf		16.0 Very stiff, brown silty clay with sand seams		
-5	20		5D		20-22	24/18	3-5-5-6					
-10	25		6D		25-27	24/24	WOH-WOH-2-1			23.5 Medium, gray silty CLAY with sand seams/layers		
-15	30		1U		30-32	24/24		W_L=43 W_P=23 w =44.5 % S_V=0.93/0.18ksf				
-20			1V		32-32.8	9						No Vane Penetration @ 1V'
	35		1V'		32.8-32.8	0						
-25												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/22		W_L=34 W_P=19 w =36.2 %		Medium, gray silty CLAY with sand seams/layers		
-30	45		2V		42-42.8	9						No Vane Rotation @ 2V
										47.0 Probable glacial till or bedrock		
-35										49.0 Bottom of Exploration at 49.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 12' +/- | **TOTAL DEPTH (FT):** 64.5 | **LOGGED BY:** P. Otto / E. Walker
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 5 ft 9/26/2017 Soils saturated below 5'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
10			1D		0-2	24/16	3-5-7-12			Medium dense, brown silty SAND, some gravel with rootlets top 12" (FILL)		
										4.0		
5	5		2D		5-7	24/15	1-1-1-1			Very loose, gray layered coarse SAND and silty CLAY with shells and few organics	▽	
0	10		3D		10-12	24/16	1-1-1-1			11.5 Loose, dark gray clayey SILT with shells and few organics		
										14.0 Soft to medium, gray silty CLAY with shells		
-5	15		4D		15-17	24/24	WOH					
-10	20		5D		20-22	24/24	WOH					
-15	25		1V		25-25.8	9		S_V=0.93/0.09ksf				
			1V'		25.8-26.6	9		S_V=0.89/0.12ksf				
-20	30		1U		30-32	24/10		W_L=40 W_P=20 w =21 %		31.0 Stiff to very stiff, gray silty CLAY, some sand		
			6D		32-34	24/24	7-10-11-16					
-25	35									38.0 Medium, gray, silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/24		W_L=45 W_P=23				
-30			2V		42-42.8	9		w =46.4 % S_V=0.92/0.14ksf				
			2V'		42.8-43.6	9		S_V=0.92/0.13ksf				
	45											
-35												
	50		3U		50-52	24/24		W_L=37 W_P=21				
-40			3V		52-52.8	9		w =40.4 % S_V=0.92/0.16ksf				
			3V'		52.8-53.6	9		S_V=0.91/0.20ksf				
	55									Roller Cone Probe Below 53.6'		
-45												
	60											
-50										63.0 Probable Granular Soils - Advance by Roller Cone		
										64.0 Probable Boulder or Bedrock - Advance by Roller Cone		
										64.5 Refusal at 64.5 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: HB-1
SHEET: 1 of 1
PROJECT NO. 17-0938
DATE START: 9/28/2017
DATE FINISH: 9/28/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 7' +/- | **TOTAL DEPTH (FT):** 17.0 | **LOGGED BY:** P. Otto
DRILLING CO.: S.W. Cole Engineering, Inc. | **DRILLER:** P. Otto | **DRILLING METHOD:**
RIG TYPE: Hand Auger/Tile Probe | **AUGER ID/OD:** N/A / N/A | **SAMPLER:**
HAMMER TYPE: N/A | **HAMMER WEIGHT (lbs):** N/A | **CASING ID/OD:** N/A /N/A | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** N/A
WATER LEVEL DEPTHS (ft): ▽ 2 ft 9/28/2017 Free Water Below 2' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
5										Vegetation / Organics		
										1.0 Gray, clayey sandy SILT with shells and organics	▽	
	5									5.0 Gray, clayey sandy SILT		
0										Becomes More Clayey with Depth		
	10									Advance by Tile Probe Below 10'		
-5												
	15									15.0 Probable Sand Layer - Advance by Tile Probe		
-10										17.0 Bottom of Exploration at 17.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
	1D	24"	14"	2.2'	12	7	8	9		BROWN AND BLACK SILTY SAND WITH SOME GRAVEL WITH COAL AND ASH (FILL)
	2D	24"	16"	4.2'	13	7	6	6		~ MEDIUM DENSE TO LOOSE ~
	3D	24"	18"	7.0'	4	3	2	3	6.3'	
	4D	24"	20"	9.0'	2	2	2	3	8.7'	ORANGE-BROWN SILTY FINE SAND ~ LOOSE ~
	5D	24"	10"	12.0'	1/12"		1/12"		12.0'	GRAY SILTY FINE SAND WITH OCCASIONAL SILT SEAMS ~ VERY LOOSE ~
										~ FREQUENT ORGANICS/PEAT IN WASH WATER 12' - 15' ~ ~ SOFT/LOOSE ~ GRAY CLAYEY SILT WITH FREQUENT ORGANICS AND PEAT SEAMS
									16.0'	w = 71.0%
	6D	24"	24"	17.0'	1/12"		1/12"			GRAY SILTY CLAY WITH VERY FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
									20.0'	
	1U	24"	24"	22.0'	PISTON SAMPLER					GRAY SILTY CLAY
	1V			22.8'	3-5/8" X 7" VANE					Sv = 0.90 KSF / 0.19 KSF
	1V'			23.6'	3-5/8" X 7" VANE					Sv = 0.93 KSF / 0.16 KSF ~ MEDIUM ~
										~ TRACE SHELL FRAGMENTS 35' - 37' ~
	7D	24"	24"	37.0'	WOH/24"					w = 52.0%

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
	8D	24"	24"	47.0'	WOH/24"					~ MEDIUM ~
	9D	24"	24"	57.0'	WOR/24"					
									64.0'	
	10D	24"	16"	67.0'	7	7	8	10	67.0'	GRAY SAND WITH SOME SILT AND SOME GRAVEL ~ MEDIUM DENSE ~
									71.3'	INCREASED RESISTANCE - FREQUENT COBBLES AND GRAVEL POSSIBLE GLACIAL TILL SOILS
									73.5'	PROBABLE BEDROCK ADVANCE BY ROLLER CONE
										BOTTOM OF EXPLORATION @ 73.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-2**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3" +/-	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN GRAVELLY SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	18"	2.2'	6	6	9	24	2.0'	BLACK SILTY SAND WITH TRACE GRAVEL WITH COAL & ASH (FILL) ~MED. DENSE~
										ORANGE BROWN SAND WITH SOMES SILT (FILL)
									6.0'	~ LOOSE ~
	2D	24"	18"	7.0'	5	6	3	4	7.0'	BROWN CLAYEY SILTY SAND ~ LOOSE ~
	3D	24"	14"	9.0'	2	3	3	4		GRAY SILTY FINE SAND
	4D	24"	6"	12.0'	1	1	1	1		~ LOOSE ~
									15.0'	
	5D	24"	22"	17.0'	1	1/12"		1		w = 70.2%, O = 7.8%
										DARK BROWN PEAT WITH FREQUENT GRAY CLAYEY SILT LAYERS
										~ VERY LOOSE ~
									20.3'	
	6D	24"	24"	20.0'	1/12"		1	1		GRAY SILTY CLAY WITH FREQUENT SHELLS
										~ MEDIUM ~
	7D	24"	24"	27.0'	1	1	1	1	27.0'	
										BOTTOM OF EXPLORATION @ 27.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:	NQ	2"		

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN SILTY GRAVELLY SAND (FILL) ~ MEDIUM DENSE ~
	1D	24"	10"	2.2'	6	5	9	9	2.0'	BLACK SILTY SAND WITH ASH (FILL) ~ MEDIUM DENSE ~
	2D	24"	12"	4.2'	6	8	9	9		BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE TO LOOSE ~
	3D	24"	16"	7.0'	4	2	3	4	6.5'	
	4D	24"	10"	9.0'	4	4	7	8	8.6'	BROWN SILTY CLAYEY SAND ~ LOOSE ~
									10.0'	ORANGE-RED MEDIUM SAND WITH SOME SILT ~ MEDIUM DENSE ~
	5D	24"	16"	12.0'	1	1	1	1	15.0'	GRAY CLAYEY SILT WITH OCCASIONAL FINE SAND SEAMS, VERY FREQUENT DARK BROWN ORGANIC/PEAT SEAMS ~ VERY LOOSE ~
									15.5'	DARK BROWN PEAT ~ STRONG ORGANIC ODOR ~ ~ VERY LOOSE ~
	6D	24"	22"	17.0'	1	1	2	2		w = 118.0%, O = 18.4% GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS, VERY FREQUENT ORGANIC/PEAT SEAMS ~ MEDIUM ~
	1V			20.0'	3-5/8" X 7" VANE				20.0'	VANE SHEAR ATTEMPTED @ 20' - NO PENETRATION
	7D	24"	20"	22.0'	1	2	4	6	25.0'	GRAY CLAYEY SILT WITH OCCASIONAL SAND SEAMS, FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
	8D	24"	22"	27.0'	7	9	10	10	30.0'	BROWN SILTY CLAY WITH FREQUENT SILT SEAMS q_p = 4.5 KSF ~ VERY STIFF ~
	9D	24"	24"	32.0'	1/12"		1/12"			GRAY SILTY CLAY
	1U	24"	24"	37.0'	PISTON SAMPLER					
	2V			37.8'	3-5/8" X 7" VANE					S_v = 1.06 KSF / 0.21 KSF ~ STIFF ~
	2V'			38.6'	3-5/8" X 7" VANE					S_v = 1.11 KSF / 0.21 KSF

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
										~ MEDIUM TO SOFT ~
	10D	24"	24"	52.0'	WOH-24"					
	11D	24"	24"	62.0'	1	1	1	1		
									65.4'	
										INCREASED RESISTANCE @ 65.4'
									68.0'	PROBABLE GRANULAR GLACIAL TILL SOILS
									69.5'	BEDROCK - ADVANCE BY ROLLER CONE
										BEDROCK - SEE ROCK CORE LOG
	R1	5.0'	3.3'	74.5'					74.5'	RQD = 57%
										BOTTOM OF EXPLORATION @ 74.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-4**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 3'
WATER MEASURED IN PIEZOMETER @ 3.6' 7/30/10

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRASS AND DARK BROWN SILTY SAND (FILL)
	1D	24"	16"	2.0'	3	3	4	7	2.0'	~ LOOSE TO MEDIUM DENSE ~
	2D	24"	14"	4.0'	8	9	11	8		BROWN TO ORANGE-BROWN MEDIUM TO COARSE SAND (FILL)
										~ MEDIUM DENSE ~
									6.0'	
	3D	24"	16"	7.0'	7	5	3	2	6.7'	BLACK COAL AND ASH (FILL) ~ LOOSE ~
	4D	24"	14"	9.0'	1	2	3	3		GRAY SILTY CLAY WITH FREQUENT SAND SEAMS
	5D	24"	16"	12.0'	1	1	1	1		~ MEDIUM ~
										w = 41.3%
									15.0'	
	6D	24"	20"	17.0'	1	2	2	1		w = 141.4%, O=27.4%
										DARK BROWN PEAT WITH CLAYEY SILT AND SILTY CLAY LAYERS
										~ STRONG ORGANIC ODOR ~
										~ VERY LOOSE ~
	7D	24"	14"	22.0'	1	1	1	1	22.0'	
										BOTTOM OF EXPLORATION @ 22.0'
										PIEZOMETER INSTALLED:
										2" PVC SCREEN 15.0' - 5.0'
										2" PVC RISER 5.0' - GROUND SURFACE
										FILTER SAND 22.0' - 4.0'
										BENTONITE SEAL 4.0' - 3.0'
										DRILL CUTTINGS 3.0' - GROUND SURFACE
										ROADBOX CAP INSTALLED

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-4**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-5**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 3'
SOILS SATURATED BELOW 5'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									2.0'	BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	16"	2.2'	8	9	11	8		BROWN SAND WITH SOME SILT AND SOME GRAVEL (FILL)
									4.0'	~ MEDIUM DENSE ~
	2D	24"	10"	4.2'	5	6	7	8		q_p=8 KSF
										~ ORGANICS @ 6-7' ~
	3D	24"	18"	7.0'	2	2	2	2		q_p=3 KSF
										GRAY-BROWN LAYERED CLAYEY SILT AND SANDY SILT
										~ LOOSE ~
	4D	24"	18"	18.0'	1	1	2	2	12.0'	q_p=0.5-1 KSF
										ROD PROBE 12.0' - 60.4'
										NO ROD PROBE ADVANCE BY WEIGHT OF MAN
										HYDRAULIC PUSH: 12.0' - 59.5'
										140 LB. HAMMER:
										59.0' - 59.5' - 38 BLOWS
										59.5' - 60.0' - 39 BLOWS
										60.0' - 60.4' - 100 BLOWS, HAMMER BOUNCING
										ROD PROBE REFUSAL @ 60.4'
										PROBABLE BEDROCK, POSSIBLE BOULDER

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-5**

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY / PORTLAND, ME

BORING NO.: B-3

CLIENT: VHB, INC.

PROJECT NO.: 09-0538

LOGGED BY P. Otto DATE: 8/3/2010 SHEET 1 OF 1

CHECKED BY E. Walker DATE: 8/3/2010 CORE SIZE NQ

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (FT)	CORE RECOVERY (FT)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
70.5		69.5					
71.5	R1	5.0	3.3	57	FAIR		Eliot Formation - Dark gray Phyllite, trace pyrite and/or muscovite mica; moderately hard; fine grained; fresh to very slightly weathered. Contains quartz veins up to 2½ inches thick and thin calcite veins. Low to moderate fracture angles between 0-45 degrees from horizontal. Foliation at 30-40 degrees from horizontal.
72.5							
73.5							Probable zone of core loss, rock fragment left in borehole.
74.5		74.5					BOTTOM OF EXPLORATION @ 74.5'

S.W.COLE ENGINEERING, INC. • Geotechnical Engineering • Field & Lab Testing • Scientific & Environmental Consulting

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to ½" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

S.W.COLE ENGINEERING, INC.

Consolidation Test

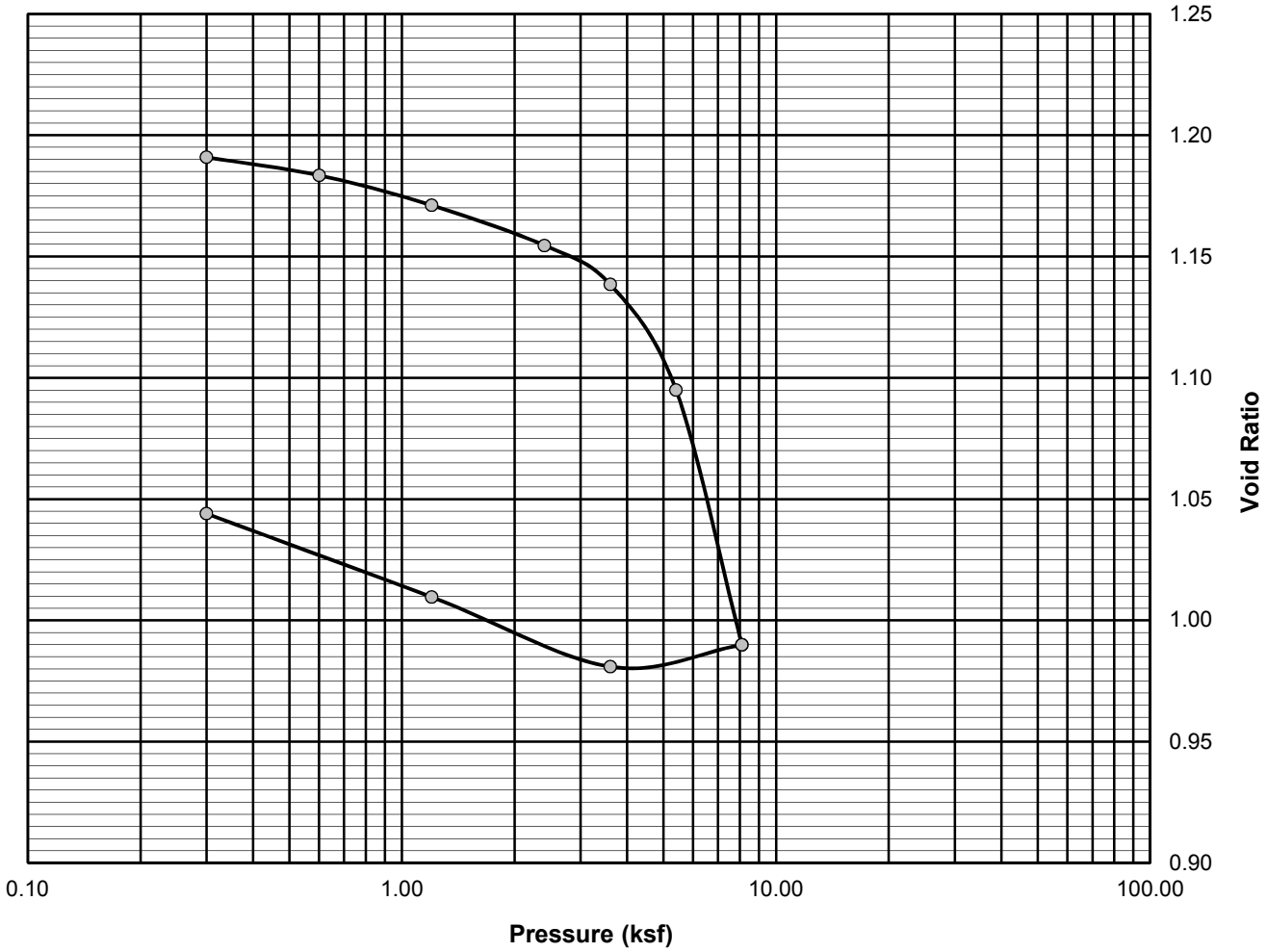
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21062B
Date: 10/11/2017

Boring: B-102
Sample: 1U
Depth: 30-32'

P_C =	4.8 KSF +/-
C_C =	0.6
C_R =	0.05
w =	44.5%
W_L =	43
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21063B
Date: 10/11/2017

Boring: B-102
Sample: 2U
Depth: 40-42'

P_C =	6.8 KSF +/-
C_C =	0.56
C_R =	0.03
w =	36.2%
W_L =	34
W_P =	19

Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

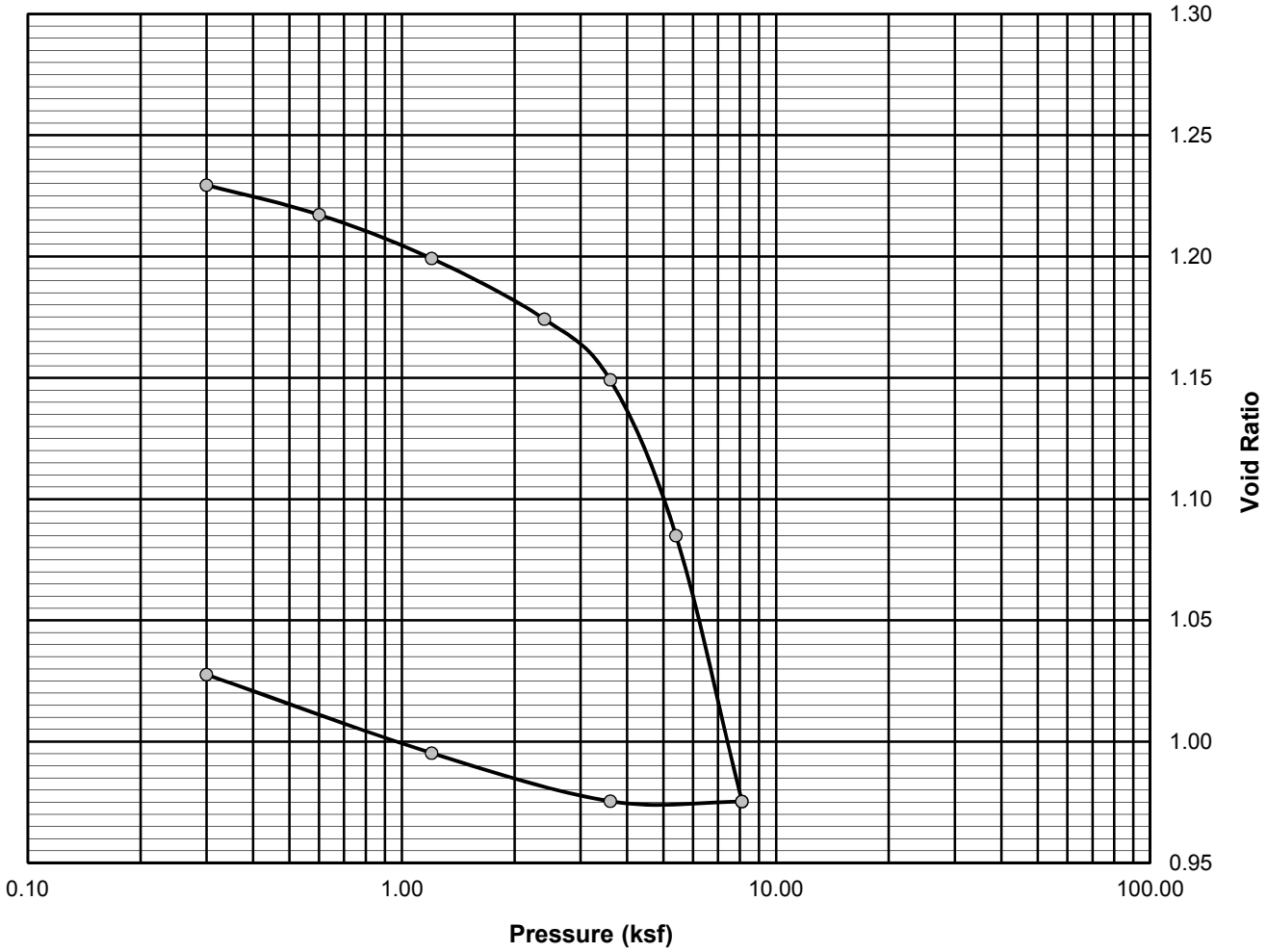
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21065B
Date: 10/11/2017

Boring: B-103
Sample: 2U
Depth: 40-42'

P_C =	4.3 KSF +/-
C_C =	0.62
C_R =	0.06
w =	46.4%
W_L =	45
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

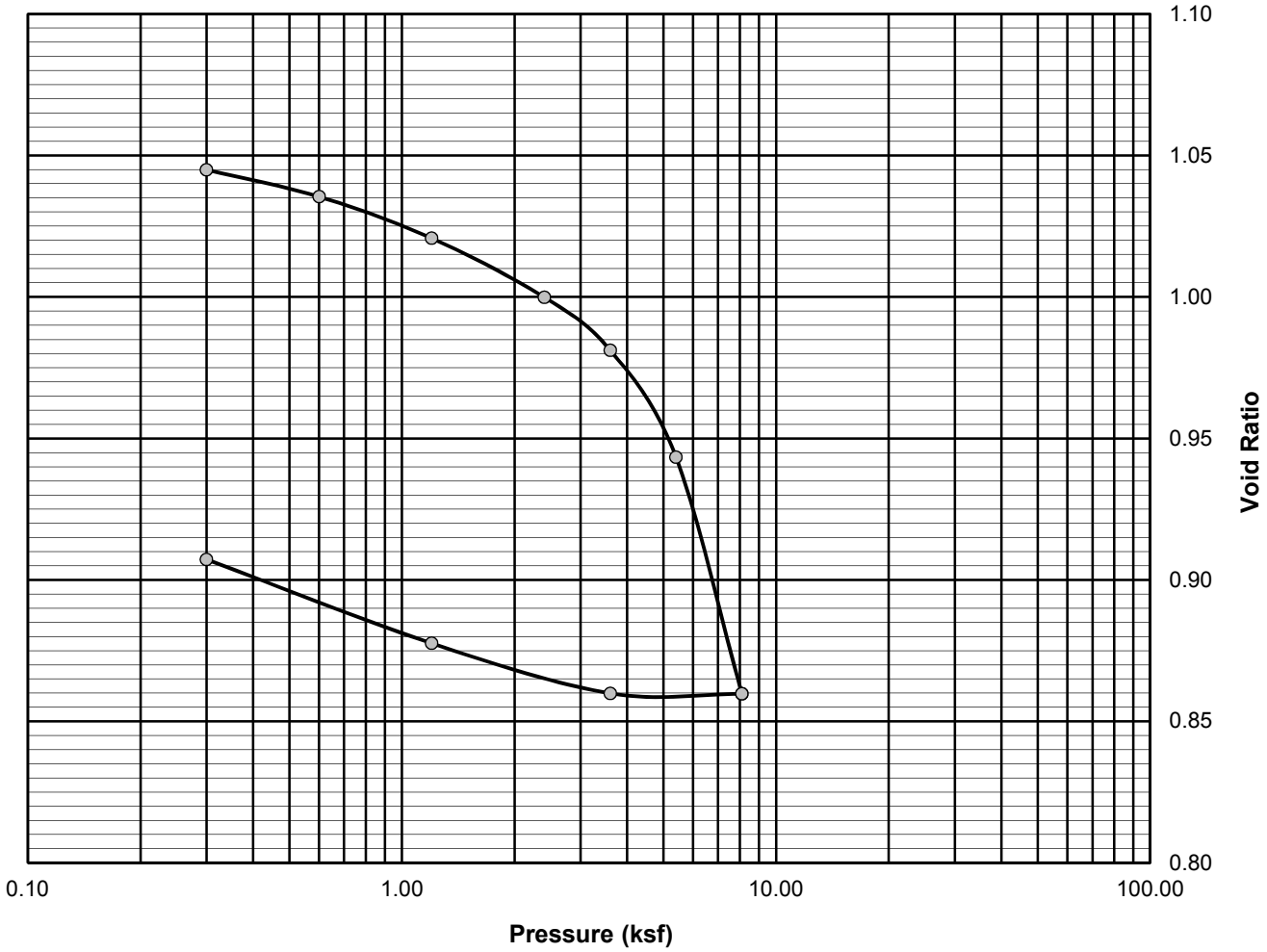
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21066B
Date: 10/11/2017

Boring: B-103
Sample: 3U
Depth: 50-52'

P_C =	4.8 KSF +/-
C_C =	0.48
C_R =	0.04
w =	40.4%
W_L =	37
W_P =	21

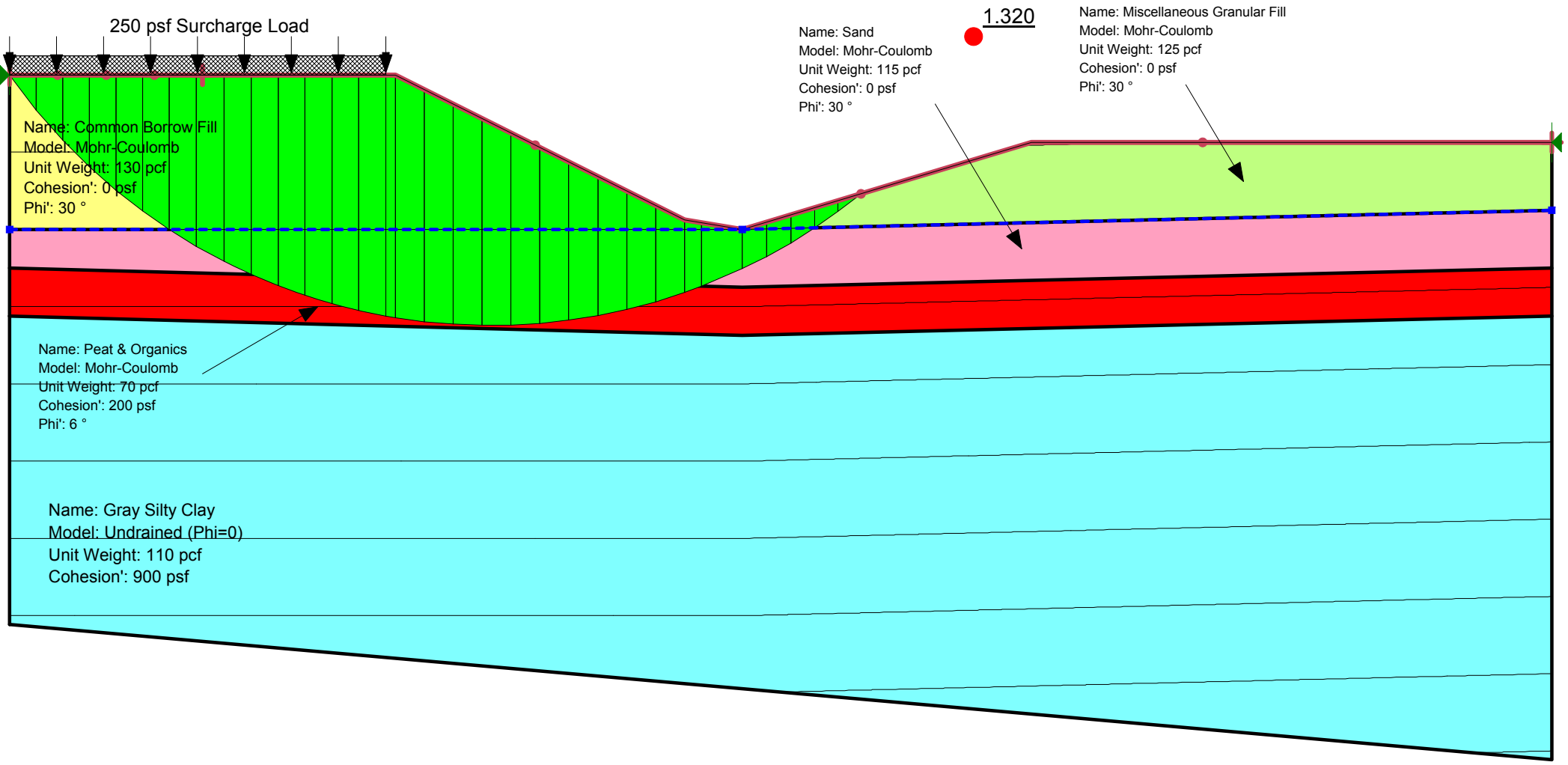


Comments:

EMW
Reviewed By

APPENDIX E

Computations


250 psf Surcharge Load
1.320
Name: Sand
Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Miscellaneous Granular Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Common Borrow Fill
Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Peat & Organics
Model: Mohr-Coulomb
Unit Weight: 70 pcf
Cohesion': 200 psf
Phi': 6 °
Name: Gray Silty Clay
Model: Undrained (Phi=0)
Unit Weight: 110 pcf
Cohesion': 900 psf

NORMANDEAU ASSOCIATES
Environmental Consultants

Resource Report:
Wetlands and Streams
Portland Transportation Center

Presented To:
Sebago Technics, Inc.
75 John Roberts Road
Suite 1A
South Portland, Maine 04106

Submitted On:
February 2, 2018

Submitted By:
Normandeau Associates, Inc.
550 Forest Ave
Suite 201
Portland, ME 04101

www.normandeau.com

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APPENDIX B: FUNCTIONAL ASSESSMENT FORMS/WETLAND DATA PLOTS

APPENDIX C: REPRESENTATIVE SITE PHOTOGRAPHS

Introduction

This report provides a summary of wetlands and streams identified during the natural resource field review conducted on September 17, 2017. The project is in support of the proposed expansion of the Portland Transportation Center's existing on-site parking area. Field reviews consisted of the undeveloped area between the I-295 on-ramp off of the Fore River Parkway, the Amtrak railroad, and the existing parking area for the Portland Transportation Center. This report will be amended with the results of a vernal pool survey, proposed for spring of 2018.

Site Description

The project area comprises a large wetland depression, fed by several culverts and rip-rap channels that also support wetland vegetation. Much of the area surrounding the wetland has been modified for the purpose of managing stormwater flows from the existing parking area as well as detention areas within the cloverleaf on/off ramps for Interstate 295 and additional parking areas upslope. Vegetation throughout the site is generally very dense and does not appear to be maintained on a regular basis. The project area is separated from a tidal wetland by the railroad tracks, and does not appear to be subject to frequent tidal flows.

Methodology

Normandeau wetland scientists reviewed the project area for wetlands and streams. Wetland boundaries were delineated according to the 2011 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region[1], which utilize the three parameter approach (i.e., evaluating the site for the presence of hydric soils, hydrophytic vegetation and wetland hydrology) for identifying wetlands and determining their jurisdictional limits. The Northeast Regional Supplement describes the methodology that is required for jurisdictional wetland determinations.

The wetland boundaries are flagged with pink "Wetland Delineation" flagging and the streams are flagged with blue flagging. The flags for the wetlands and streams are sequentially numbered and remain at the site for future reference. U.S. Army Corps of Engineers (USACE) data plots were sampled in pairs to document representative wetland boundary information. Wetland delineations were conducted within the growing season as defined by the Corps Manual and Regional Supplement. In general, most features were well defined by topographical breaks, hydrological indicators and changes in plant community and structure. Wetland boundaries were surveyed at a later date by Sebago Technics using GPS technology capable of sub-meter accuracy. These GPS points were translated into a map (see Attachment 1) depicting jurisdictional boundaries using Normandeau's geographic information system (GIS) software.

Vernal pool surveys were not performed in 2017. According to Maine Department of Inland Fisheries and Wildlife (IF&W) guidelines, potential pools are visited a minimum of two times during

[1] U.S. Army Corps of Engineers. 2011. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowirz. ERDC/EL TR-12-1 Vicksburg, MS: U.S. Army Corps of Engineer Research and Development Center.

the vernal pool survey window, which occurs from approximately mid-April to early May. The project begun after this survey window had passed, but will be performed during the appropriate time of 2018 and included as an addendum to this survey report.

Data sheets were completed for all resources identified, including documentation of physical stream characteristics as well as a general functions and values assessment for all wetlands. The wetlands were also classified by covertype according to the classification system developed by Cowardin et al.[2]

Survey Results

One natural wetland and one intermittent stream were identified during the field surveys. In addition, four engineered stormwater control features exhibiting wetland characteristics and two stormwater drainages (ditches) were identified.

A site map depicting the locations of the above resources can be found as Appendix A. Appendix B contains a completed U.S. Army Corps data form for wetland W1. Appendix C is a brief photolog showing representative locations within each feature. The following is a brief description of the features identified on site.

Wetlands

Wetland W01: This 2.03 acre emergent wetland is the dominant feature on site, and consists largely of a broad-leaved cattail (*Typha latifolia*), and common reed (*Phragmites australis*) dominated marsh, with some wetland tree species such as ash-leaved maple (*Acer negundo* var. *negundo*) and gray birch (*Betula populifolia*) along the perimeter. Hybrid cattail (*Typha x glauca*) was also likely observed in the interior of the wetland, although its identification is not certain due to the variable nature of this hybrid. The wetland is bordered by uplands consisting of fill material and associated with Interstate 295 on/off ramps, the existing parking area for the transportation center, and the railroad embankment. All three drainages on the site flow into this wetland. The outlet is a 36-inch culvert under the railroad tracks draining to the Fore River.

The principal function of this wetland is that of sediment and toxicant retention, due to its confined basin, dense vegetation, proximity to developed areas and receiving of stormwater from the culverts. Floodflow alteration and wildlife habitat are also suitable functions due to the overall size of the wetland, its vegetation structure and urban setting. Groundwater recharge is also likely although proximity to tidal waters limits the potential ability of this wetland to contribute significantly to groundwater resources. The lack of vegetation diversity within the wetland limits its value as wildlife habitat, however its presence as a habitat island within an urbanized landscape allows for avian use and provides nesting habitat. This area is also within 250 feet of a tidal wetland and composed of greater than 20,000 square feet of emergent vegetation, rendering it a Wetland of Special Significance (WOSS) and subject to greater legal protection under the Maine Natural

[2] Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service: Washington, D.C.

Resources Protection Act (NRPA). This wetland discharges through a 36-inch culvert under the railroad tracks into a tidal wetland area between I-295 and Thompson's Point. It supports an assemblage of disturbance tolerant species as well as freshwater species such as spotted touch-me-not (*Impatiens capensis*) near this outlet, and does not appear to be subject to frequent salt or brackish water. The culvert invert appears high enough to prohibit regular tidal flows, but it is likely that occasional storm surges flow into Wetland 01 via in the culvert.

Streams

Stream S01: Stream S01 is an intermittent stream that begins as a channelized ditch in wetland W02 and flows south before dissipating through the greater wetland W1 area. Its banks consist of rip-rap until it flows into W01, where it becomes naturalized and possesses a silty bed composition with vegetated banks. It ranges from approximately 4 to 9 feet in width, and up to 1 foot in depth at the time of survey.

Engineered Stormwater Control Features (ESF)

Features that appear to support wetland characteristics, but have been created entirely for, and are periodically maintained for, the purposes of stormwater management are included in this section.

ESF01: This is an area supporting wetland vegetation, constructed around a culvert outlet and becomes channelized into stream S01. It is a narrow stormwater feature and contains a large amount of rip-rap around the margins. Dominant wetland vegetation includes common reed, broad-leaved cattail, spotted touch-me-not, and long-beaked willow (*Salix bebbiana*). This area appears to have been entirely constructed as a stormwater conveyance from the adjacent road/parking area.

ESF02: Stormwater feature ESF02 is of similar character to ESF01, consisting of a swale constructed for the purpose of stormwater conveyance from the adjacent I-295 interchange, through a series of culverts under the adjacent railroad tracks, and discharging into an area connected to the tidal wetland between I-295 and Thompson's point. Dominant vegetation includes common reed, spotted touch-me-not, purple loosestrife (*Lythrum salicaria*), gray birch, and silky dogwood (*Cornus amomum*). This area is hydrologically connected to wetland W01 through a large berm of rip-rap that separates the wetlands but allows water to pass.

ESF03: This is a circular detention basin constructed adjacent to wetland W01 entirely for the purpose of stormwater management. It is dominated by broad-leaved cattail with some purple loosestrife, and possessed a small area of open water at the time of survey. It is surrounded by an upland berm that is entirely fill material, and also contains a drainage structure that appears to flow into wetland W01, although it is buried and not clearly evident.

ESF04: This is a very small area along stormwater drainage D02 dominated by broad-leaved cattail and spotted touch-me-not. It is appears to have been created by disturbance associated with the perimeter fence.

Channelized Stormwater Drainages

This group of features consists of channelized flow that appears to have been constructed for stormwater flow and do not support criteria specified under NRPA as meeting the definition of a river, stream or brook.

Drainage D01: This small ephemeral channel flows from a corrugated plastic pipe adjacent to the railroad tracks, southeast into wetland W01. It ranges from 1 to 3-feet in width and is composed of a sandy loam substrate. This feature is a ditch constructed to transport stormwater flows from a culvert draining the existing parking area.

Drainage D02: This channel originates at the outlet of a culvert from the existing parking lot and flows through ESF04 and into wetland W01, and appears to transport only stormwater flows. It ranges from 1 to 4 feet in width, with a sandy loam substrate.

Appendix A: Resource Map

Portland Transportation Center
Wetland and Stream Survey

Portland, Maine

0 50 100 200 300 400 Feet

N

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Appendix B: Functional Assessment Forms/Wetland Data Plots

Wetland Function-Value Evaluation Form

Total area of wetland: 2.03ac	Human made? No	Is wetland part of a wildlife corridor: No	Or a habitat island? Yes	Wetland I.D.: W1	
Adjacent land use: Parking, roads, rail, tidal area		Distance to nearest roadway or other development: 15ft		Lat/Long: 43.391025, -70.172249	
Dominant wetland system present: PEM1/5		Contiguous undeveloped buffer zone present: No		Prepared by: EBL	Date: 9/17/17
Is the wetland a separate hydraulic system? No		If not, where does the wetland lie in the drainage basin? Bottom		Wetland Impact: Fill	Area:
How many tributaries contribute to the wetland? 2, plus one stormwater ditch along railroad tracks.		Wildlife and vegetation diversity /abundance? Low diversity, high abundance		Evaluation based on:	
				Field _X____ Office _X___	
				Corp manual delineation completed Y_x_ N__	

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principle Functions/ Values	Comments
Groundwater Recharge/Discharge	√		7,9,15		Some recharge likely due to lack of defined outlet
Floodflow Alteration	√		3,4,6,7,8,9,10,13,15,16,18		Detains floodwater, but discharges eventually into Fore River, limiting its value for floodwater storage (i.e. not protecting downstream resources/property)
Fish and Shellfish Habitat		√	2,14		Stream not defined in wetland, no connection to other habitat
Sediment/Toxicant Retention	√		1,2,3,4,5,10,11,12,13,14,16	√	Principal due to size, retention, and availability of toxicants
Nutrient Removal		√	3,5,6,7,8,11,12,13,14		Low opportunity/availability of nutrients
Production Export		√	2,7		Little indication of export
Sediment/Shoreline Stabilization		√	12,15		Wetland edges mostly fill material, stable
Wildlife Habitat	√		6,7,11,13,20		Low diversity wetland, little use observed, possible avian habitat
Recreation		√	10		Little recreational value
Educational/Scientific Value		√	8,9		Unsafe, low recreational value
Uniqueness/Heritage		√	1,2,9,13,17		Dominated by cattails and invasives – not unique
Visual Quality/Aesthetics		√	2,6,9		Low aesthetic value
Endangered Species Habitat		√			None
Other:					

Summary: This large wetland is the dominant feature on site. It receives flow from a large culvert under the main access to the transportation center. This culvert becomes naturalized within the wetland as stream S1. Drainage ditch D02 flows into the wetland from a culvert under the existing parking area and becomes naturalized prior to entering wetland W1. Drainage D01 is a small ditch that flows into the western corner of the wetland adjacent to the train tracks. The wetland is dominated by common reed and broad-leaved cattail throughout. It is listed on NWI maps as a tidal wetland, however no evidence of current tidal influence is evident.

Corresponding Photo: 1

Wildlife Observations: None

Dominant Vegetation:

Trees			**Herbs**		
	Ashleaf maple	*Acer negundo*		Common reed	*Phragmites australis*
				Broad-leaved cattail	*Typha latifolia*
				Spotted touch-me-not	*Impatiens capensis*
Shrubs					
	Honeysuckles	*Lonicera* Spp.			

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Portland Transportation Center City/County: Portland/Cumberlar Sampling Date: 09/08/17
Applicant/Owner: Concord Coach Lines, Inc. State: ME Sampling Point: W1-Wetland
Investigator(s): E. Lema Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 5 Lat.: 43.391142 Long.: -70.172251 Datum: NAD83
Soil Map Unit Name W (water) NWI Classification: PEM1R
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology X significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology considered disturbed because this area used to be tidal. Does not currently show signs of tidal fluctuation.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	10
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	3

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: W1-Wetland

Tree Stratum	Plot Size (30)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer negundo*	5	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (5)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phragmites australis*	100	Y	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	1	3
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	105 (A)		215 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Monotypic stand of common reed.

SOIL **Sampling Point:** W1-Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-9	2.5Y5/2	40	7.5YR5/4	20	C	M	sandy loam	
	10YR3/1	40						
9-18	2.5Y5/1	90	10YR6/1	10	D	M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Portland Transportation Center City/County: Portland/Cumberlar Sampling Date: 09/08/17
Applicant/Owner: Concord Coach Lines, Inc. State: ME Sampling Point: W1-Upland
Investigator(s): E. Lema Section, Township, Range:
Landform (hillslope, terrace, etc.): Top of slope Local relief (concave, convex, none): Concave
Slope (%): 5 Lat.: 43.391185 Long.: -70.172224 Datum: NAD83
Soil Map Unit Name W (water) NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil X, or hydrology X significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Site extremely disturbed. Upland area appears to be the result of fill due to surrounding construction associated with roads, parking lot, and railroad.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	____	No	X	Depth (inches): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Plot location exhibits no sign of wetland hydrology.

VEGETATION - Use scientific names of plants

Sampling Point: W1-Upland

Tree Stratum	Plot Size (30)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1	*Lonicera morrowii*	5	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size (5)	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	60	Y	FACU
2	*Poa pratensis*	60	Y	FACU
3	*Cirsium arvense*	5	N	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		125	= Total Cover	

Woody Vine Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	1	3
Herb Stratum	25	63
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	130	x 4 =	520
UPL species	0	x 5 =	0
Column totals	130 (A)		520 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Upland field vegetation

SOIL **Sampling Point:** W1-Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-7	10YR3/3	100					sandy loam	Fill material

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:
Auger refusal at 7 inches. Potentially fill conglomerate under soil.

Appendix C: Representative Site Photographs

Photo #: 1

Wetland W1 facing south

Photo #: 2

Engineered Stormwater Feature (ESF) 01 in a narrow drainage from road.

Photo #: 3

ESF02, showing rip-rap embankment separating wetland W1 and ESF02.

Photo #: 4

ESF03 depicting the open water area in the center

Photo #: 5

ESF04.

Photo #: 6

Stream S1 facing downstream from ESF01

Photo #: 7

Drainage D01 (ditch) downstream from culvert outlet.

Photo #: 8

Drainage D02 (ditch) facing downstream. Drainage is poorly channelized at this point, near wetland W01.

United States Department of Agriculture

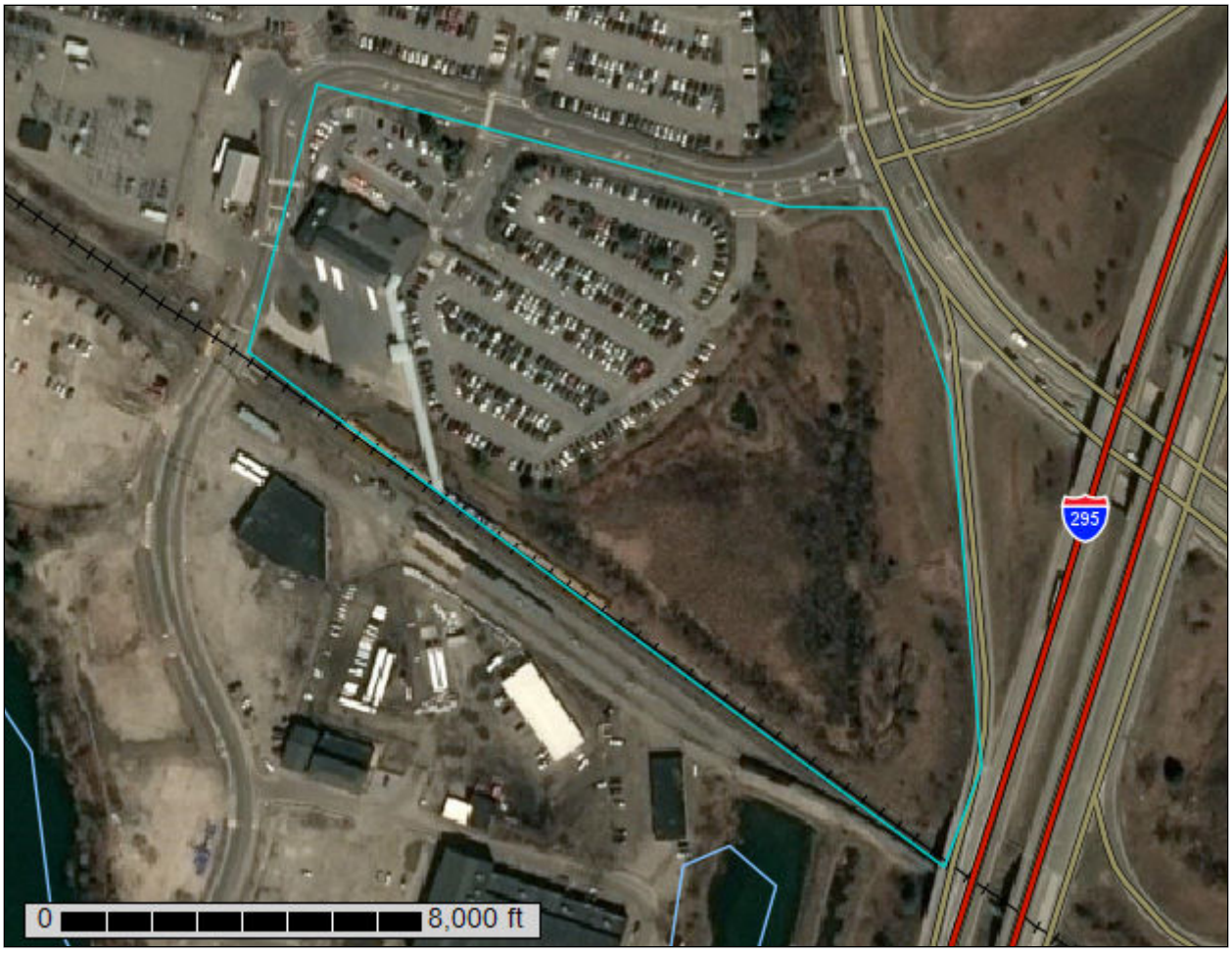
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cumberland County and Part of Oxford County, Maine

Portland Transportantion Center



February 15, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,170 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	1.5	13.5%
BgC2	Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded	4.9	43.5%
Cu	Cut and fill land	0.2	1.4%
Tm	Tidal marsh	0.5	4.2%
W	Water	4.2	37.4%
Totals for Area of Interest		**11.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cumberland County and Part of Oxford County, Maine

BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes

Map Unit Composition

Belgrade and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belgrade

Setting

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 18 inches: very fine sandy loam
H3 - 18 to 28 inches: silt loam
H4 - 28 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded

Map Unit Composition

Belgrade and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belgrade

Setting

Landform: Lakebeds
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 18 inches: very fine sandy loam
H3 - 18 to 28 inches: silt loam
H4 - 28 to 65 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Cu—Cut and fill land

Map Unit Composition

Cut and fill land: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cut And Fill Land

Typical profile

H1 - 0 to 65 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: About 24 to 42 inches
Available water storage in profile: Moderate (about 6.6 inches)

Tm—Tidal marsh

Map Unit Composition

Tidal marsh: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tidal Marsh

Setting

Landform: Salt marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

Oe - 0 to 24 inches: mucky peat
H2 - 24 to 60 inches: very fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.60 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Lakes

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Section 12

Stormwater Management

Section 12

Stormwater Management

Please see this Section for a copy of the Stormwater Management Plan.

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

Stormwater Management Report

To:

Maine Department of Environmental Protection

Portland Transportation Center

Thompson's Point Connector
Portland, Maine

Prepared for:
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Concord, NH 03301

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February 2018

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Attachment B – Pre-Development Stormwater Modeling
Attachment C – Post-Development Stormwater Modeling
Attachment D – Inspection, Maintenance, and Housekeeping Plan

Stormwater Management Narrative

A. General

This Stormwater Management Plan has been prepared to address the potential impacts associated with the proposed modification in stormwater runoff characteristics for the proposed development at Portland Transportation Center located at Thompson's Point Connector in Portland. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements to evaluate the pre- and post-development conditions.

The existing development consist of approximately 8.74 acres of impervious areas and associated vegetated areas. Proposed improvements to the site include the construction of paved surfaces for parking and vehicular traffic with the remaining developed area comprised of vegetated side slopes and landscaped areas. The project will result in a net increase in impervious area of 2.86 acres, for a total impervious area of approximately 6.32 acres.

B. Existing Conditions

The site has been developed in the past dating back to 1996. The existing site includes a building totaling 15,600 square feet accessed by paved parking lot located off of Thompson's Point Connector. The remaining developed land consists of paved areas used for vehicular traffic and parking, landscaped areas and a stormwater detention basin.

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond. For stormwater calculating purposes, runoff was analyzed at two study points where the runoff exits the subject parcel. Study Point 1 (SP-1) is located at the southeastern corner of the property. Runoff at SP-1 leaving the property enters into the Fore River. Study Point 2 (SP-2) is located along Thompson's Point Connector along the north western sideline of the property. Runoff at this location enters into the existing closed storm drain system.

C. Proposed Site Improvements

Proposed improvements involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the total impervious surfaces by approximately 2.86 acres over the existing impervious areas that exist today. With the development of the site, stormwater BMPs will be constructed to treat runoff prior to entering into the existing drainage system. The proposed stormwater BMP, a proposed Subsurface Sand Filter, has been designed to treat stormwater runoff prior to leaving the site. The proposed stormwater BMP has been designed to conform the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

The stormwater management plan was designed so that existing drainage patterns are not significantly altered at the two study points SP-1, and SP-2.

D. Soils

Soil information for the site was obtained via the USDA United States Department of Agriculture and Natural Resources Conservation Service's Web Soil Survey. The Hydrologic Soil Group (HSG) of the site soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Type	Symbol	HSG	Drainage Class
Belgrade	BgB	B	Moderately Well Drained
Belgrade	BgC2	B	Moderately Well Drained
Cut and Fill	Cu	-	Moderately Well Drained
Tidal Marsh	Tm	-	Very Poorly Drained
Water	W	-	

E. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland for the 2-year, 10-year and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.10
10-yr	4.60
25-yr	5.80

F. Pre-Development Watershed Model

The pre-development watershed model consists of nine (9) subcatchments.

Subcatchments 1S through 6S, includes a majority of the subject parcel. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to an existing wet pond. Stormwater flows generally from west to east, designated as Study Point 1 (SP-1).

Subcatchments 7S includes portions of the site east of the existing parking lot with runoff that drains to the existing wetland, designated as Study Point 1 (SP-1).

Subcatchments 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 9S includes a portion of the site in the southwestern corner of the property. This area flows to an existing culvert that discharges directly into the existing wetland, designated as Study Point 1 (SP-1).

G. Post-Development Watershed Model

The post-development watershed model consists of seventeen (17) subcatchments. Modeling reflects on-site ground cover changes to include proposed landscaping and impervious areas associated with the parking lot and associated sidewalks. Existing drainage patterns will be generally maintained with the proposed stormwater design.

Subcatchments 1S through 7S and 9S through 15S includes the existing parking areas, portions of the existing building, the proposed parking areas and proposed landscape areas associated the expansion. The area is graded to discharge runoff through a closed storm drain system to the proposed Subsurface Sand Filter. Stormwater will then flow through proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchments 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchment 16S and 17S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

H. Stormwater Quality Management (General Standard)

Runoff from the existing development that was treated in the wet pond, along with the proposed development will be directed to a subsurface sand filter. The subsurface sand filter is designed in general conformance with Section 7.3 of the BMPs Technical Design Manual. An inlet control structure will distribute flow from a 1 inch rain storm evenly to four isolator rows within the system. Through the isolator rows, flow will disperse equally to exterior chambers so that a consistent water level is maintained throughout the entire system. An outlet control structure will be constructed with a weir installed so that storage is provided for at least the first 1 inch of runoff. Additional runoff from larger storm events will be diverted along the easterly side of the system so that additional flow does not impact conditions upstream. Runoff contained in the chambers will first pass through a media for treatment before discharging to the project's closed storm drainage system.

The new impervious surface combined with the existing impervious areas currently being treated in the wet pond would require a total impervious treatment of 246,946 square feet (SF). The new landscape areas combined with the existing landscape areas currently being treated would require a total landscape treatment of 30,974 square feet (SF). Therefore, the proposed development will treat stormwater to a much greater extent than what is actually required to be treated through a strict interpretation of the MeDEP Stormwater Law regulations.

Test pits were observed within the general area of the proposed development. Test pits indicate the presence of groundwater approximately two feet below existing ground level in the lower area adjacent to the proposed subsurface sand filter. Given the existing topography in the area of the proposed parking lot, the proposed subsurface sand filter will be constructed entirely in fill conditions. This will place the bottom of the proposed subsurface sand filter approximately four feet above groundwater table, which is above the elevation requiring an impermeable liner.

Stormwater management design calculations for the Subsurface Sand Filter, and for General Standard compliance, are enclosed as part of **Attachment A**.

I. Stormwater Quantity Management (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project area. Calculations and computer modeling data sheets are provided with this report.

The HydroCAD model predicts increases in estimated peak flow rates during the 10- and 25-year storm events at SP-1. At SP-2 the model predicts that peaks flows remain constant during the 2- and 10-year storms and decreases slightly during the 25-year storm. Stormwater exiting the site will enter into Fore River.

As permitted under Chapter 500 §4.F(3)(a), the project is eligible for a waiver from the Flooding Standard since it is within the direct watershed of a coastal wetland with adequate capacity and the stormwater is conveyed through a piped system directly to Fore River. Fore River, which separates South Portland and Portland, is a direct tributary to Casco Bay. Due to the proximity to Casco Bay and ultimately the Atlantic Ocean, Fore River is subject to tidal influence, as such, there are no anticipated detrimental impacts to downstream receiving structures, drainage channels, or properties. A waiver from the flooding standards has been requested. Please refer to Attachment B and Attachment C for pre- and post-development stormwater modeling.

Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**
SP-1	13.03	10.55	-2.48	19.42	39.32	19.90	26.94	59.99	33.05
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

J. Inspection & Maintenance

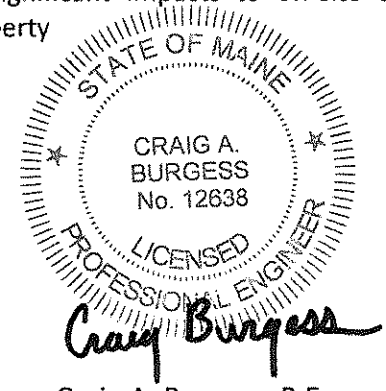
Provisions for periodic inspection and maintenance of the subsurface sand filter are included in the Inspection, Maintenance, and Housekeeping Plan included in this section of the application.

K. Summary

An Erosion and Sedimentation Control Plan has been developed using the Maine Department of Environmental Protection's 2015 Erosion and Sediment Control Field Guide for Contractors for the project site placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan is incorporated into the design plans and includes the locations of the erosion control provisions (i.e., silt fence, construction entrance) along with a narrative and construction details for reference by the contractor during construction.

The proposed development will include the construction of a Subsurface Sand Filter to which a majority of runoff from impervious and developed areas will be directed. The construction of the Subsurface Sand Filter will provide water quality treatment of stormwater runoff from the site so that the General Standards are satisfied. Increases in post-development peak flow rates during the 10-year, and 25-year storm events are anticipated to have negligible impact on flow characteristics of Fore River, immediately downstream of the site and further downstream.

With incorporation of these measures, no significant impacts to off-site drainage are anticipated due to the development of the property



Prepared by

SEBAGO TECHNICS, INC.

Brandon Blake
Project Engineer

Craig A. Burgess, P.E.
Senior Project Engineer

CAB/BJB

Attachment A

Water Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	-	**246,946**	**25,892**	**272,838**	-

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

SEBAGO TECHNICS, INC.
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South Portland, Maine 04106
Tel. (207) 200-2100

JOB			
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/15/2018
FILE NAME	99607-WQC.xls	PRNT DATE	2/1/2018

UNDERDRAINED SUBSURFACE SAND FILTER-1

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.3.2
   a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
   b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
   c. "treatment flow rate for the Stormtech Isolator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	fs/chamber
SC-740	0.20	fs/chamber
DC-780	0.20	fs/chamber
MC-3500	0.30	fs/chamber
Cultech 150XLHD	0.185	fs/chamber
Cultech 330XLHD	0.227	fs/chamber

Tributary to Subsurface Sand Filter

Landscaped Area	30,974	SF	
Impervious Area	246,946	SF	

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	30,974	SF	Area	619.5	SF	
Total Impervious Area	246,946	SF	Area	12,347.3	SF	
Required Minimum Surface Area				12,966.8	SF	
Provided Surface Area				16,932.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	30,974	SF	Volume	1,032.5				
Impervious Area	246,946	SF	Volume	20,578.8				
Treatment Volume Required				21,611.3	CF	0.496	AF	
Provided Treatment Volume				24,354.0	CF	Elev.= 13.00		

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:		14.28	cfs
ISO Row sizing for:	**SC-740**	**0.2**	cfs
Total number of Isolator Row Chambers required:		72	

SEBAGO TECHNICS, INC.
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JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/29/2018
FILE NAME	99607-WQC.xls	PRNT DATE	2/1/2018

ORIFICE SIZING CALCULATION

SUBSURFACE SAND FILTER #1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{TV}{tCF}$$

T = Treatment Volume (cf)
t = Recovery Time (hrs)
CF = Conversion Factor = 3600 sec/hr

TV = 24,354 cf
t = 24 hr

$$Q = \frac{TV}{tCF} = 0.28 \text{ cfs}$$

surface area of filter = 16,932 SF

h = 1.44 ft

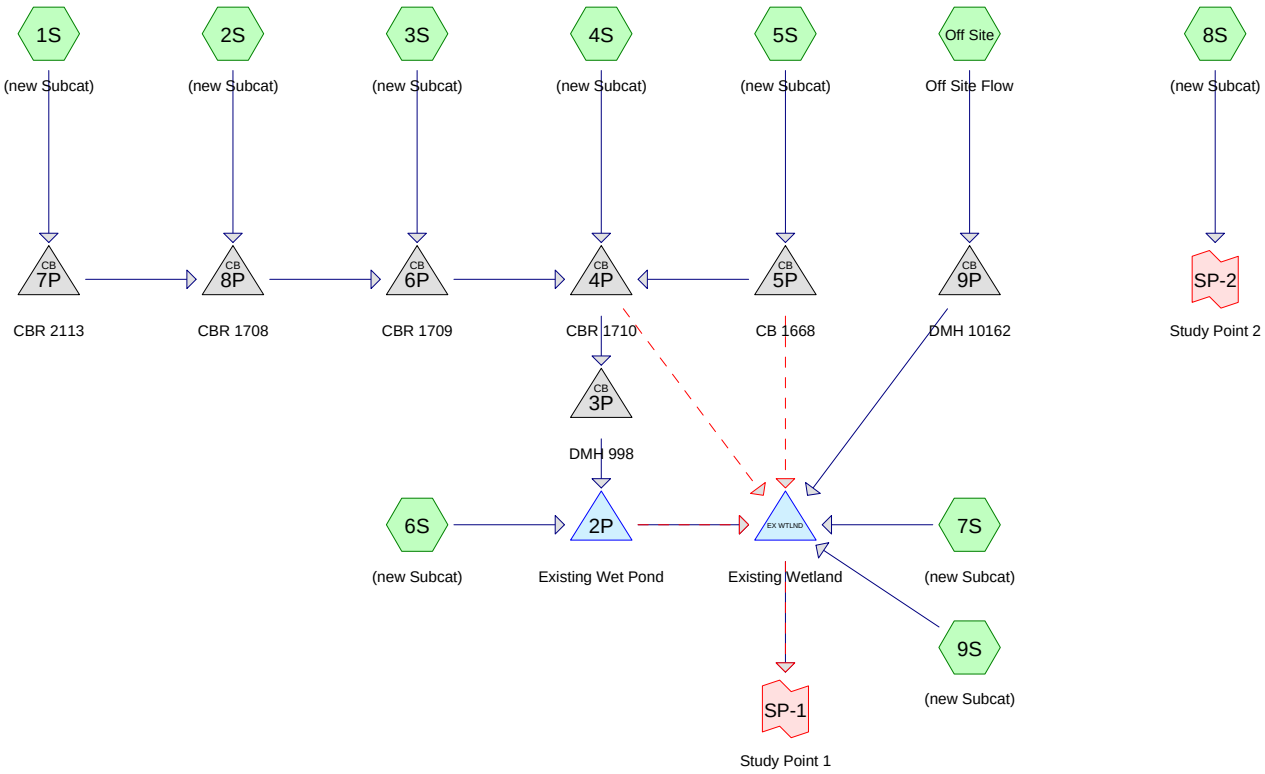
$$A = \frac{Q}{C\sqrt{(2gh)}}$$

A = 0.049 sf = 7.03 sq. in.

Diam = 2.99 in

Attachment B

Pre-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Pre
Prepared by Sebago Techincs, Printed 2/1/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
492,802	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, Off Site)
80,663	80	>75% Grass cover, Good, HSG D (6S, 7S)
261,673	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 9S, Off Site)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 7S, 9S)
7,169	98	Water Surface, HSG B (7S)
84,579	98	Water Surface, HSG D (6S, 7S)
941,810	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
776,568	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, Off Site
0	HSG C	
165,242	HSG D	6S, 7S
0	Other	
941,810		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.43 cfs 4,740 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=1.98 cfs 6,694 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.91 cfs 9,217 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=1.33"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.29 cfs 906 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=1.60"
Flow Length=306' Tc=6.3 min CN=84 Runoff=9.09 cfs 28,446 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=0.72"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=7.21 cfs 32,021 cf

Pond 2P: Existing Wet Pond Peak Elev=14.61' Storage=8,947 cf Inflow=8.75 cfs 30,609 cf
Primary=5.59 cfs 26,082 cf Secondary=0.48 cfs 176 cf Outflow=6.07 cfs 26,257 cf

Pond 3P: DMH 998 Peak Elev=15.55' Inflow=8.47 cfs 29,703 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=8.47 cfs 29,703 cf

Pond 4P: CBR 1710 Peak Elev=16.65' Inflow=8.47 cfs 29,703 cf
Primary=8.47 cfs 29,703 cf Secondary=0.01 cfs 0 cf Outflow=8.47 cfs 29,703 cf

Pond 5P: CB 1668 Peak Elev=21.03' Inflow=2.91 cfs 9,217 cf
Primary=2.03 cfs 8,422 cf Secondary=0.88 cfs 795 cf Outflow=2.91 cfs 9,217 cf

Pond 6P: CBR 1709 Peak Elev=17.13' Inflow=4.46 cfs 14,587 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.46 cfs 14,587 cf

Pond 7P: CBR 2113 Peak Elev=23.84' Inflow=1.80 cfs 5,805 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=1.80 cfs 5,805 cf

Pond 8P: CBR 1708 Peak Elev=17.57' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 9P: DMH 10162 Peak Elev=10.14' Inflow=7.21 cfs 32,021 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=7.21 cfs 32,021 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.50' Storage=9,817 cf Inflow=22.58 cfs 92,990 cf
Primary=13.03 cfs 93,032 cf Secondary=0.00 cfs 0 cf Outflow=13.03 cfs 93,032 cf

Link SP-1: Study Point 1 Inflow=13.03 cfs 93,032 cf
Primary=13.03 cfs 93,032 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 941,810 sf Runoff Volume = 97,907 cf Average Runoff Depth = 1.25"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.17 cfs 7,395 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.98 cfs 10,314 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.66 cfs 15,115 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=2.55"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.56 cfs 1,741 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=2.91"
Flow Length=306' Tc=6.3 min CN=84 Runoff=16.47 cfs 51,713 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=1.67"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=18.76 cfs 73,952 cf

Pond 2P: Existing Wet Pond Peak Elev=14.86' Storage=9,875 cf Inflow=10.63 cfs 47,480 cf
Primary=6.46 cfs 40,990 cf Secondary=2.77 cfs 2,137 cf Outflow=9.23 cfs 43,128 cf

Pond 3P: DMH 998 Peak Elev=16.23' Inflow=10.07 cfs 45,739 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=10.07 cfs 45,739 cf

Pond 4P: CBR 1710 Peak Elev=17.59' Inflow=12.83 cfs 46,700 cf
Primary=10.07 cfs 45,739 cf Secondary=2.76 cfs 961 cf Outflow=12.83 cfs 46,700 cf

Pond 5P: CB 1668 Peak Elev=21.19' Inflow=4.66 cfs 15,115 cf
Primary=2.96 cfs 13,320 cf Secondary=1.70 cfs 1,795 cf Outflow=4.66 cfs 15,115 cf

Pond 6P: CBR 1709 Peak Elev=18.25' Inflow=6.88 cfs 23,065 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.88 cfs 23,065 cf

Pond 7P: CBR 2113 Peak Elev=24.16' Inflow=2.80 cfs 9,284 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=2.80 cfs 9,284 cf

Pond 8P: CBR 1708 Peak Elev=18.59' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 9P: DMH 10162 Peak Elev=10.79' Inflow=18.76 cfs 73,952 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=18.76 cfs 73,952 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.93' Storage=33,508 cf Inflow=47.28 cfs 180,987 cf
Primary=19.42 cfs 181,011 cf Secondary=0.00 cfs 0 cf Outflow=19.42 cfs 181,011 cf

Link SP-1: Study Point 1 Inflow=19.42 cfs 181,011 cf
Primary=19.42 cfs 181,011 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 941,810 sf Runoff Volume = 186,571 cf Average Runoff Depth = 2.38"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.76 cfs 9,529 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.78 cfs 13,217 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.04 cfs 19,911 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=3.60"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 2,462 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=4.01"
Flow Length=306' Tc=6.3 min CN=84 Runoff=22.50 cfs 71,335 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=2.56"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=29.44 cfs 113,111 cf

Pond 2P: Existing Wet Pond Peak Elev=14.95' Storage=10,235 cf Inflow=11.98 cfs 60,344 cf
Primary=6.78 cfs 51,984 cf Secondary=3.95 cfs 4,008 cf Outflow=10.73 cfs 55,992 cf

Pond 3P: DMH 998 Peak Elev=16.70' Inflow=11.19 cfs 57,882 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=11.19 cfs 57,882 cf

Pond 4P: CBR 1710 Peak Elev=18.41' Inflow=16.24 cfs 60,292 cf
Primary=11.19 cfs 57,882 cf Secondary=5.05 cfs 2,410 cf Outflow=16.24 cfs 60,292 cf

Pond 5P: CB 1668 Peak Elev=21.29' Inflow=6.04 cfs 19,911 cf
Primary=3.66 cfs 17,177 cf Secondary=2.38 cfs 2,733 cf Outflow=6.04 cfs 19,911 cf

Pond 6P: CBR 1709 Peak Elev=19.46' Inflow=8.79 cfs 29,897 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,897 cf

Pond 7P: CBR 2113 Peak Elev=24.51' Inflow=3.60 cfs 12,095 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=3.60 cfs 12,095 cf

Pond 8P: CBR 1708 Peak Elev=20.04' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 9P: DMH 10162 Peak Elev=11.28' Inflow=29.44 cfs 113,111 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=29.44 cfs 113,111 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.21' Storage=55,362 cf Inflow=68.25 cfs 258,297 cf
Primary=23.88 cfs 253,608 cf Secondary=3.06 cfs 4,695 cf Outflow=26.94 cfs 258,303 cf

Link SP-1: Study Point 1 Inflow=26.94 cfs 258,303 cf
Primary=26.94 cfs 258,303 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 941,810 sf Runoff Volume = 264,491 cf Average Runoff Depth = 3.37"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Summary for Subcatchment 1S: (new Subcat)

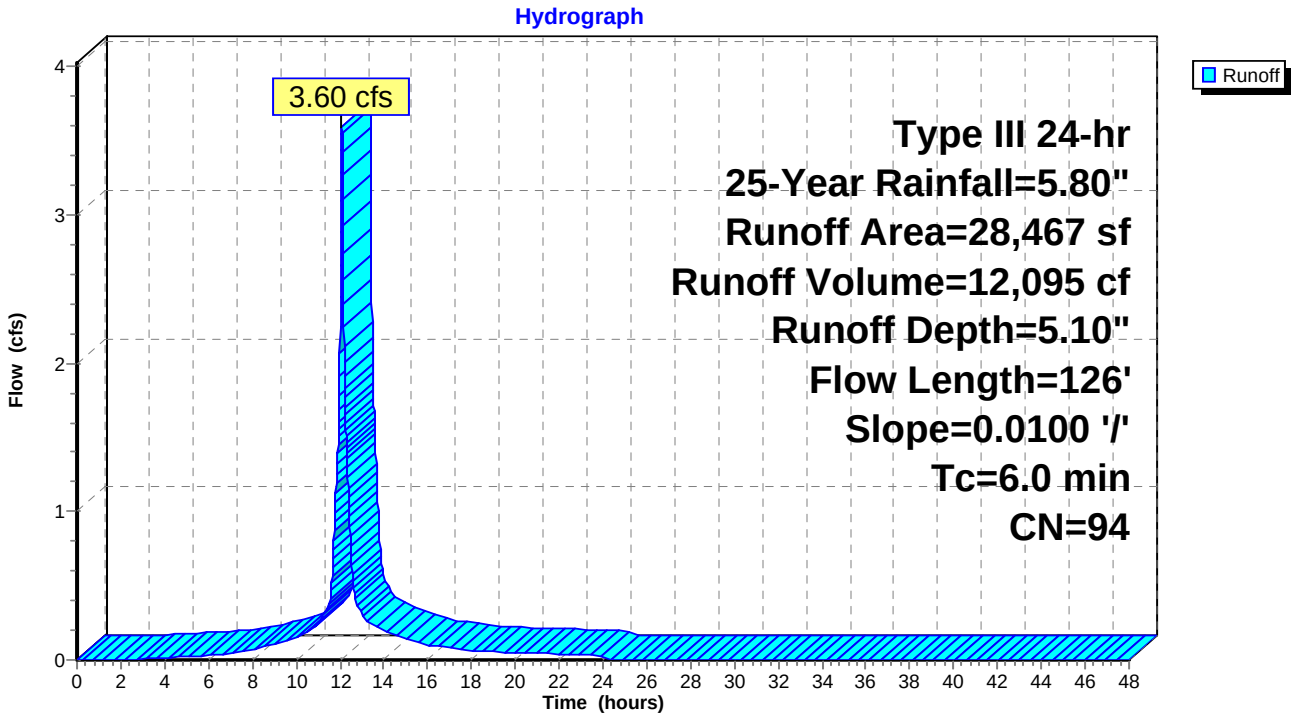
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

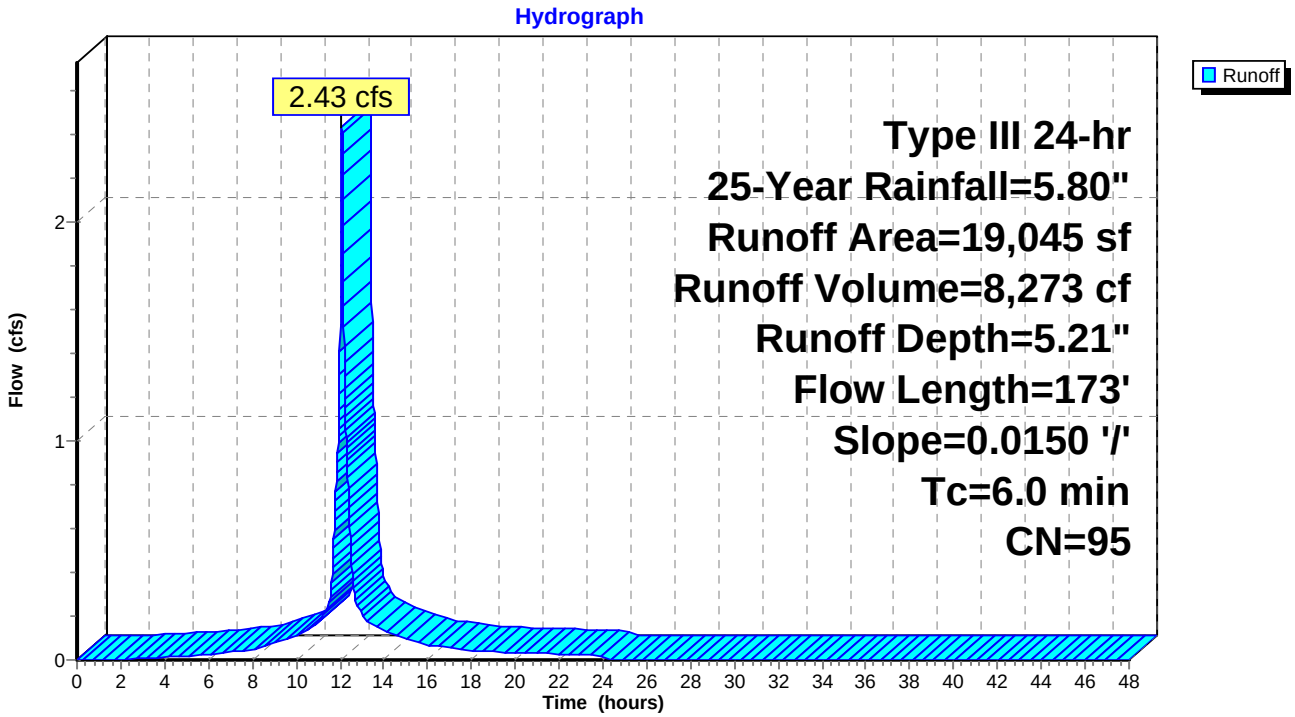
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

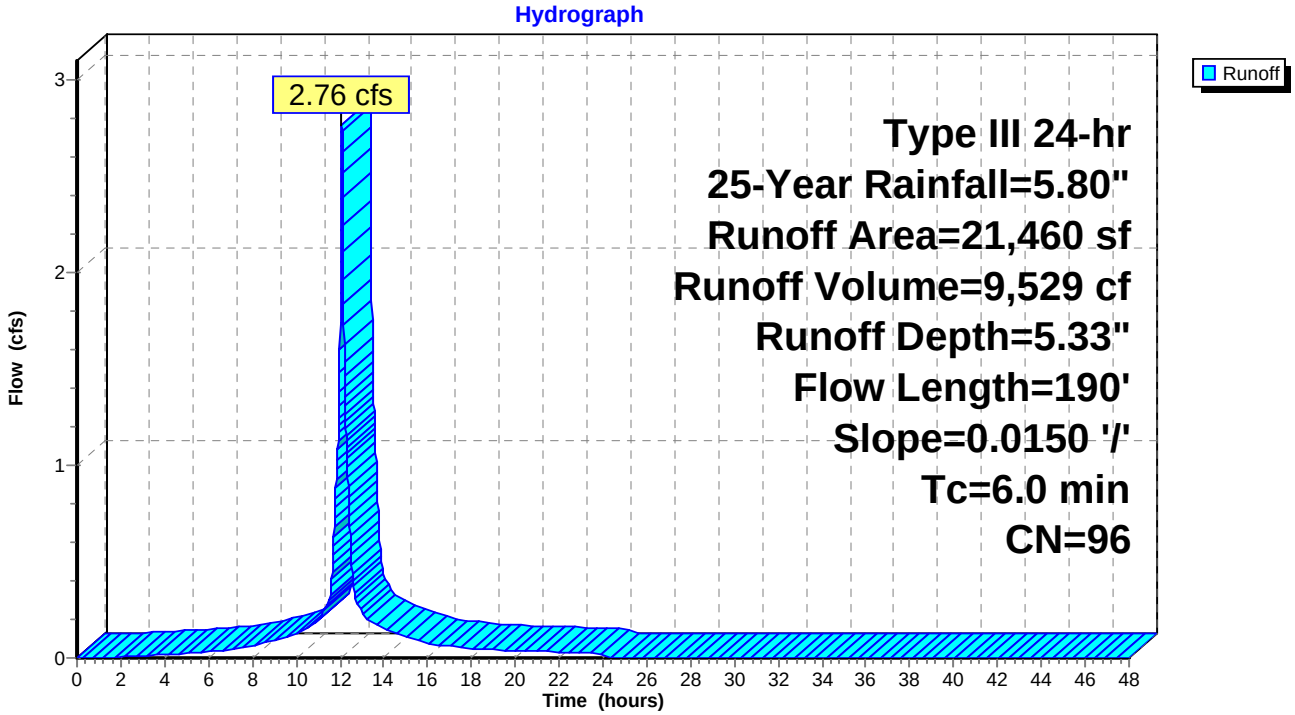
Runoff = 2.76 cfs @ 12.08 hrs, Volume= 9,529 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
259	98	Roofs, HSG B
19,851	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,460	96	Weighted Average
1,350		6.29% Pervious Area
20,110		93.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

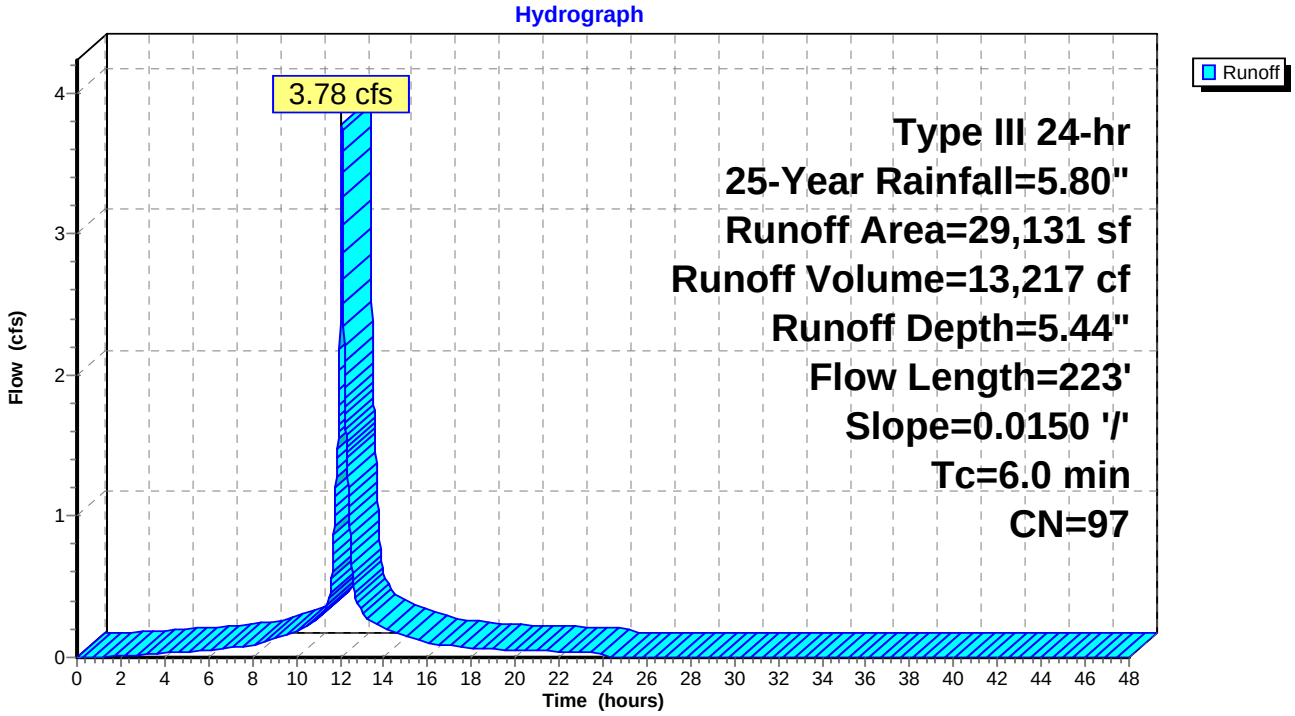
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 13,217 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
28,151	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
29,131	97	Weighted Average
980		3.36% Pervious Area
28,151		96.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

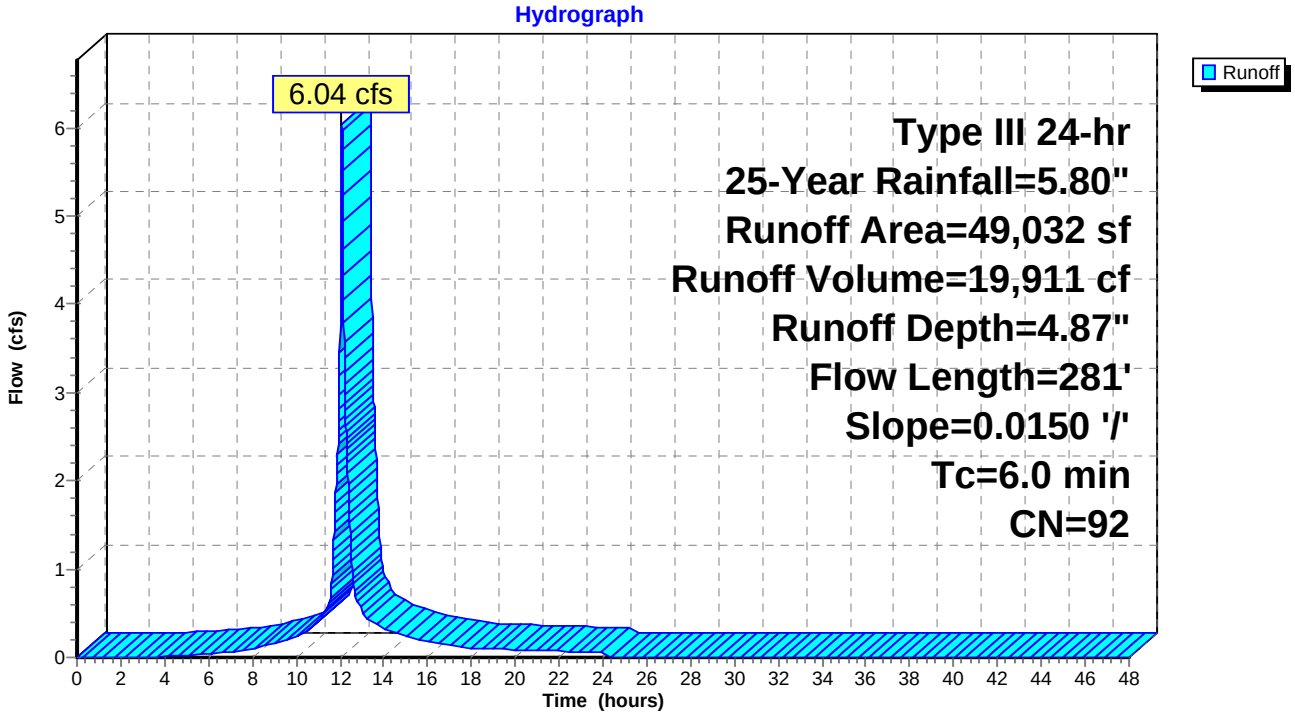
Runoff = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,586	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,032	92	Weighted Average
8,446		17.23% Pervious Area
40,586		82.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

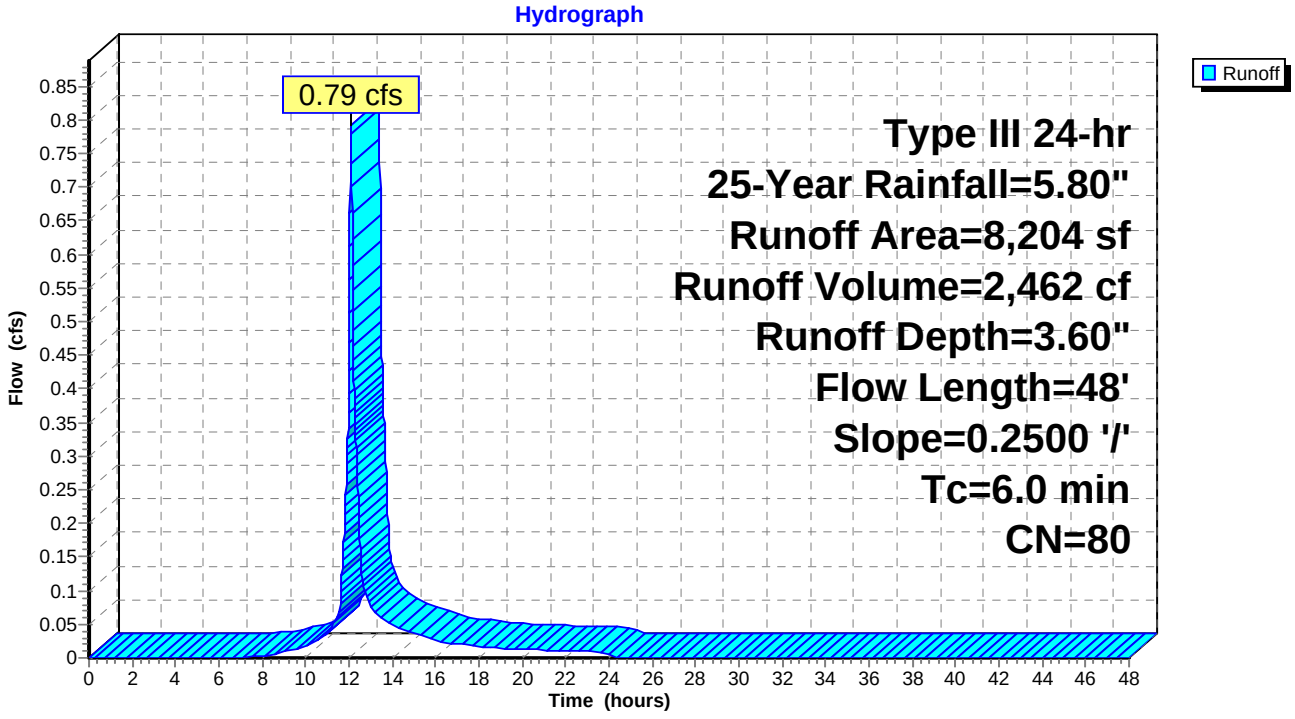
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,462 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
3,041	61	>75% Grass cover, Good, HSG B
1,992	80	>75% Grass cover, Good, HSG D
3,171	98	Water Surface, HSG D
8,204	80	Weighted Average
5,033		61.35% Pervious Area
3,171		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	48	0.2500	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
4.0					**Direct Entry,**
6.0	48	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

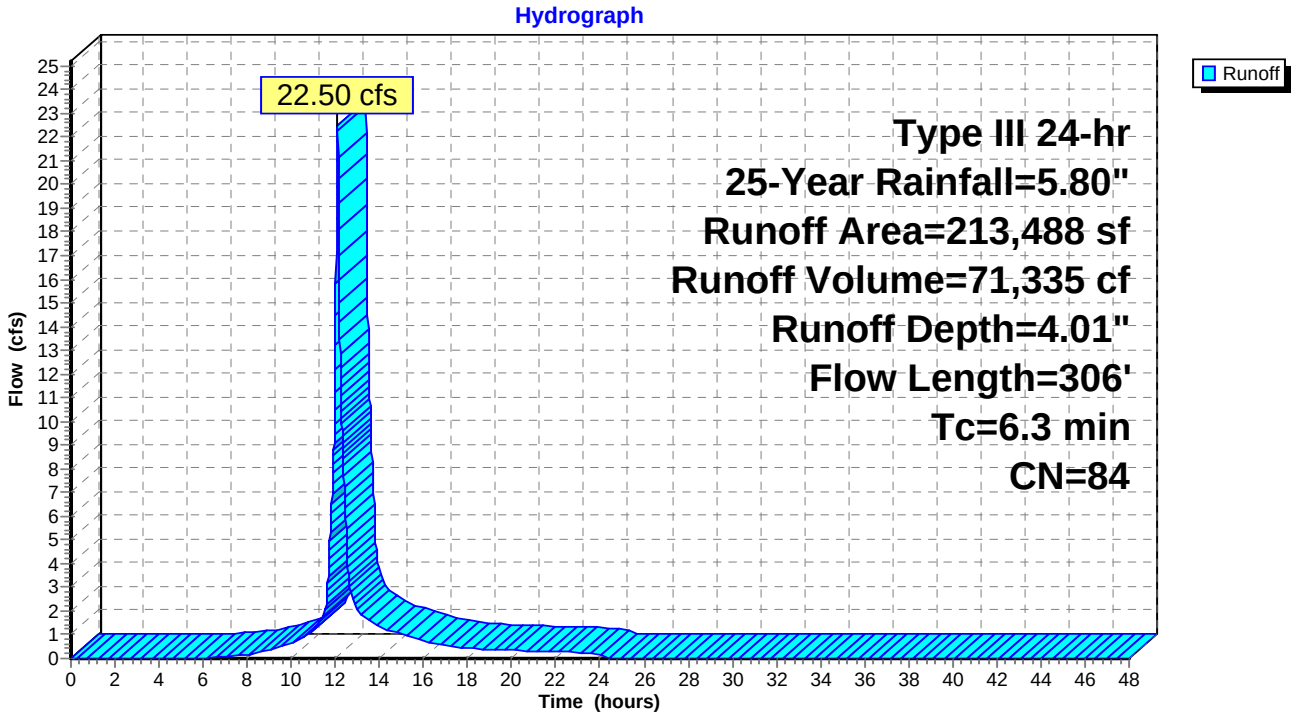
Runoff = 22.50 cfs @ 12.09 hrs, Volume= 71,335 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
45,283	61	>75% Grass cover, Good, HSG B
78,671	80	>75% Grass cover, Good, HSG D
7,169	98	Water Surface, HSG B
81,408	98	Water Surface, HSG D
957	98	Roofs, HSG B
213,488	84	Weighted Average
123,954		58.06% Pervious Area
89,534		41.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.2	44	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	191	0.0100	4.15	45.69	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=1.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
6.3	306	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

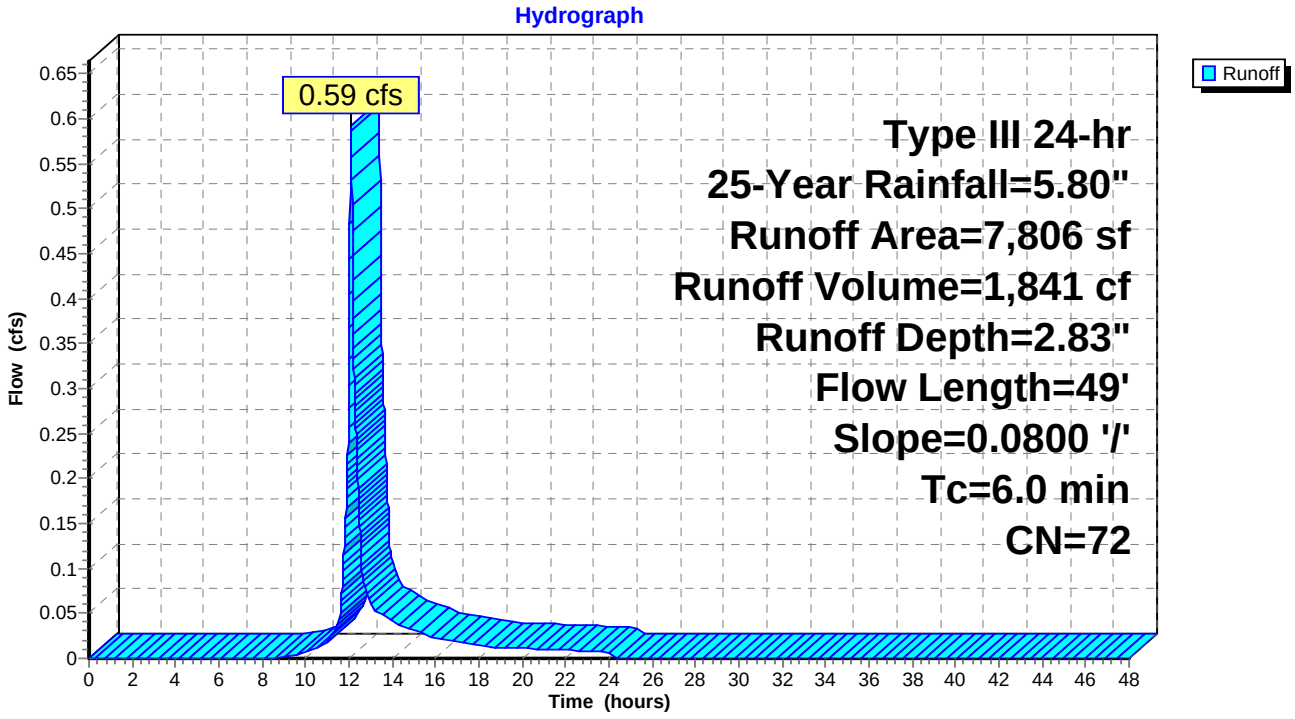
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

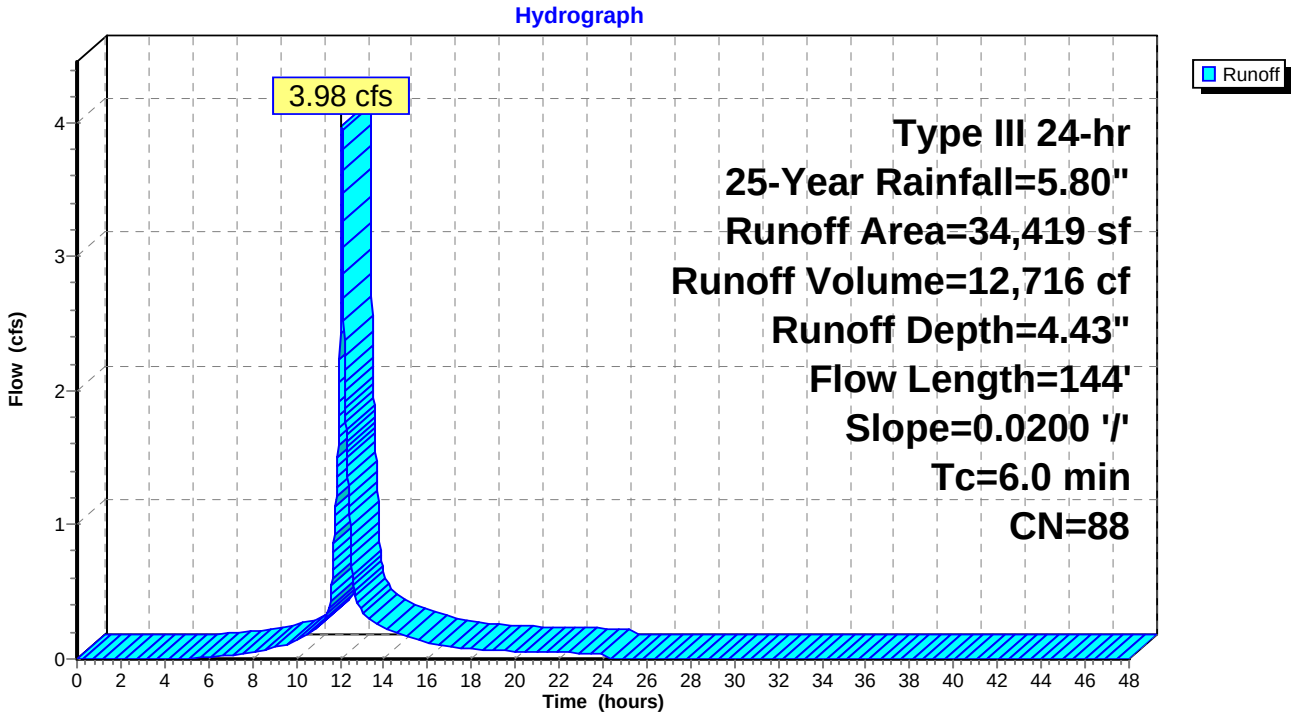
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment Off Site: Off Site Flow

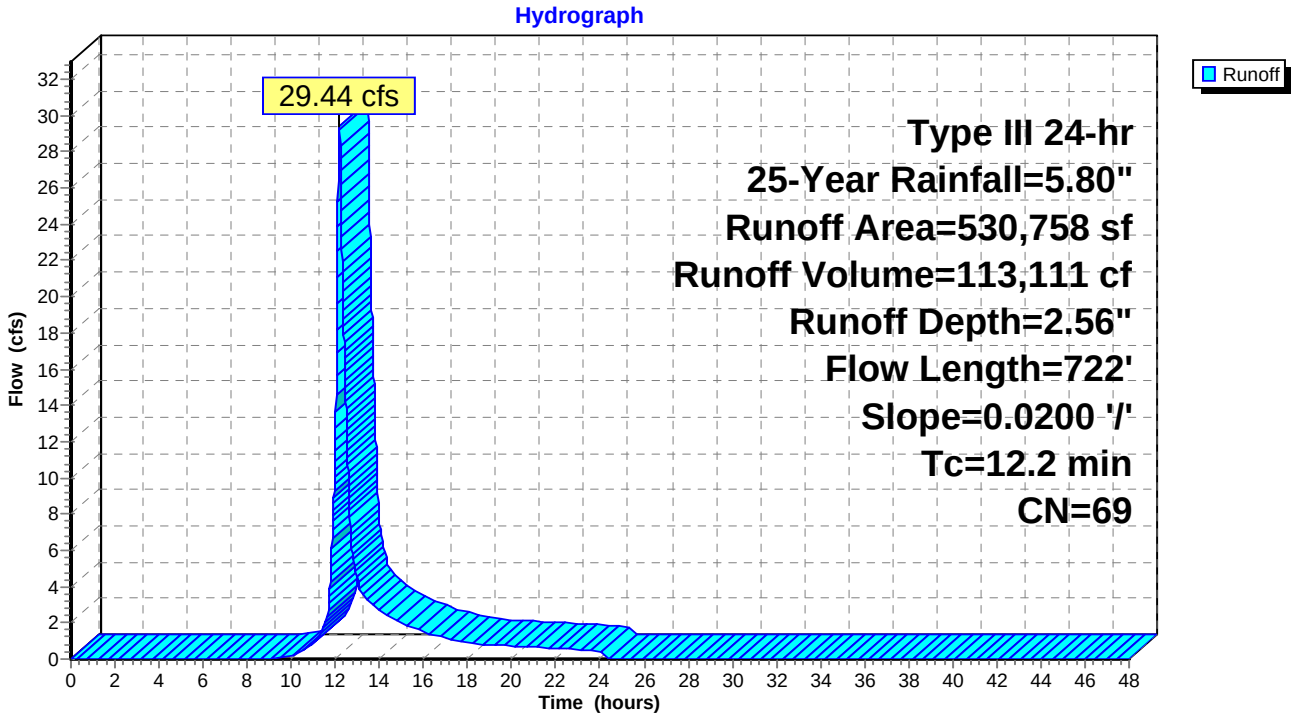
Runoff = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
414,874	61	>75% Grass cover, Good, HSG B
115,884	98	Paved parking, HSG B
530,758	69	Weighted Average
414,874		78.17% Pervious Area
115,884		21.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	722	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment Off Site: Off Site Flow



Summary for Pond 2P: Existing Wet Pond

Inflow Area = 155,339 sf, 87.13% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 60,344 cf
Outflow = 10.73 cfs @ 12.14 hrs, Volume= 55,992 cf, Atten= 10%, Lag= 3.4 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 51,984 cf
Secondary = 3.95 cfs @ 12.14 hrs, Volume= 4,008 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.95' @ 12.14 hrs Surf.Area= 3,953 sf Storage= 10,235 cf
Flood Elev= 16.00' Surf.Area= 4,707 sf Storage= 14,792 cf

Plug-Flow detention time= 89.8 min calculated for 55,980 cf (93% of inflow)
Center-of-Mass det. time= 50.8 min (822.8 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	14,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

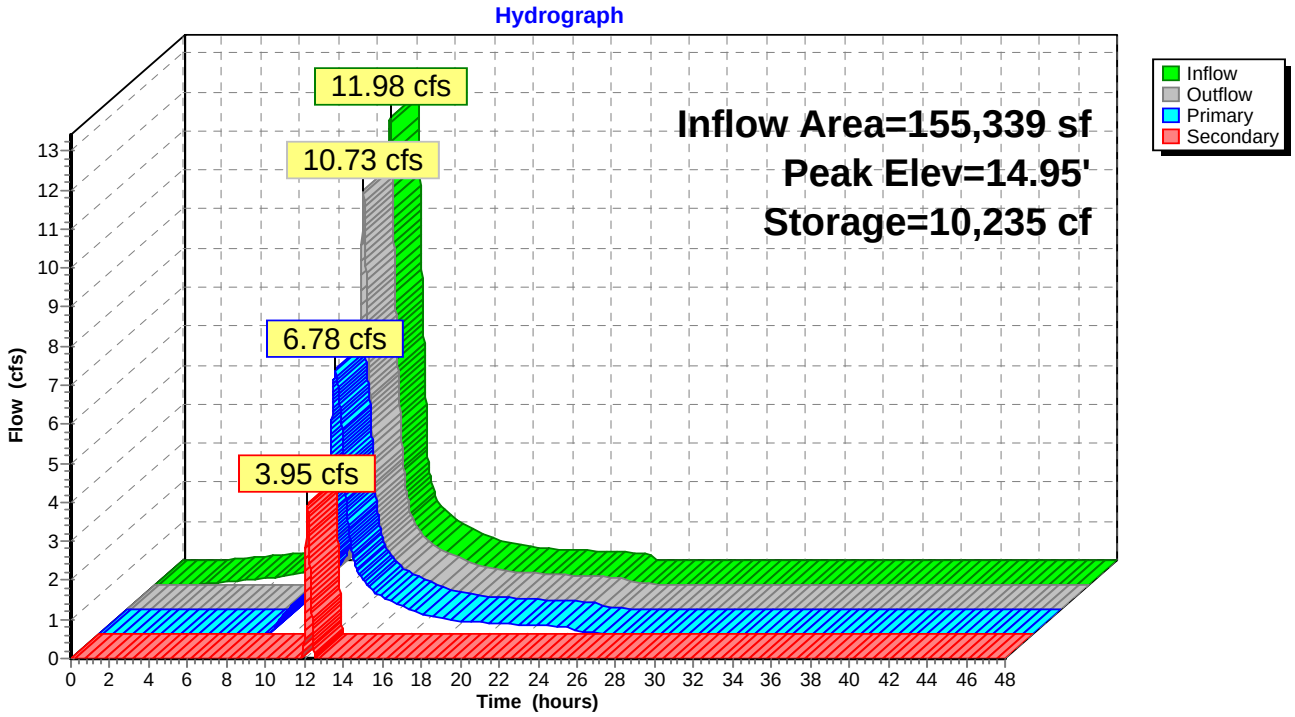
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
9.00	38	0	0
10.00	287	163	163
11.00	765	526	689
12.00	1,474	1,120	1,808
13.00	2,613	2,044	3,852
14.00	3,290	2,952	6,803
15.00	3,990	3,640	10,443
16.00	4,707	4,349	14,792

Device	Routing	Invert	Outlet Devices
#1	Primary	8.16'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.16' / 7.78' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	13.18'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.18' / 12.96' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Secondary	14.50'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=14.95' TW=6.91' (Dynamic Tailwater)
↑└**1=Culvert** (Passes 6.78 cfs of 28.73 cfs potential flow)
↑└**2=Culvert** (Inlet Controls 6.78 cfs @ 3.83 fps)

Secondary OutFlow Max=3.95 cfs @ 12.14 hrs HW=14.95' TW=6.91' (Dynamic Tailwater)
↑└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.95 cfs @ 1.77 fps)

Pond 2P: Existing Wet Pond



Summary for Pond 3P: DMH 998

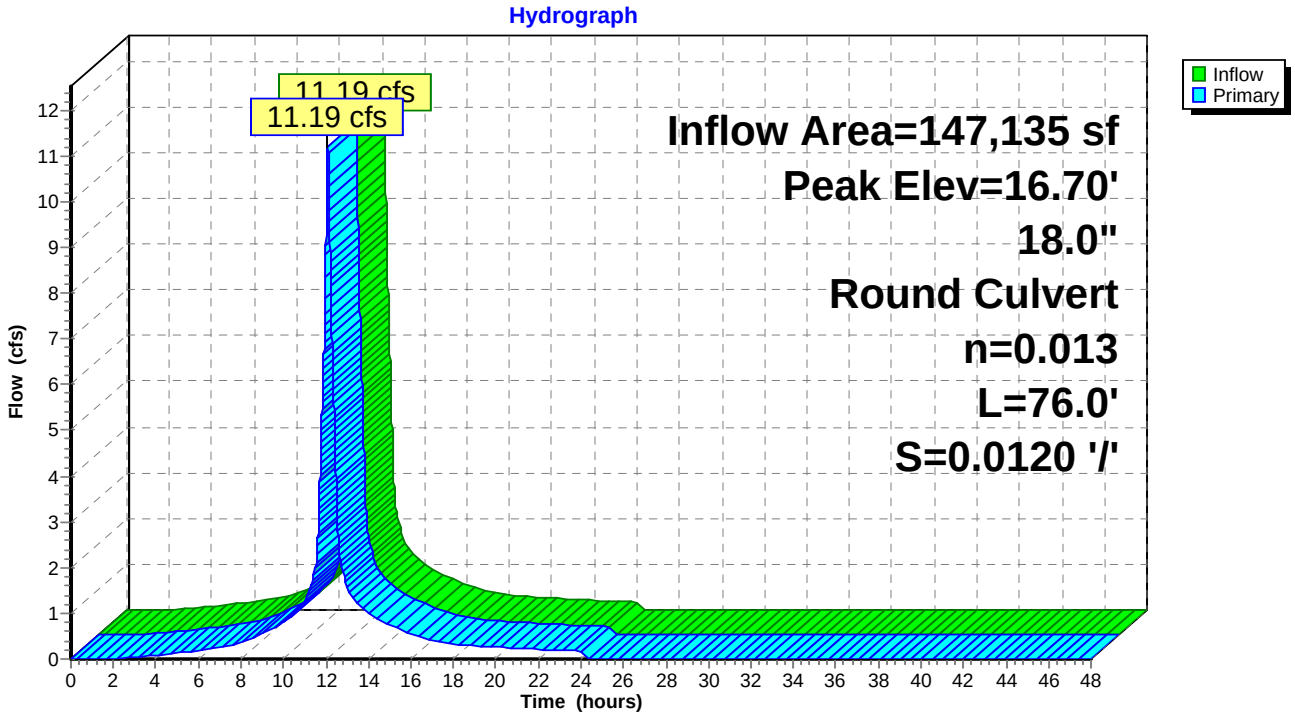
Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Outflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.70' @ 12.09 hrs
Flood Elev= 21.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.81'	**18.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.81' / 12.90' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.18 cfs @ 12.08 hrs HW=16.69' TW=14.89' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 6.32 fps)

Pond 3P: DMH 998



Summary for Pond 4P: CBR 1710

Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.92" for 25-Year event
Inflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf
Outflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Secondary = 5.05 cfs @ 12.08 hrs, Volume= 2,410 cf

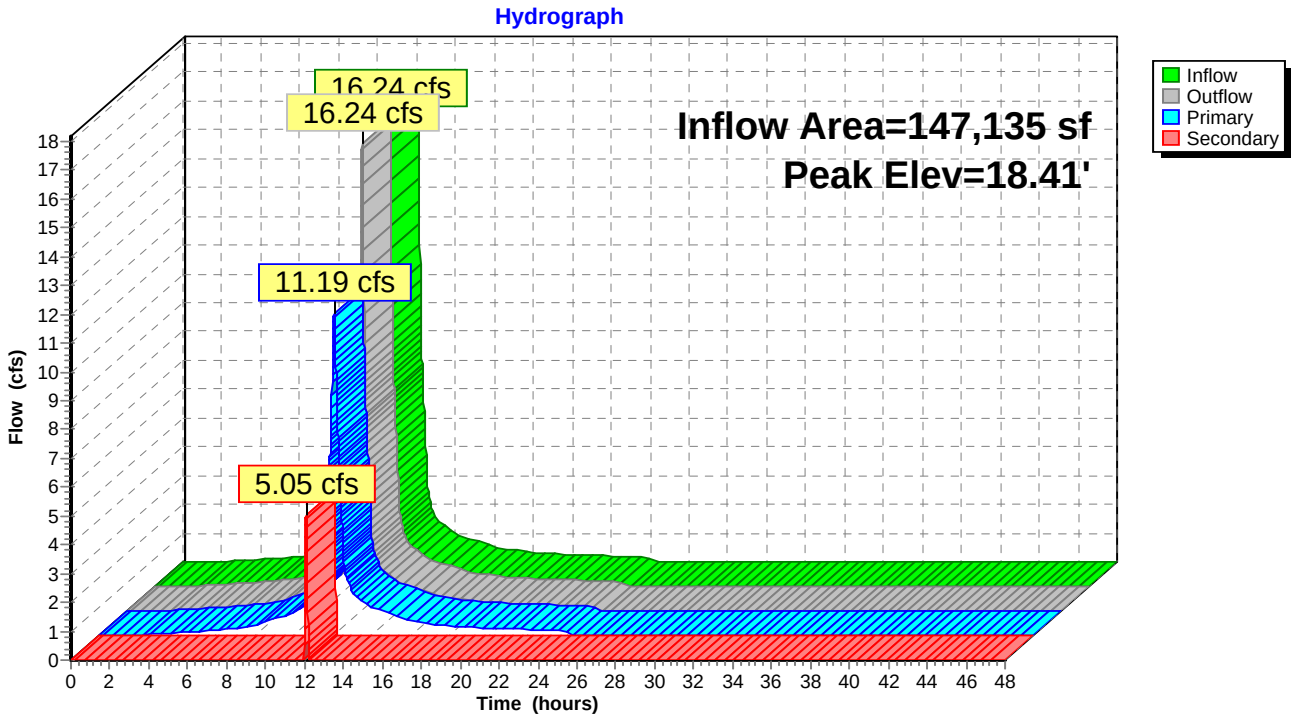
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.41' @ 12.08 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 13.91' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	16.61'	**15.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.61' / 10.60' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=11.14 cfs @ 12.08 hrs HW=18.40' TW=16.69' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 11.14 cfs @ 6.30 fps)

Secondary OutFlow Max=5.03 cfs @ 12.08 hrs HW=18.40' TW=6.76' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 5.03 cfs @ 4.10 fps)

Pond 4P: CBR 1710



Summary for Pond 5P: CB 1668

Inflow Area = 49,032 sf, 82.77% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.08 hrs, Volume= 17,177 cf
Secondary = 2.38 cfs @ 12.08 hrs, Volume= 2,733 cf

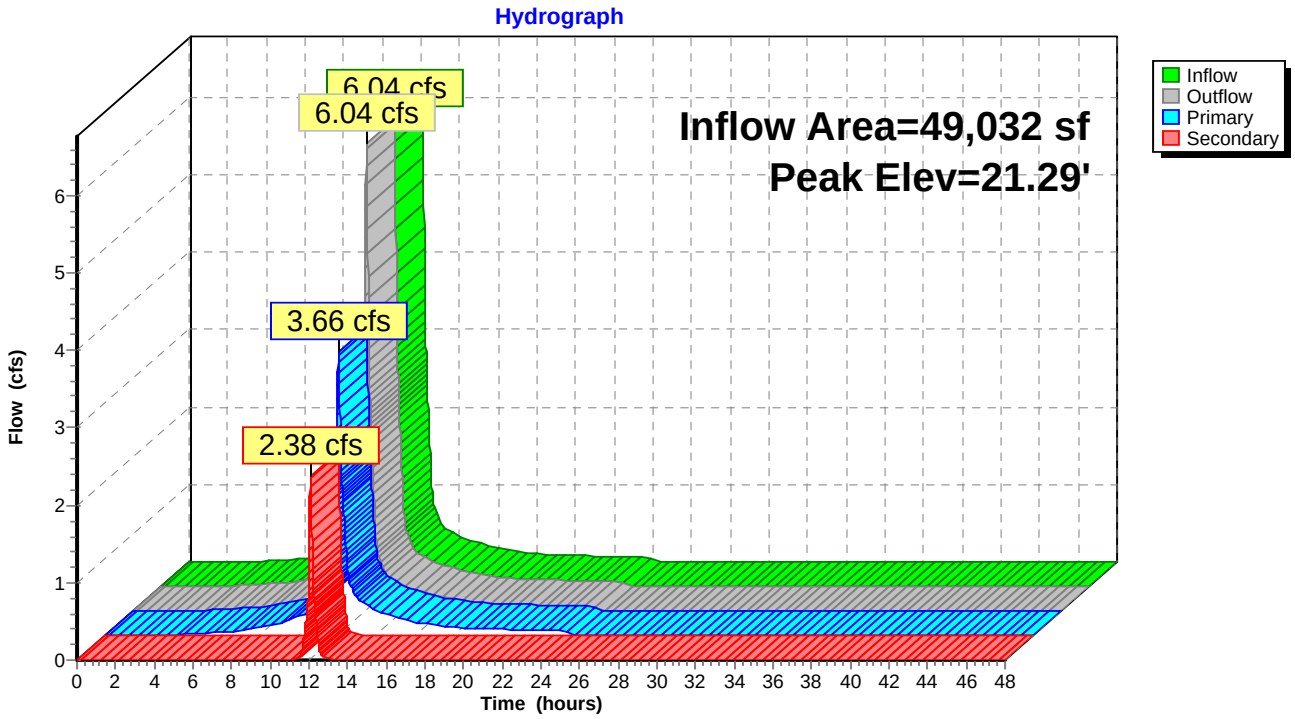
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.29' @ 12.08 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	20.65'	**24.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.65' / 13.39' S= 0.1037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.08 hrs HW=21.29' TW=18.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.66 cfs @ 3.25 fps)

Secondary OutFlow Max=2.37 cfs @ 12.08 hrs HW=21.29' TW=6.76' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.37 cfs @ 2.73 fps)

Pond 5P: CB 1668



Summary for Pond 6P: CBR 1709

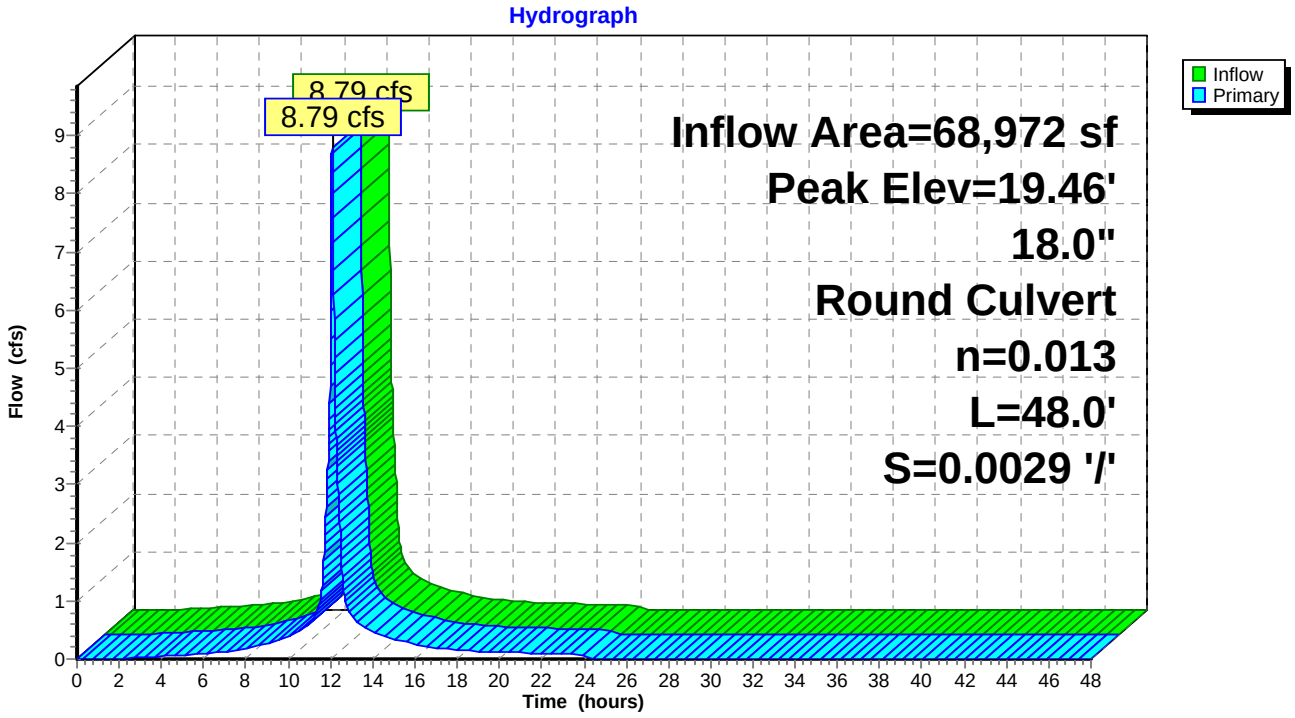
Inflow Area = 68,972 sf, 91.97% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.46' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.71 cfs @ 12.08 hrs HW=19.45' TW=18.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.71 cfs @ 4.93 fps)

Pond 6P: CBR 1709



Summary for Pond 7P: CBR 2113

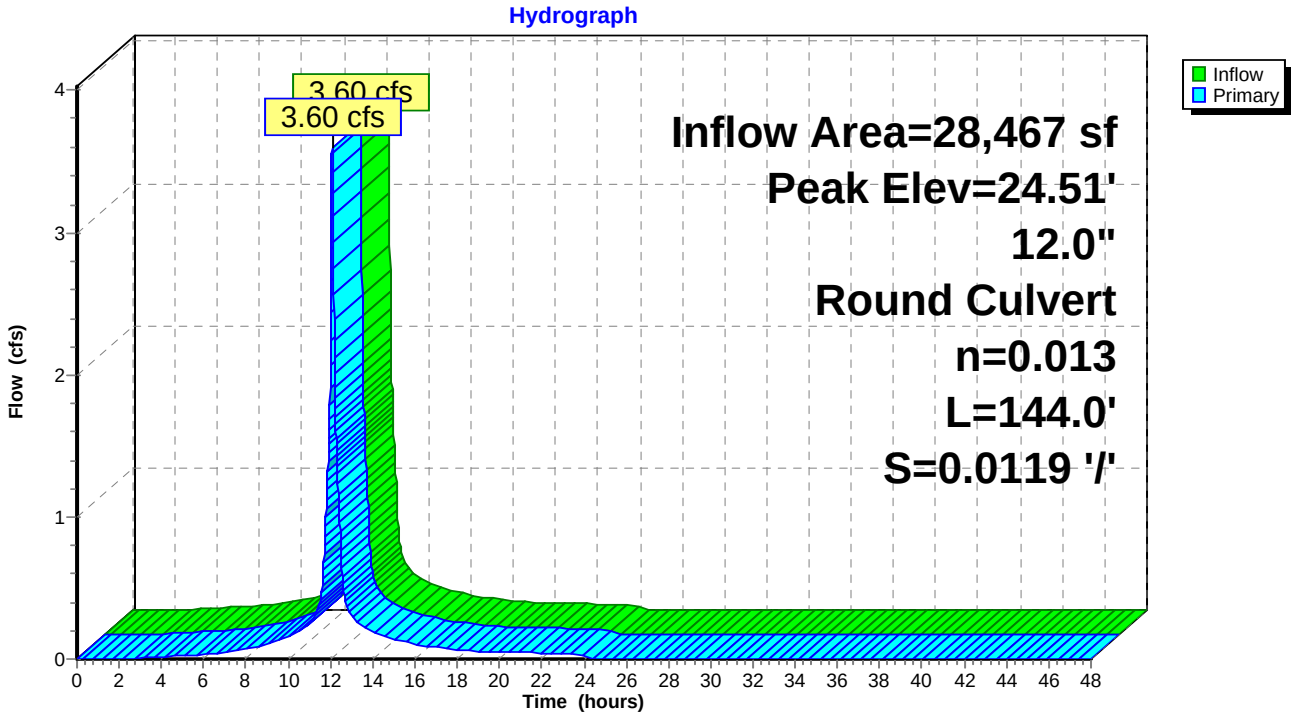
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.51' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.11'	**12.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.11' / 21.40' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.59 cfs @ 12.08 hrs HW=24.51' TW=20.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.59 cfs @ 4.57 fps)

Pond 7P: CBR 2113



Summary for Pond 8P: CBR 1708

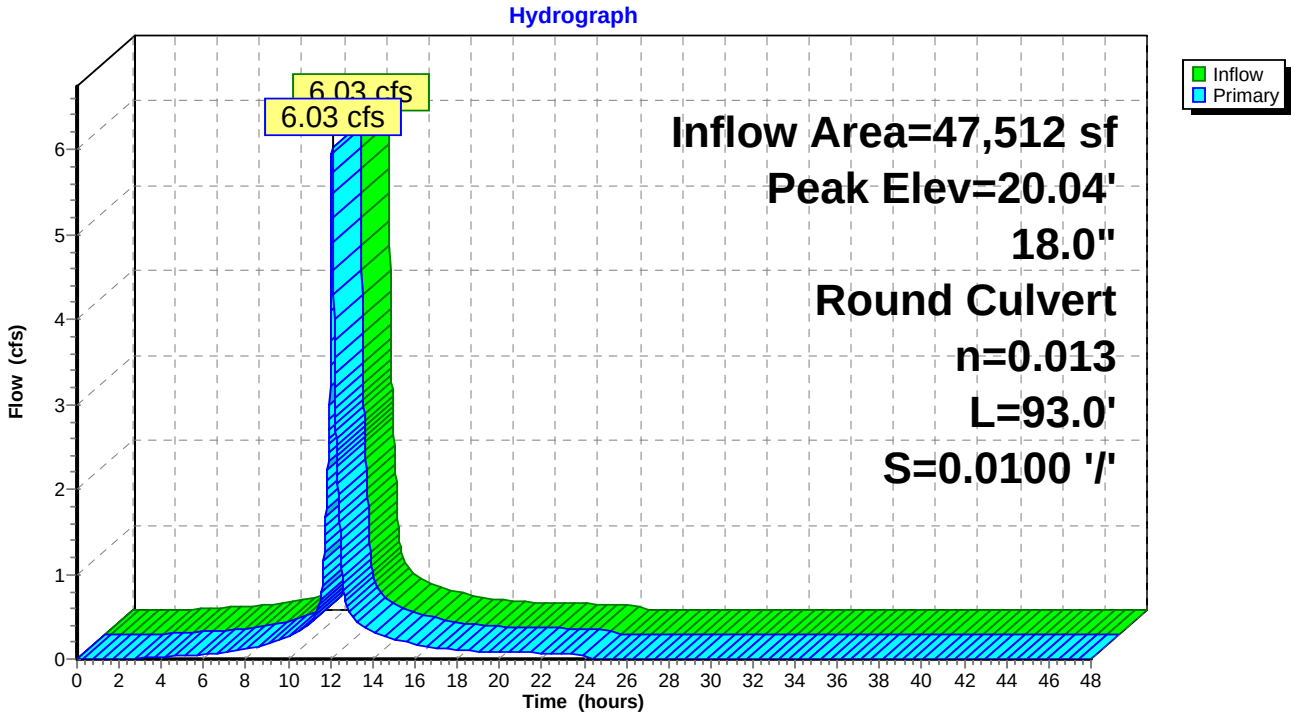
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.04' @ 12.09 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.94 cfs @ 12.08 hrs HW=20.01' TW=19.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.94 cfs @ 3.36 fps)

Pond 8P: CBR 1708



Summary for Pond 9P: DMH 10162

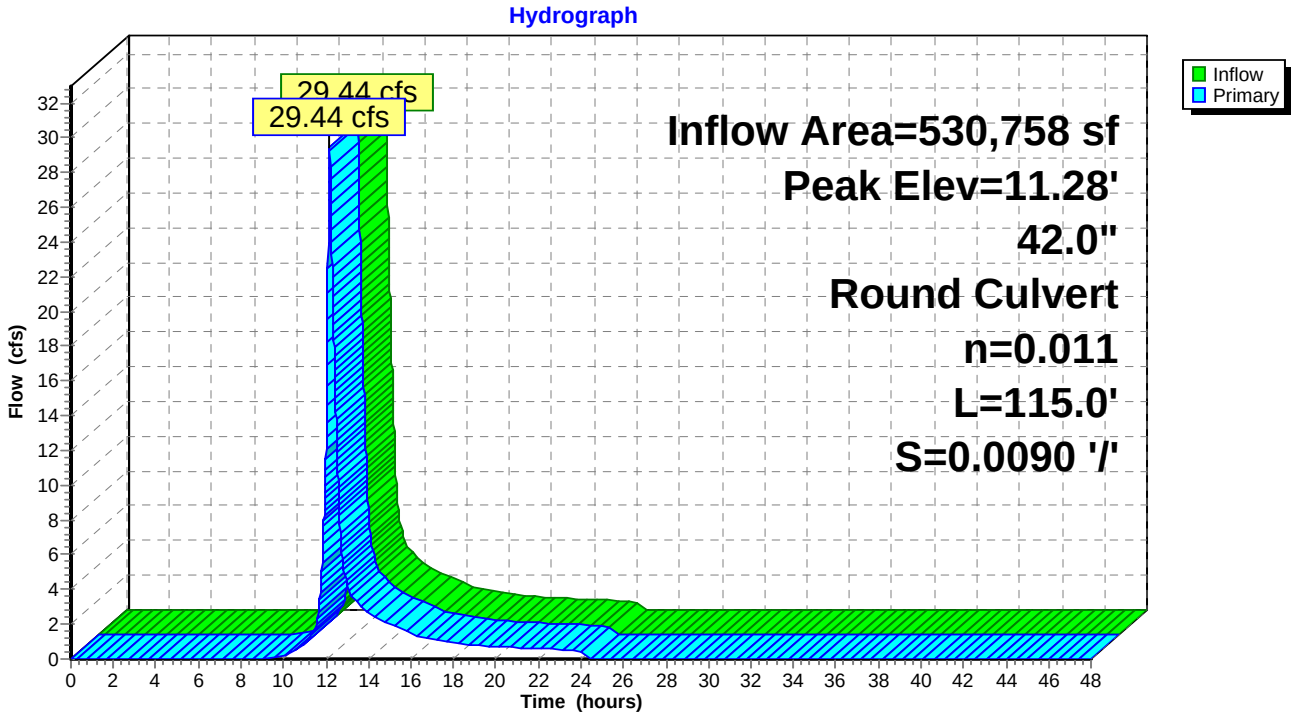
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.28' @ 12.17 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 115.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.15' S= 0.0090 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=11.28' TW=6.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 29.42 cfs @ 7.01 fps)

Pond 9P: DMH 10162



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 934,004 sf, 39.20% Impervious, Inflow Depth = 3.32" for 25-Year event
Inflow = 68.25 cfs @ 12.11 hrs, Volume= 258,297 cf
Outflow = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf, Atten= 61%, Lag= 21.4 min
Primary = 23.88 cfs @ 12.47 hrs, Volume= 253,608 cf
Secondary = 3.06 cfs @ 12.47 hrs, Volume= 4,695 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.21' @ 12.47 hrs Surf.Area= 79,019 sf Storage= 55,362 cf
Flood Elev= 9.00' Surf.Area= 86,688 sf Storage= 120,546 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 15.2 min (840.8 - 825.5)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	120,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

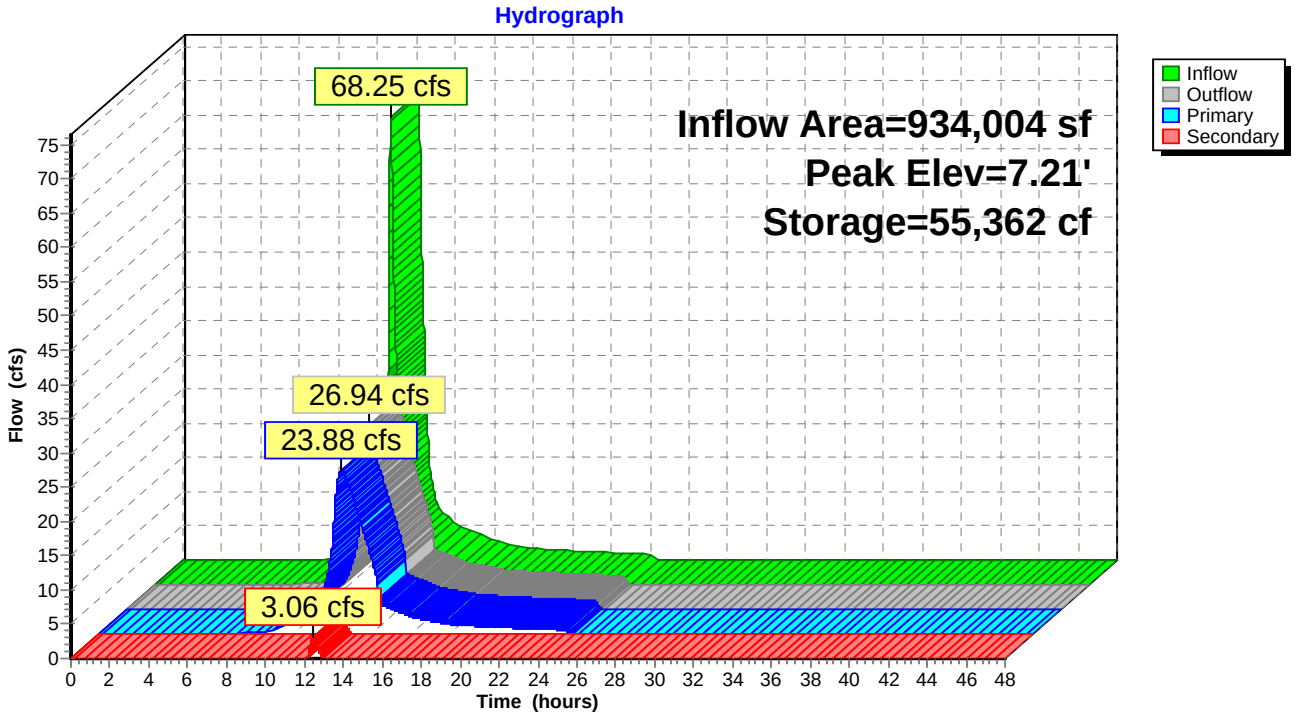
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	523	0	0
7.00	76,940	38,732	38,732
8.00	86,688	81,814	120,546

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=23.88 cfs @ 12.47 hrs HW=7.21' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 23.88 cfs @ 5.61 fps)

Secondary OutFlow Max=3.06 cfs @ 12.47 hrs HW=7.21' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 3.06 cfs @ 1.10 fps)

Pond EX WTLND: Existing Wetland

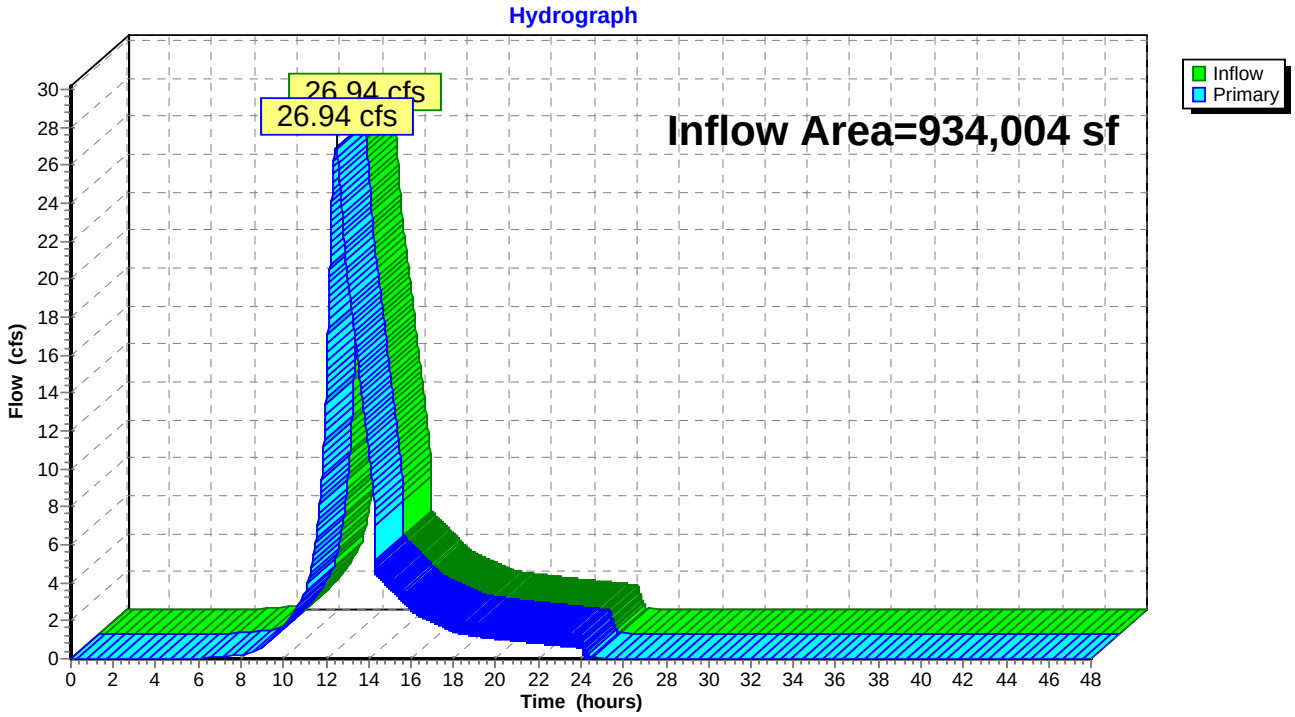


Summary for Link SP-1: Study Point 1

Inflow Area = 934,004 sf, 39.20% Impervious, Inflow Depth = 3.32" for 25-Year event
Inflow = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf
Primary = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

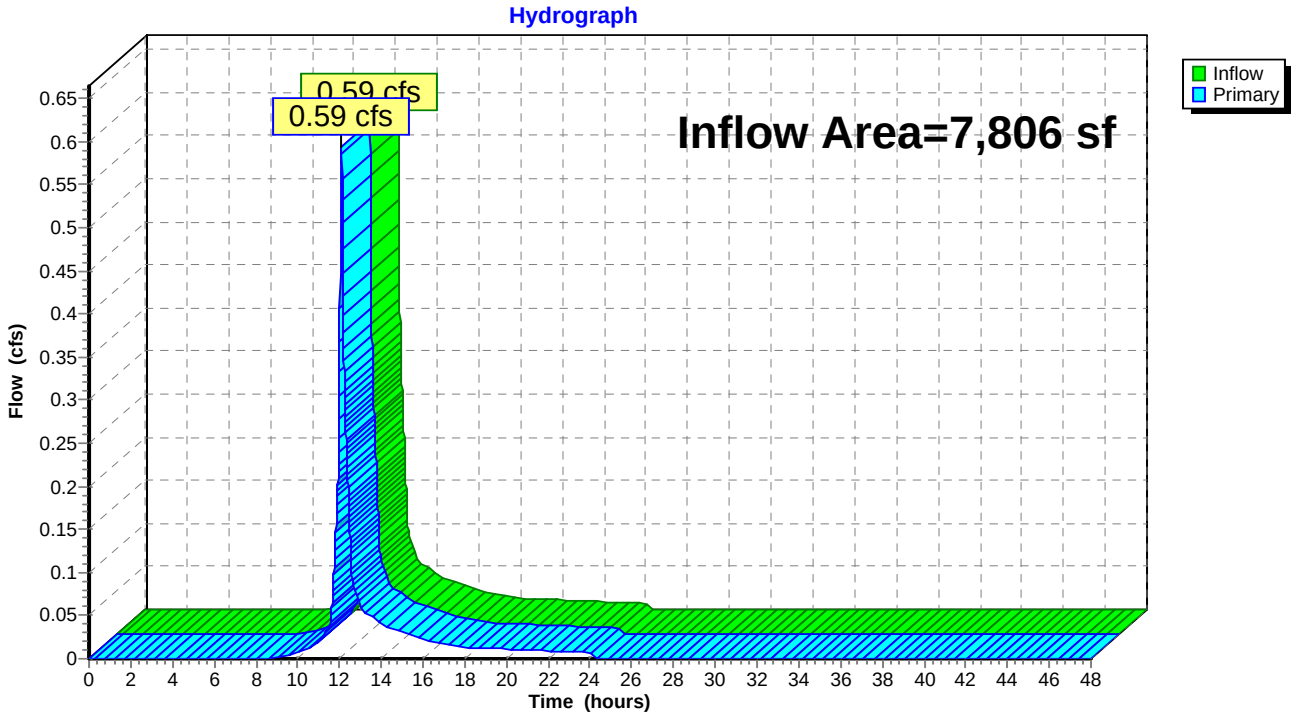


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

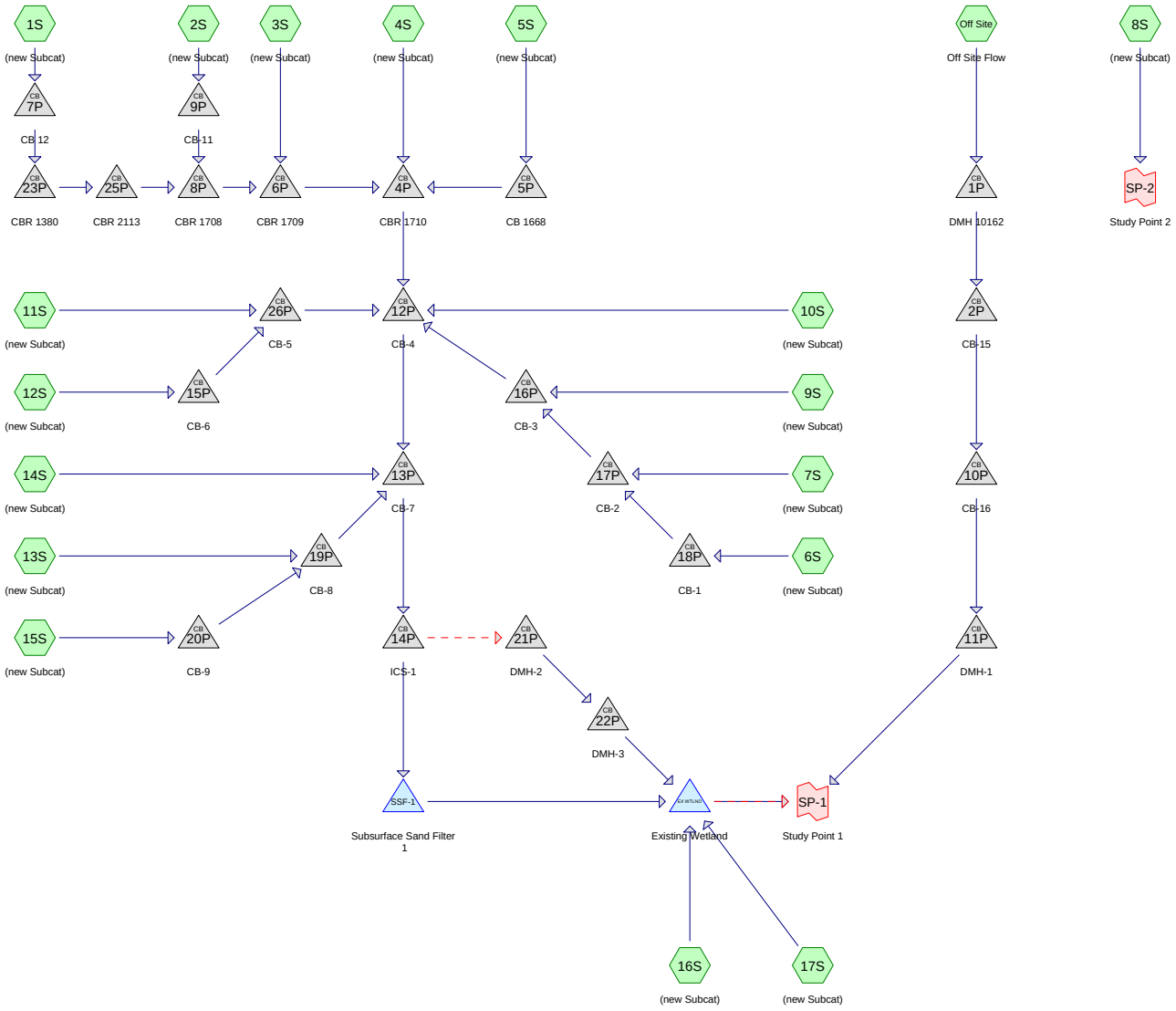
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment C

Post-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Post
Prepared by Sebago Techincs, Printed 2/1/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
483,724	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 16S, 17S, Off Site)
66,656	80	>75% Grass cover, Good, HSG D (6S, 7S, 10S, 11S, 13S, 14S, 15S, 16S)
277,920	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 17S, Off Site)
98,586	98	Paved parking, HSG D (6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
14,924	98	Roofs, HSG B (1S, 2S, 16S, 17S)
941,810	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
776,568	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 16S, 17S, Off Site
0	HSG C	
165,242	HSG D	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0	Other	
941,810		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=2.16"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=1.66 cfs 5,201 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=2.45"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=1.72 cfs 5,543 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=2.16"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 2,744 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=2.76"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=1.96 cfs 6,627 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=2.16"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.84 cfs 8,915 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=2.08"
Flow Length=231' Tc=6.1 min CN=90 Runoff=0.88 cfs 2,747 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=2.65"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.51 cfs 1,688 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=0.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.17 cfs 570 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=2.76"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=0.87 cfs 2,958 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=2.76"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.12 cfs 3,774 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=2.76"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.99 cfs 3,337 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=0.67 cfs 2,310 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=2.65"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=0.81 cfs 2,678 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=2.76"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.60 cfs 2,044 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=2.76"
Flow Length=331' Tc=6.0 min CN=97 Runoff=2.06 cfs 6,985 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.25 cfs 7,395 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=0.72"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=7.21 cfs 32,021 cf

Pond 1P: DMH 10162 Peak Elev=10.33' Inflow=7.21 cfs 32,021 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=7.21 cfs 32,021 cf

Pond 2P: CB-15 Peak Elev=9.66' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 4P: CBR 1710 Peak Elev=17.27' Inflow=9.04 cfs 29,030 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=9.04 cfs 29,030 cf

Pond 5P: CB 1668 Peak Elev=21.17' Inflow=2.84 cfs 8,915 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.84 cfs 8,915 cf

Pond 6P: CBR 1709 Peak Elev=17.52' Inflow=4.25 cfs 13,488 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.25 cfs 13,488 cf

Pond 7P: CB 12 Peak Elev=25.48' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=1.66 cfs 5,201 cf

Pond 8P: CBR 1708 Peak Elev=17.82' Inflow=3.37 cfs 10,744 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.37 cfs 10,744 cf

Pond 9P: CB-11 Peak Elev=22.40' Inflow=1.72 cfs 5,543 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=1.72 cfs 5,543 cf

Pond 10P: CB-16 Peak Elev=8.77' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 11P: DMH-1 Peak Elev=7.19' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 12P: CB-4 Peak Elev=16.12' Inflow=14.07 cfs 45,845 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=14.07 cfs 45,845 cf

Pond 13P: CB-7 Peak Elev=13.87' Inflow=17.54 cfs 57,552 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=17.54 cfs 57,552 cf

Pond 14P: ICS-1 Peak Elev=13.18' Inflow=17.54 cfs 57,552 cf
Primary=17.54 cfs 52,420 cf Secondary=1.44 cfs 5,132 cf Outflow=17.54 cfs 57,552 cf

Pond 15P: CB-6 Peak Elev=16.47' Inflow=0.67 cfs 2,310 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=0.67 cfs 2,310 cf

Pond 16P: CB-3 Peak Elev=16.38' Inflow=2.26 cfs 7,394 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=2.26 cfs 7,394 cf

Pond 17P: CB-2 Peak Elev=16.97' Inflow=1.38 cfs 4,435 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=1.38 cfs 4,435 cf

Pond 18P: CB-1 Peak Elev=17.51' Inflow=0.88 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=0.88 cfs 2,747 cf

Pond 19P: CB-8 Peak Elev=13.93' Inflow=2.87 cfs 9,663 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.87 cfs 9,663 cf

Pond 20P: CB-9 Peak Elev=14.18' Inflow=2.06 cfs 6,985 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=2.06 cfs 6,985 cf

Pond 21P: DMH-2 Peak Elev=11.51' Inflow=1.44 cfs 5,132 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=1.44 cfs 5,132 cf

Pond 22P: DMH-3 Peak Elev=8.56' Inflow=1.44 cfs 5,132 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=1.44 cfs 5,132 cf

Pond 23P: CBR 1380 Peak Elev=24.46' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=1.66 cfs 5,201 cf

Pond 25P: CBR 2113 Peak Elev=23.52' Inflow=1.66 cfs 5,201 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.66 cfs 5,201 cf

Pond 26P: CB-5 Peak Elev=16.42' Inflow=1.65 cfs 5,647 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=1.65 cfs 5,647 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.00' Storage=0 cf Inflow=4.48 cfs 70,425 cf
Primary=4.48 cfs 70,425 cf Secondary=0.00 cfs 0 cf Outflow=4.48 cfs 70,425 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.17' Storage=26,498 cf Inflow=17.54 cfs 52,420 cf
Outflow=1.93 cfs 52,427 cf

Link SP-1: Study Point 1 Inflow=10.55 cfs 102,446 cf
Primary=10.55 cfs 102,446 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 570 cf
Primary=0.17 cfs 570 cf

Total Runoff Area = 941,810 sf Runoff Volume = 103,009 cf Average Runoff Depth = 1.31"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=3.59"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.69 cfs 8,638 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=3.91"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=2.68 cfs 8,865 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=3.59"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.42 cfs 4,557 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=4.25"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=2.95 cfs 10,211 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=3.59"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=4.60 cfs 14,805 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=3.49"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.44 cfs 4,620 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=4.14"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.77 cfs 2,634 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=1.97"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.39 cfs 1,222 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=4.25"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.32 cfs 4,558 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=4.25"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.68 cfs 5,815 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=4.25"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.49 cfs 5,141 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.00 cfs 3,515 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=4.14"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.23 cfs 4,178 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=4.25"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.91 cfs 3,150 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=4.25"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.11 cfs 10,762 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.99 cfs 15,589 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=1.67"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=18.76 cfs 73,952 cf

Pond 1P: DMH 10162 Peak Elev=11.30' Inflow=18.76 cfs 73,952 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=18.76 cfs 73,952 cf

Pond 2P: CB-15 Peak Elev=10.65' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 4P: CBR 1710 Peak Elev=18.37' Inflow=14.33 cfs 47,076 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=14.33 cfs 47,076 cf

Pond 5P: CB 1668 Peak Elev=21.43' Inflow=4.60 cfs 14,805 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.60 cfs 14,805 cf

Pond 6P: CBR 1709 Peak Elev=18.98' Inflow=6.78 cfs 22,060 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.78 cfs 22,060 cf

Pond 7P: CB 12 Peak Elev=25.81' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=2.69 cfs 8,638 cf

Pond 8P: CBR 1708 Peak Elev=19.45' Inflow=5.36 cfs 17,503 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=5.36 cfs 17,503 cf

Pond 9P: CB-11 Peak Elev=22.82' Inflow=2.68 cfs 8,865 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=2.68 cfs 8,865 cf

Pond 10P: CB-16 Peak Elev=9.66' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 11P: DMH-1 Peak Elev=8.03' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 12P: CB-4 Peak Elev=16.92' Inflow=22.03 cfs 73,359 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=22.03 cfs 73,359 cf

Pond 13P: CB-7 Peak Elev=14.54' Inflow=27.28 cfs 91,449 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=27.28 cfs 91,449 cf

Pond 14P: ICS-1 Peak Elev=13.62' Inflow=27.28 cfs 91,449 cf
Primary=21.66 cfs 72,013 cf Secondary=7.24 cfs 19,436 cf Outflow=27.28 cfs 91,449 cf

Pond 15P: CB-6 Peak Elev=17.72' Inflow=1.00 cfs 3,515 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.00 cfs 3,515 cf

Pond 16P: CB-3 Peak Elev=17.50' Inflow=3.53 cfs 11,812 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=3.53 cfs 11,812 cf

Pond 17P: CB-2 Peak Elev=18.04' Inflow=2.22 cfs 7,254 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.22 cfs 7,254 cf

Pond 18P: CB-1 Peak Elev=18.28' Inflow=1.44 cfs 4,620 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.44 cfs 4,620 cf

Pond 19P: CB-8 Peak Elev=14.68' Inflow=4.34 cfs 14,940 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.34 cfs 14,940 cf

Pond 20P: CB-9 Peak Elev=14.89' Inflow=3.11 cfs 10,762 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.11 cfs 10,762 cf

Pond 21P: DMH-2 Peak Elev=12.81' Inflow=7.24 cfs 19,436 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=7.24 cfs 19,436 cf

Pond 22P: DMH-3 Peak Elev=9.86' Inflow=7.24 cfs 19,436 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=7.24 cfs 19,436 cf

Pond 23P: CBR 1380 Peak Elev=24.78' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=2.69 cfs 8,638 cf

Pond 25P: CBR 2113 Peak Elev=23.77' Inflow=2.69 cfs 8,638 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.69 cfs 8,638 cf

Pond 26P: CB-5 Peak Elev=17.62' Inflow=2.48 cfs 8,657 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=2.48 cfs 8,657 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.01' Storage=1,675 cf Inflow=21.63 cfs 116,480 cf
Primary=20.67 cfs 116,479 cf Secondary=0.03 cfs 3 cf Outflow=20.70 cfs 116,481 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.57' Storage=31,015 cf Inflow=21.66 cfs 72,013 cf
Outflow=8.78 cfs 72,017 cf

Link SP-1: Study Point 1 Inflow=39.32 cfs 190,434 cf
Primary=39.32 cfs 190,434 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,222 cf
Primary=0.39 cfs 1,222 cf

Total Runoff Area = 941,810 sf Runoff Volume = 191,651 cf Average Runoff Depth = 2.44"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=4.76"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=3.50 cfs 11,442 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=5.10"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=3.43 cfs 11,549 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=4.76"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.85 cfs 6,037 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=5.44"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=3.74 cfs 13,085 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=4.76"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=6.00 cfs 19,612 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=4.65"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.89 cfs 6,155 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=5.33"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.98 cfs 3,394 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=2.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.58 cfs 1,812 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=5.44"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.67 cfs 5,841 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=5.44"
Flow Length=195' Tc=6.0 min CN=97 Runoff=2.13 cfs 7,452 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=5.44"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.88 cfs 6,589 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.26 cfs 4,481 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=5.33"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.56 cfs 5,383 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=5.44"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.15 cfs 4,037 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=5.44"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.94 cfs 13,792 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.41 cfs 22,951 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=2.56"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=29.44 cfs 113,111 cf

Pond 1P: DMH 10162 Peak Elev=12.24' Inflow=29.44 cfs 113,111 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=29.44 cfs 113,111 cf

Pond 2P: CB-15 Peak Elev=11.63' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 4P: CBR 1710 Peak Elev=20.42' Inflow=18.53 cfs 61,725 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=18.53 cfs 61,725 cf

Pond 5P: CB 1668 Peak Elev=21.73' Inflow=6.00 cfs 19,612 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.00 cfs 19,612 cf

Pond 6P: CBR 1709 Peak Elev=21.48' Inflow=8.79 cfs 29,027 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,027 cf

Pond 7P: CB 12 Peak Elev=26.28' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=3.50 cfs 11,442 cf

Pond 8P: CBR 1708 Peak Elev=22.20' Inflow=6.94 cfs 22,991 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.94 cfs 22,991 cf

Pond 9P: CB-11 Peak Elev=23.49' Inflow=3.43 cfs 11,549 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=3.43 cfs 11,549 cf

Pond 10P: CB-16 Peak Elev=10.43' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 11P: DMH-1 Peak Elev=8.73' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 12P: CB-4 Peak Elev=18.09' Inflow=28.35 cfs 95,635 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=28.35 cfs 95,635 cf

Pond 13P: CB-7 Peak Elev=15.81' Inflow=35.01 cfs 118,847 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=35.01 cfs 118,847 cf

Pond 14P: ICS-1 Peak Elev=14.29' Inflow=35.01 cfs 118,847 cf
Primary=27.29 cfs 90,438 cf Secondary=8.33 cfs 28,409 cf Outflow=35.01 cfs 118,847 cf

Pond 15P: CB-6 Peak Elev=19.34' Inflow=1.26 cfs 4,481 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.26 cfs 4,481 cf

Pond 16P: CB-3 Peak Elev=18.99' Inflow=4.55 cfs 15,389 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=4.55 cfs 15,389 cf

Pond 17P: CB-2 Peak Elev=19.93' Inflow=2.88 cfs 9,548 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.88 cfs 9,548 cf

Pond 18P: CB-1 Peak Elev=20.28' Inflow=1.89 cfs 6,155 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.89 cfs 6,155 cf

Pond 19P: CB-8 Peak Elev=16.01' Inflow=5.51 cfs 19,175 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=5.51 cfs 19,175 cf

Pond 20P: CB-9 Peak Elev=16.37' Inflow=3.94 cfs 13,792 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.94 cfs 13,792 cf

Pond 21P: DMH-2 Peak Elev=13.19' Inflow=8.33 cfs 28,409 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=8.33 cfs 28,409 cf

Pond 22P: DMH-3 Peak Elev=10.24' Inflow=8.33 cfs 28,409 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=8.33 cfs 28,409 cf

Pond 23P: CBR 1380 Peak Elev=25.42' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=3.50 cfs 11,442 cf

Pond 25P: CBR 2113 Peak Elev=23.98' Inflow=3.50 cfs 11,442 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.50 cfs 11,442 cf

Pond 26P: CB-5 Peak Elev=19.15' Inflow=3.15 cfs 11,069 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=3.15 cfs 11,069 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.31' Storage=2,487 cf Inflow=31.43 cfs 154,517 cf
Primary=25.46 cfs 150,582 cf Secondary=5.60 cfs 3,935 cf Outflow=31.05 cfs 154,517 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=14.17' Storage=36,291 cf Inflow=27.29 cfs 90,438 cf
Outflow=13.47 cfs 90,441 cf

Link SP-1: Study Point 1 Inflow=59.99 cfs 267,628 cf
Primary=59.99 cfs 267,628 cf

Link SP-2: Study Point 2 Inflow=0.58 cfs 1,812 cf
Primary=0.58 cfs 1,812 cf

Total Runoff Area = 941,810 sf Runoff Volume = 269,438 cf Average Runoff Depth = 3.43"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Summary for Subcatchment 1S: (new Subcat)

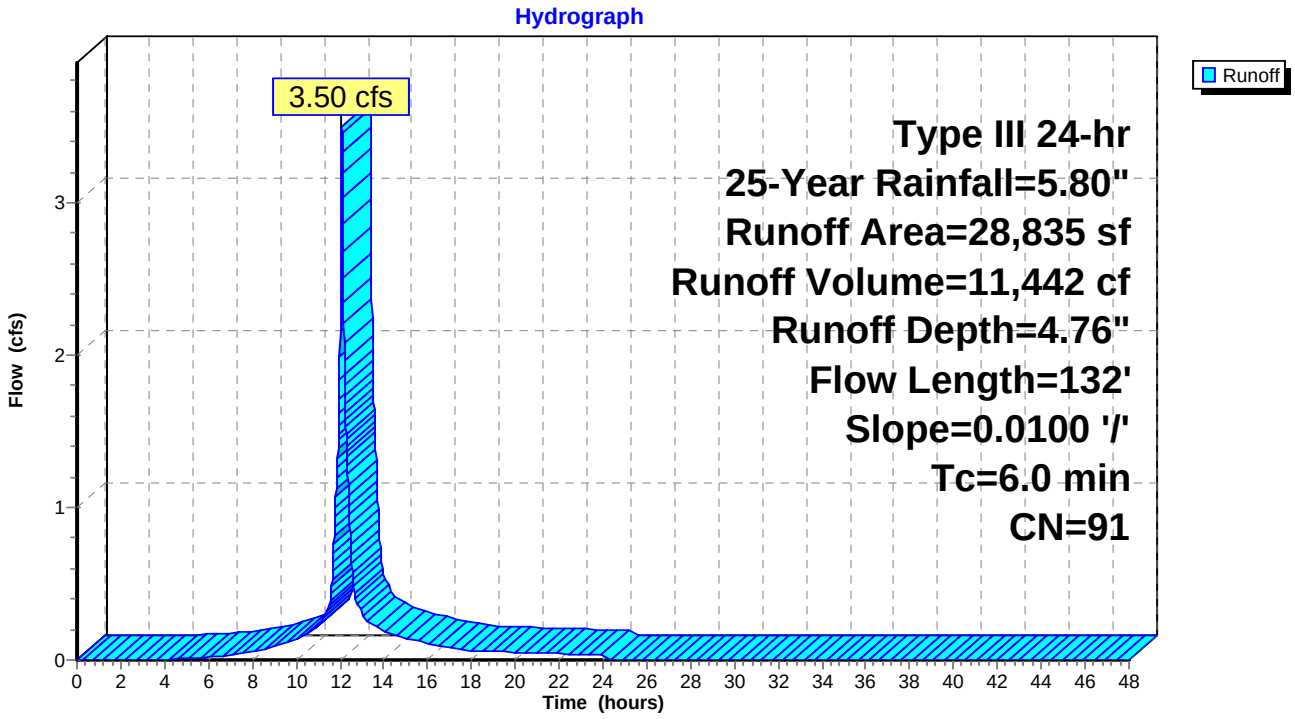
Runoff = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
19,414	98	Paved parking, HSG B
5,131	61	>75% Grass cover, Good, HSG B
28,835	91	Weighted Average
5,131		17.79% Pervious Area
23,704		82.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	58	0.0100	0.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	74	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	132	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

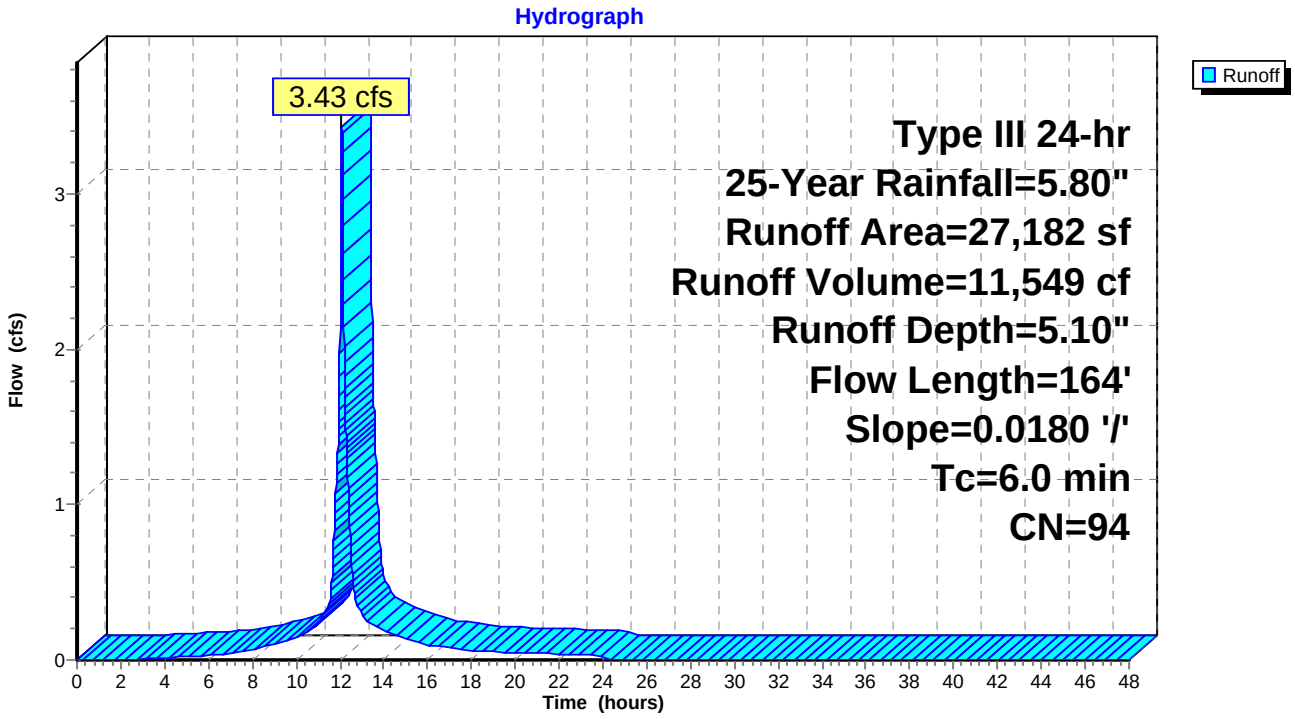
Runoff = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,939	98	Roofs, HSG B
22,074	98	Paved parking, HSG B
3,169	61	>75% Grass cover, Good, HSG B
27,182	94	Weighted Average
3,169		11.66% Pervious Area
24,013		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0180	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	64	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	164	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

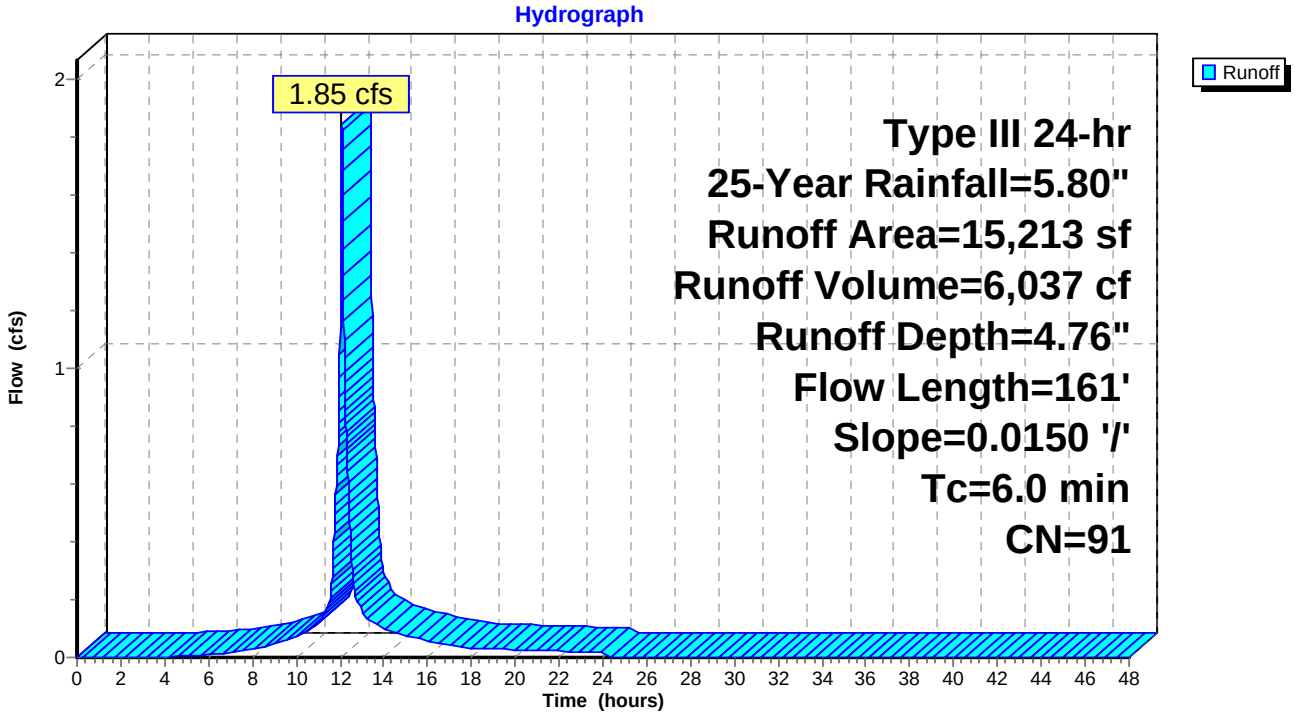
Runoff = 1.85 cfs @ 12.08 hrs, Volume= 6,037 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,202	98	Paved parking, HSG B
3,011	61	>75% Grass cover, Good, HSG B
15,213	91	Weighted Average
3,011		19.79% Pervious Area
12,202		80.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	33	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	128	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5					**Direct Entry,**
6.0	161	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

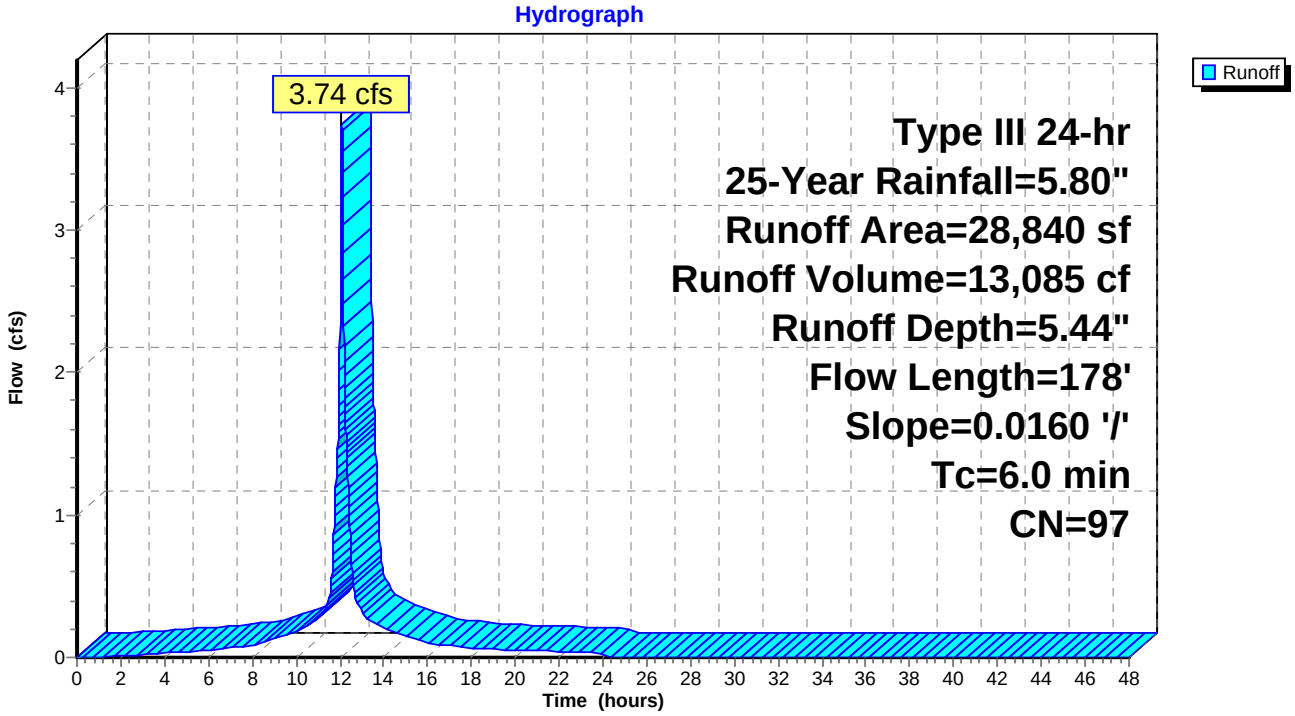
Runoff = 3.74 cfs @ 12.08 hrs, Volume= 13,085 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
27,938	98	Paved parking, HSG B
902	61	>75% Grass cover, Good, HSG B
28,840	97	Weighted Average
902		3.13% Pervious Area
27,938		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	78	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	178	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

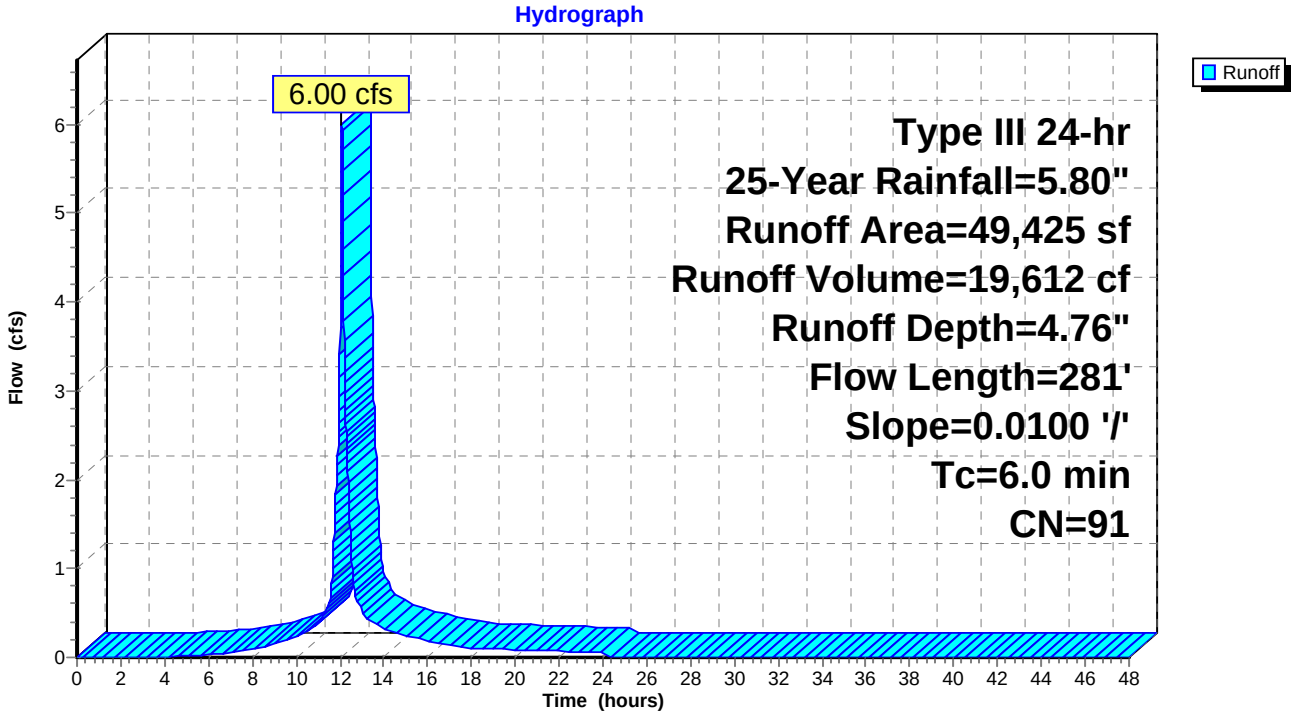
Runoff = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,650	98	Paved parking, HSG B
8,775	61	>75% Grass cover, Good, HSG B
49,425	91	Weighted Average
8,775		17.75% Pervious Area
40,650		82.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.5	181	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

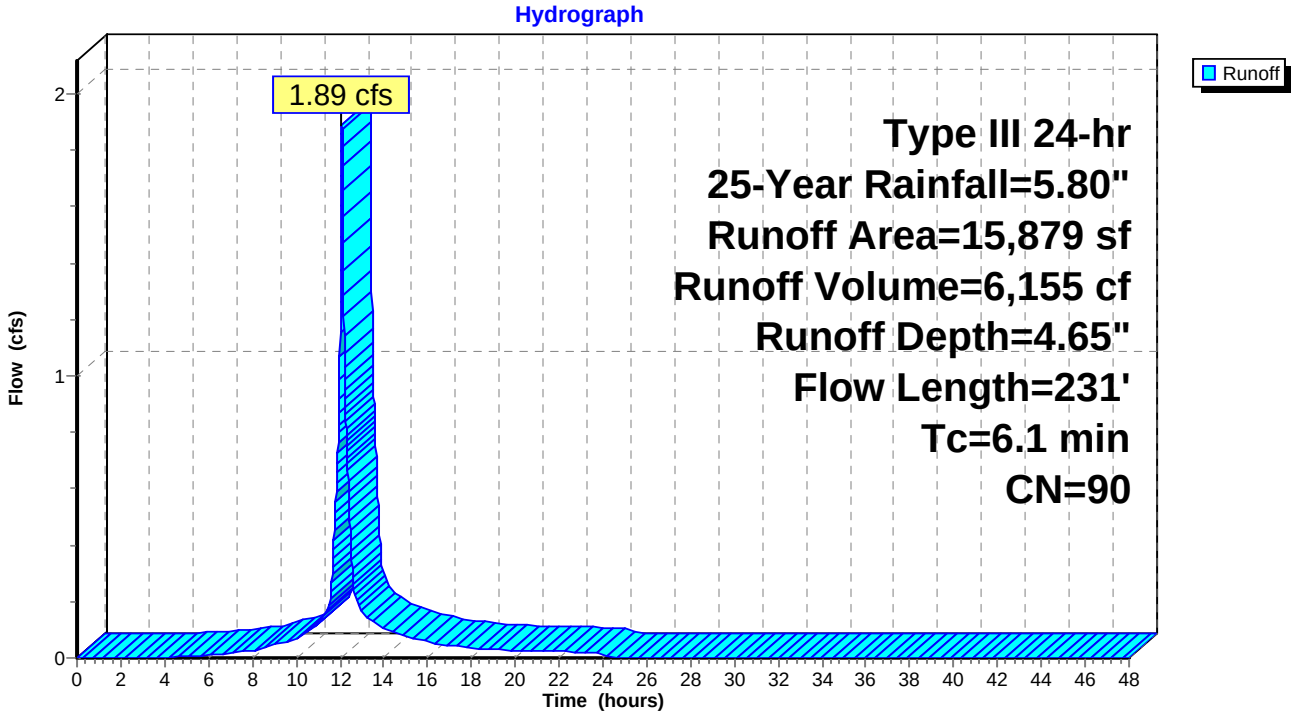
Runoff = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,219	98	Paved parking, HSG B
3,967	98	Paved parking, HSG D
3,328	61	>75% Grass cover, Good, HSG B
365	80	>75% Grass cover, Good, HSG D
15,879	90	Weighted Average
3,693		23.26% Pervious Area
12,186		76.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

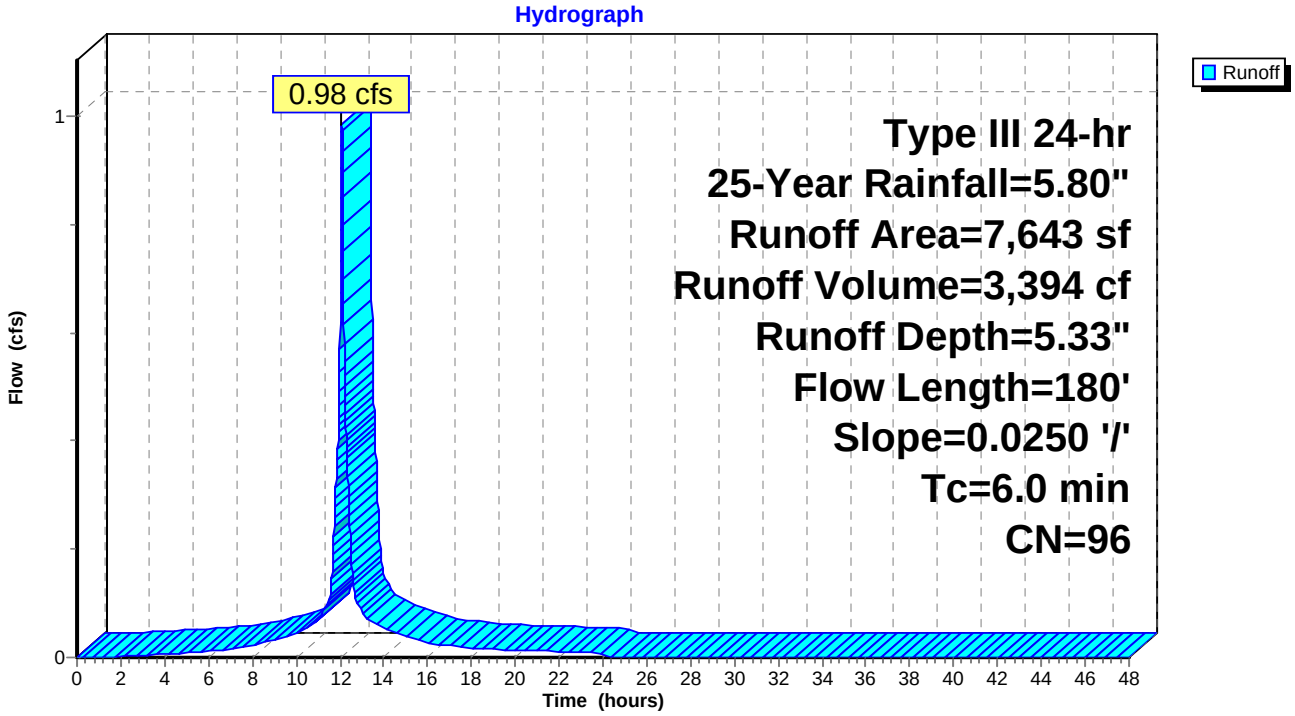
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,394 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,645	98	Paved parking, HSG B
4,421	98	Paved parking, HSG D
183	61	>75% Grass cover, Good, HSG B
394	80	>75% Grass cover, Good, HSG D
7,643	96	Weighted Average
577		7.55% Pervious Area
7,066		92.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5					**Direct Entry,**
6.0	180	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

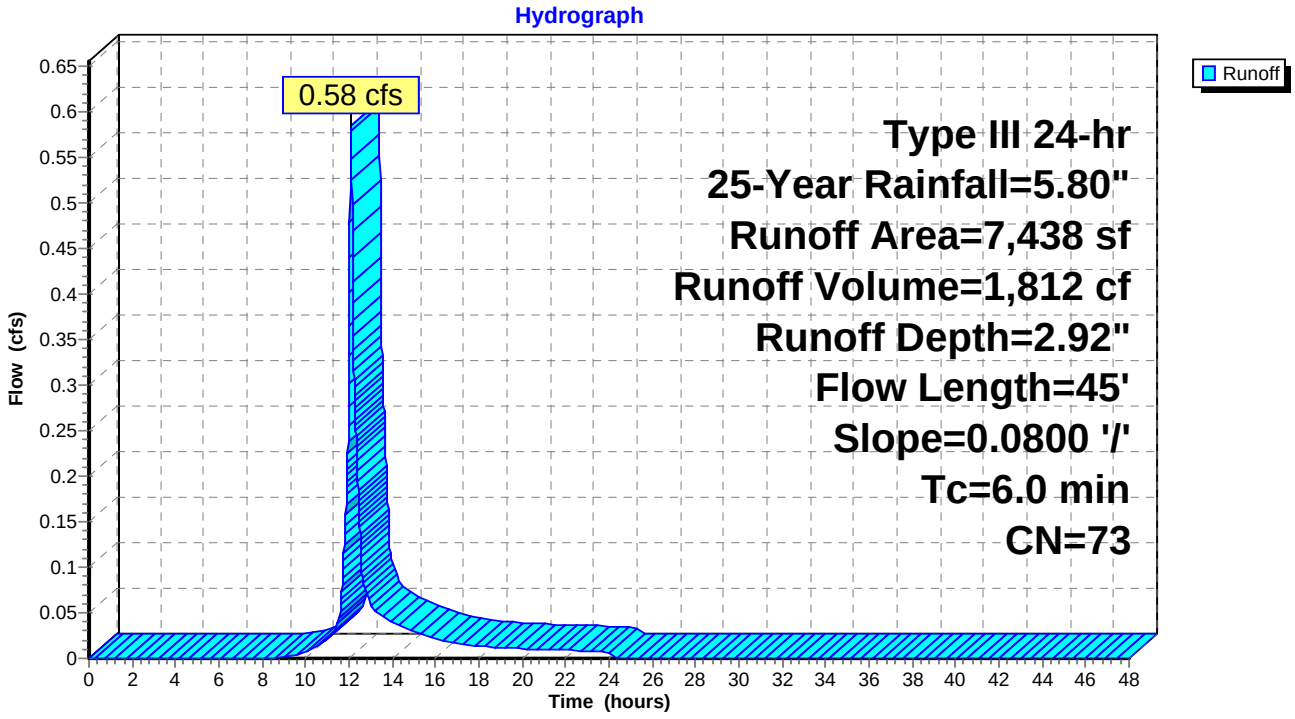
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG B
5,074	61	>75% Grass cover, Good, HSG B
7,438	73	Weighted Average
5,074		68.22% Pervious Area
2,364		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	45	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.0					**Direct Entry,**
6.0	45	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

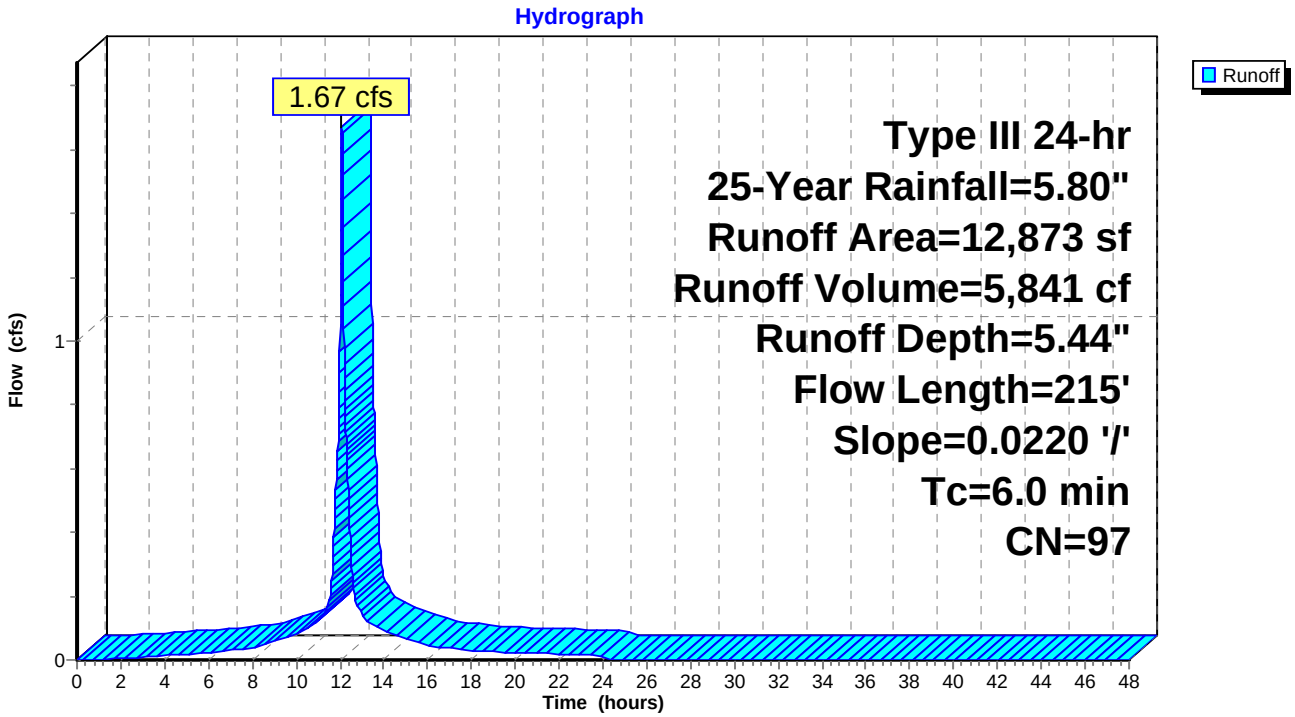
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 5,841 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,193	98	Paved parking, HSG B
10,370	98	Paved parking, HSG D
310	61	>75% Grass cover, Good, HSG B
12,873	97	Weighted Average
310		2.41% Pervious Area
12,563		97.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0220	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	115	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	215	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

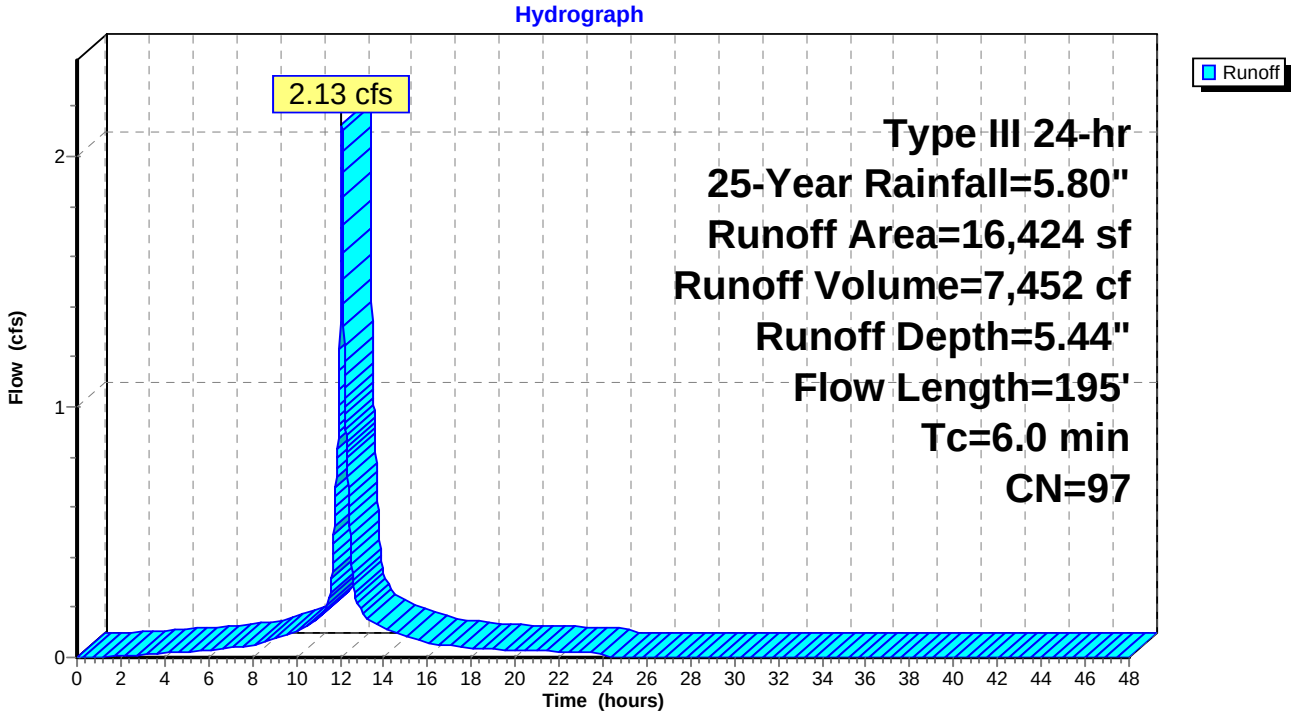
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 7,452 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,869	98	Paved parking, HSG B
13,780	98	Paved parking, HSG D
465	61	>75% Grass cover, Good, HSG B
310	80	>75% Grass cover, Good, HSG D
16,424	97	Weighted Average
775		4.72% Pervious Area
15,649		95.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0226	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	95	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	195	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment 11S: (new Subcat)

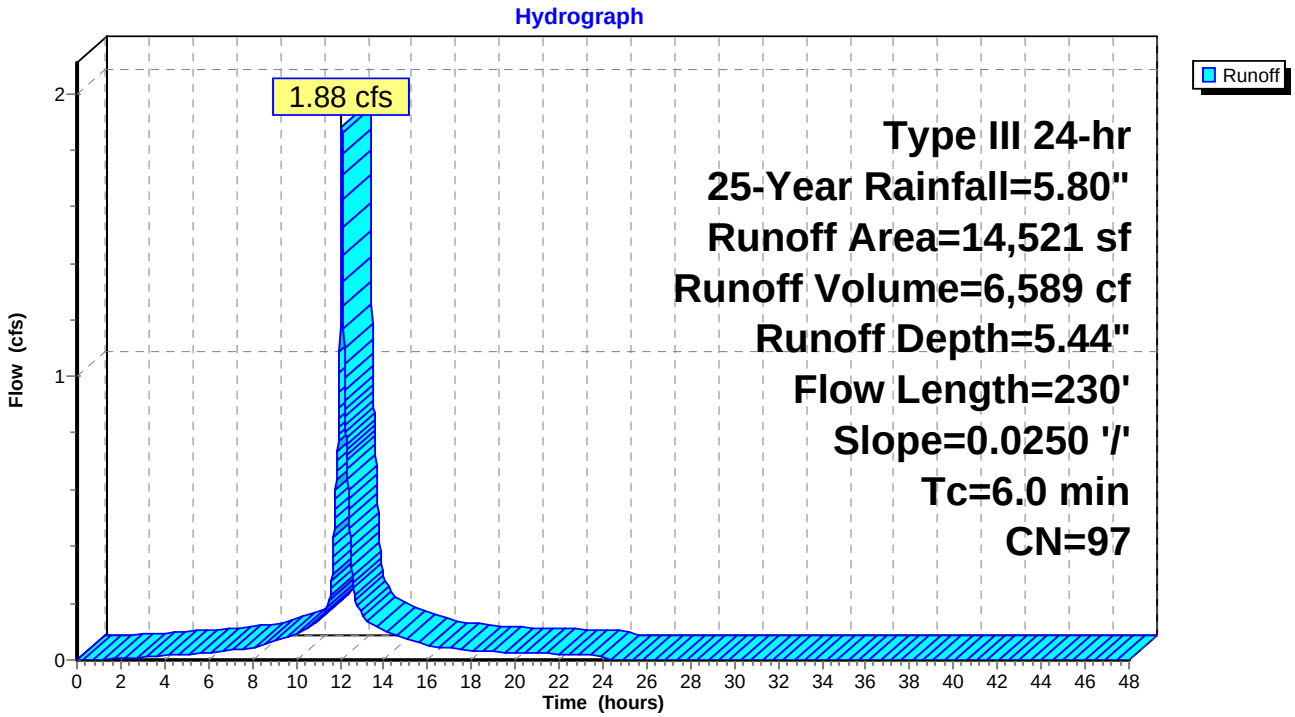
Runoff = 1.88 cfs @ 12.08 hrs, Volume= 6,589 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,962	98	Paved parking, HSG B
11,938	98	Paved parking, HSG D
621	80	>75% Grass cover, Good, HSG D
14,521	97	Weighted Average
621		4.28% Pervious Area
13,900		95.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	130	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	230	Total			

Subcatchment 11S: (new Subcat)



Summary for Subcatchment 12S: (new Subcat)

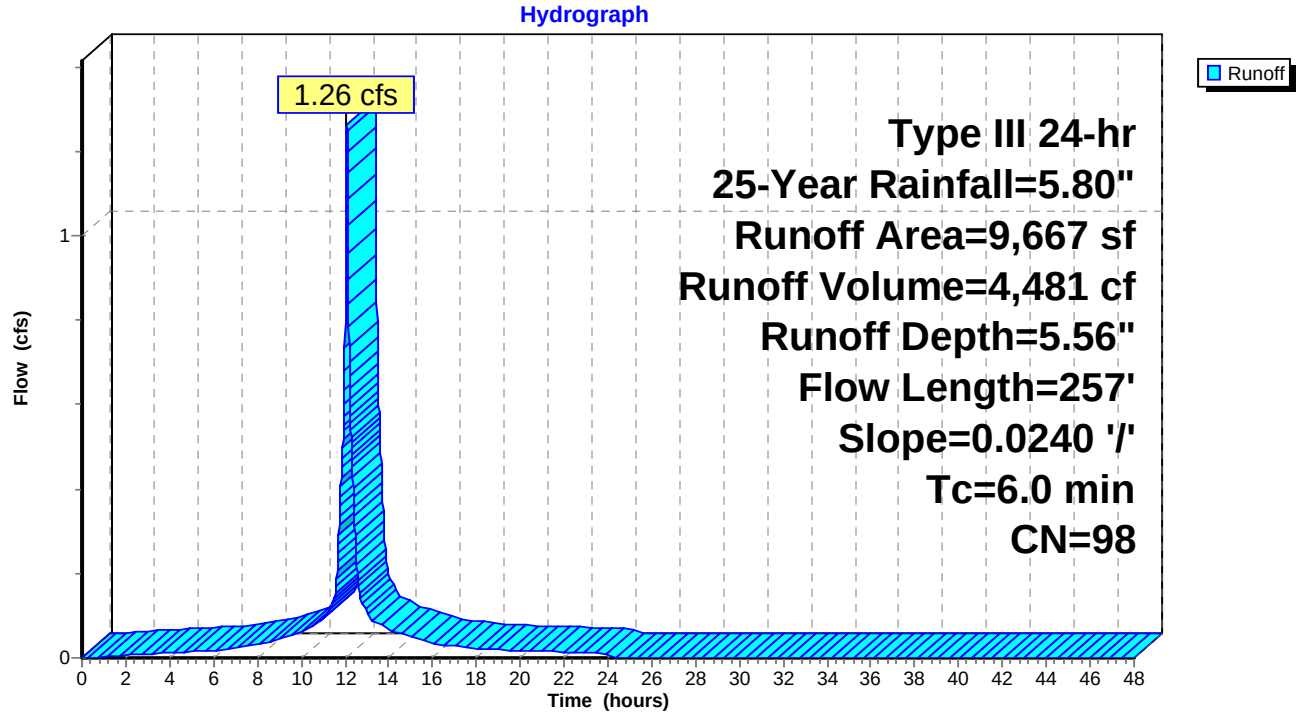
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,861	98	Paved parking, HSG B
6,806	98	Paved parking, HSG D
9,667	98	Weighted Average
9,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0240	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	157	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	257	Total			

Subcatchment 12S: (new Subcat)



Summary for Subcatchment 13S: (new Subcat)

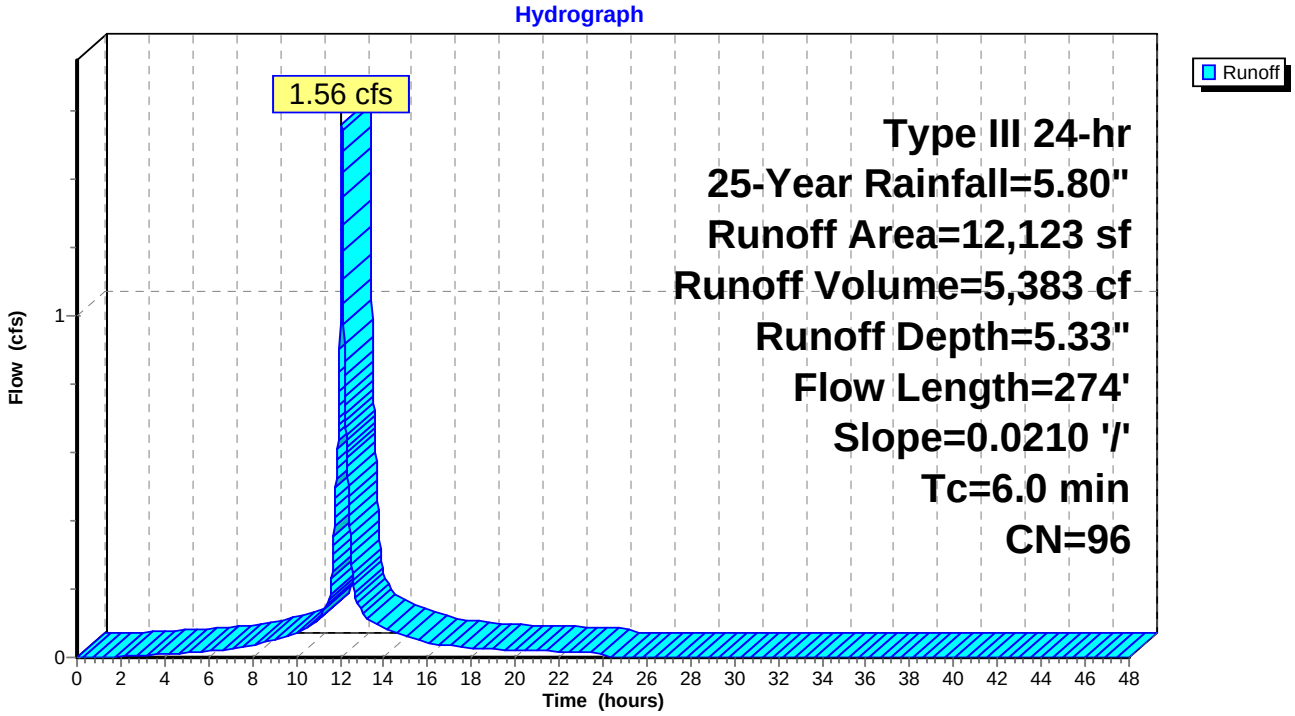
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,383 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
10,776	98	Paved parking, HSG D
1,347	80	>75% Grass cover, Good, HSG D
12,123	96	Weighted Average
1,347		11.11% Pervious Area
10,776		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0210	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.0	174	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	274	Total			

Subcatchment 13S: (new Subcat)



Summary for Subcatchment 14S: (new Subcat)

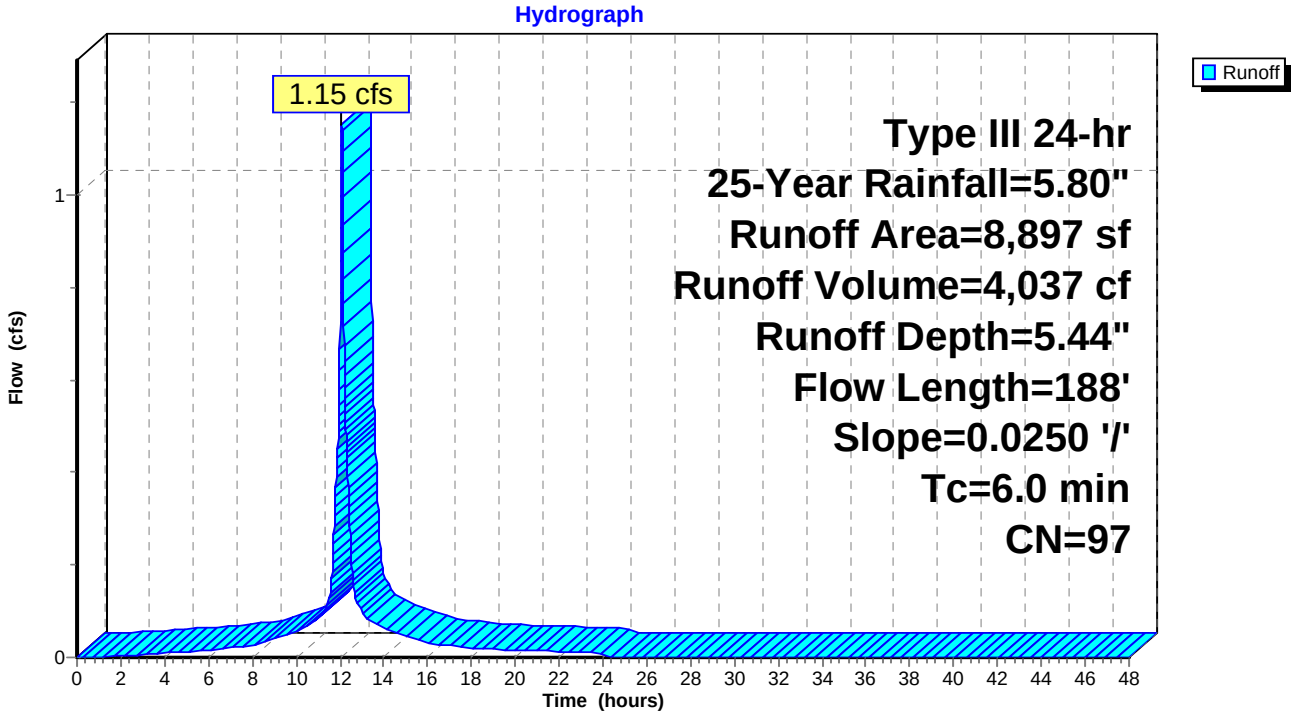
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,037 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,240	98	Paved parking, HSG D
657	80	>75% Grass cover, Good, HSG D
8,897	97	Weighted Average
657		7.38% Pervious Area
8,240		92.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	88	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	188	Total			

Subcatchment 14S: (new Subcat)



Summary for Subcatchment 15S: (new Subcat)

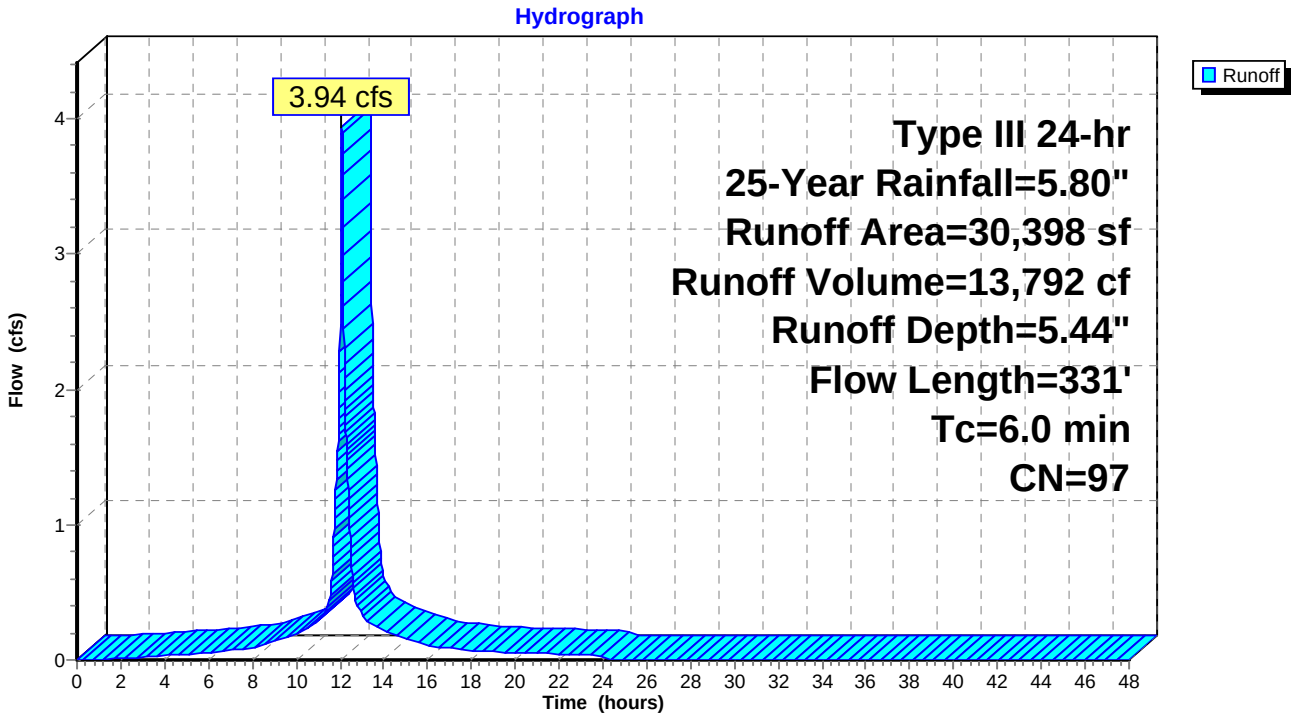
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
104	98	Paved parking, HSG B
28,288	98	Paved parking, HSG D
2,006	80	>75% Grass cover, Good, HSG D
30,398	97	Weighted Average
2,006		6.60% Pervious Area
28,392		93.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0225	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.7	231	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.1					**Direct Entry,**
6.0	331	Total			

Subcatchment 15S: (new Subcat)



Summary for Subcatchment 16S: (new Subcat)

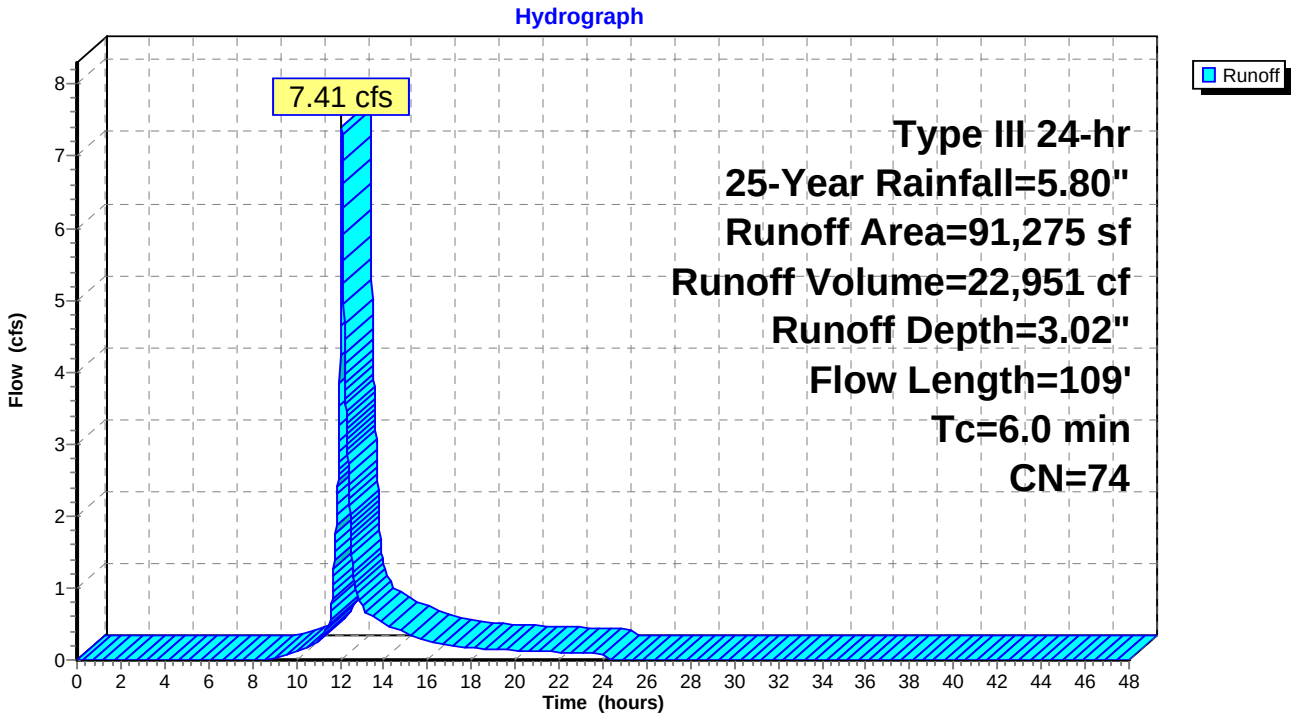
Runoff = 7.41 cfs @ 12.09 hrs, Volume= 22,951 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,956	80	>75% Grass cover, Good, HSG D
91,275	74	Weighted Average
90,383		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 16S: (new Subcat)



Summary for Subcatchment 17S: (new Subcat)

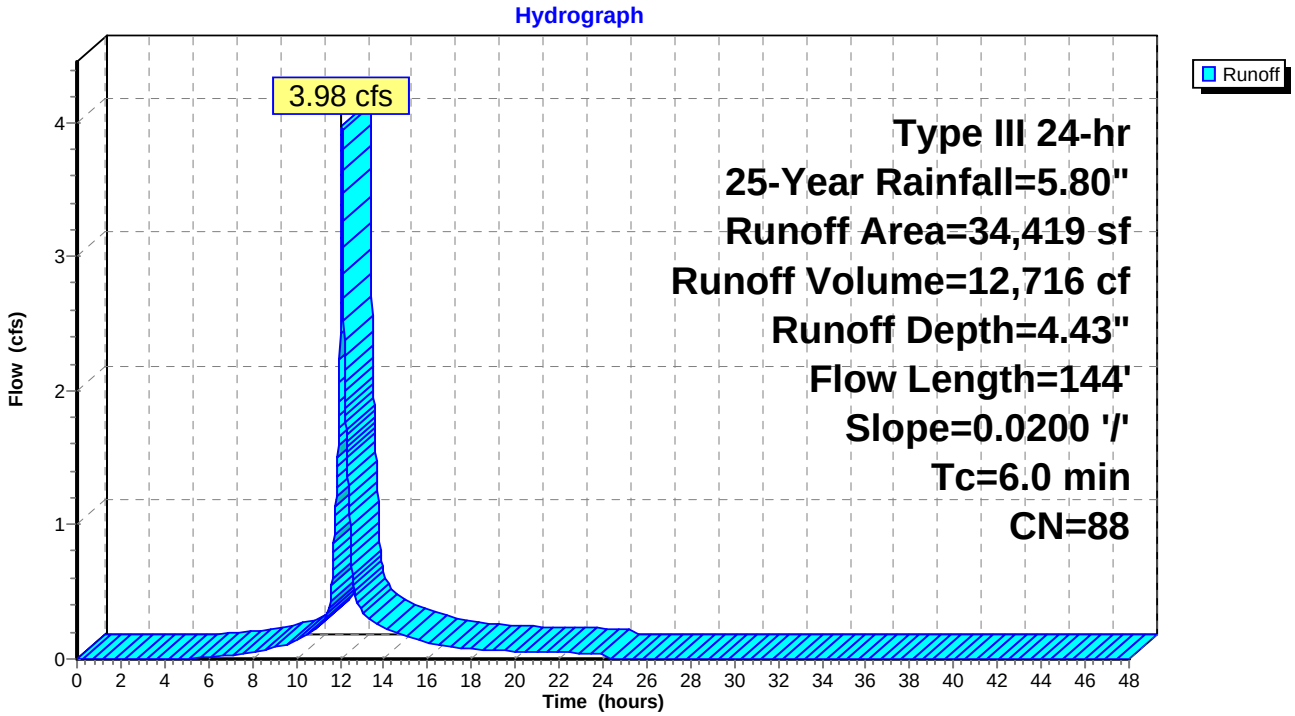
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 17S: (new Subcat)



Summary for Subcatchment Off Site: Off Site Flow

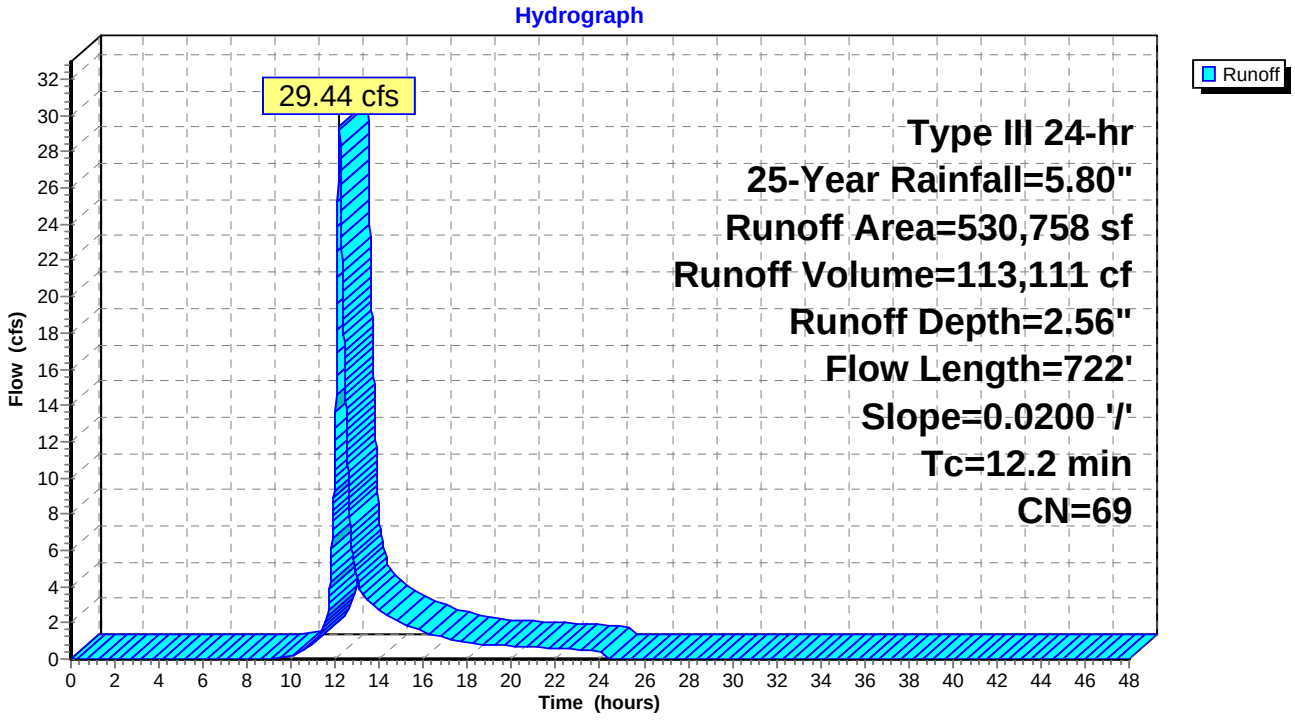
Runoff = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
414,874	61	>75% Grass cover, Good, HSG B
115,884	98	Paved parking, HSG B
530,758	69	Weighted Average
414,874		78.17% Pervious Area
115,884		21.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	722	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment Off Site: Off Site Flow



Summary for Pond 1P: DMH 10162

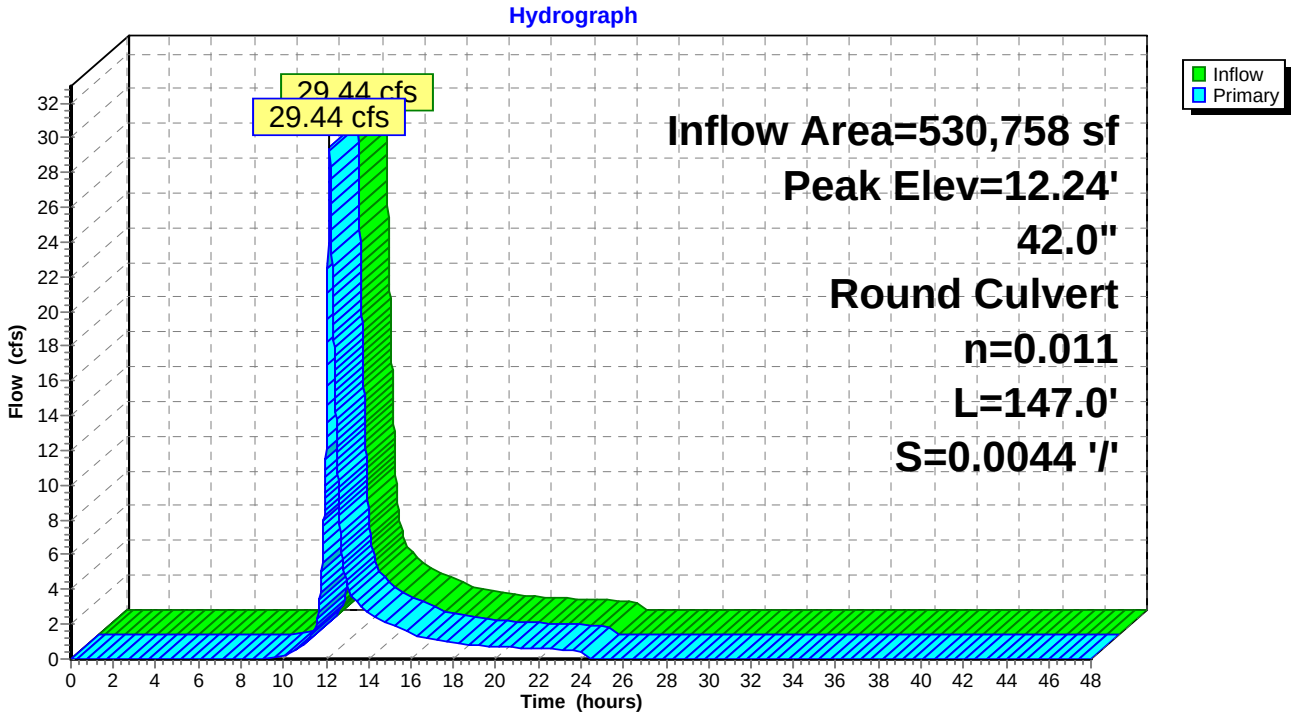
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.24' @ 12.18 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 147.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0044 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=29.33 cfs @ 12.17 hrs HW=12.23' TW=11.63' (Dynamic Tailwater)
1=Culvert (Outlet Controls 29.33 cfs @ 4.40 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB-15

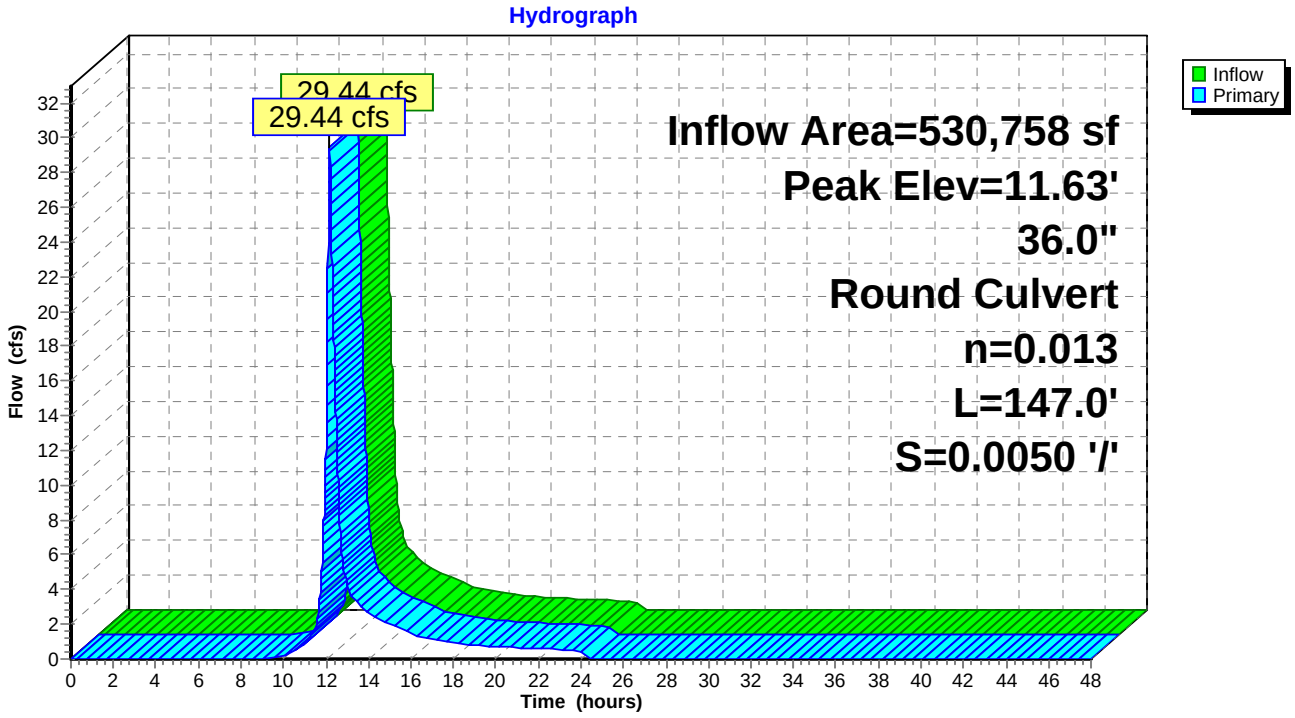
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.63' @ 12.18 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**36.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.39 cfs @ 12.17 hrs HW=11.63' TW=10.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.39 cfs @ 4.16 fps)

Pond 2P: CB-15



Summary for Pond 4P: CBR 1710

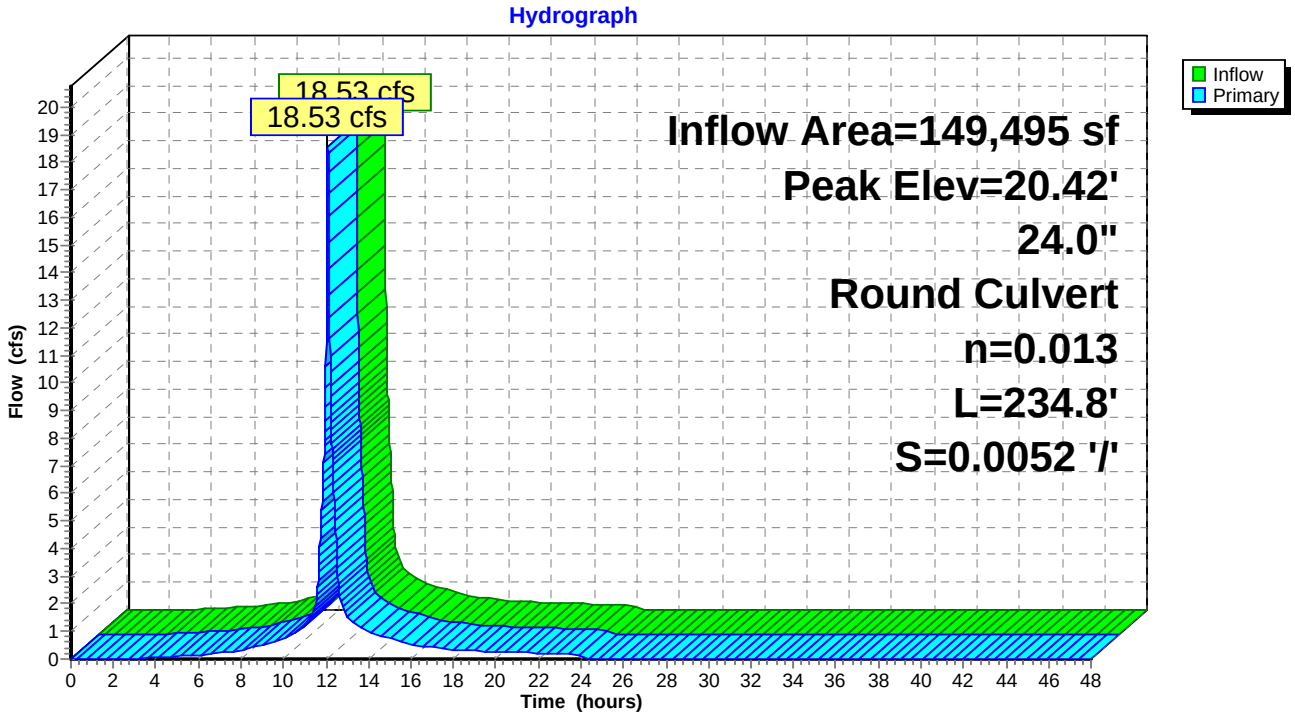
Inflow Area = 149,495 sf, 85.96% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.42' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.59'	**24.0" Round Culvert** L= 234.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.59' / 14.38' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.08 hrs HW=20.37' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 18.20 cfs @ 5.79 fps)

Pond 4P: CBR 1710



Summary for Pond 5P: CB 1668

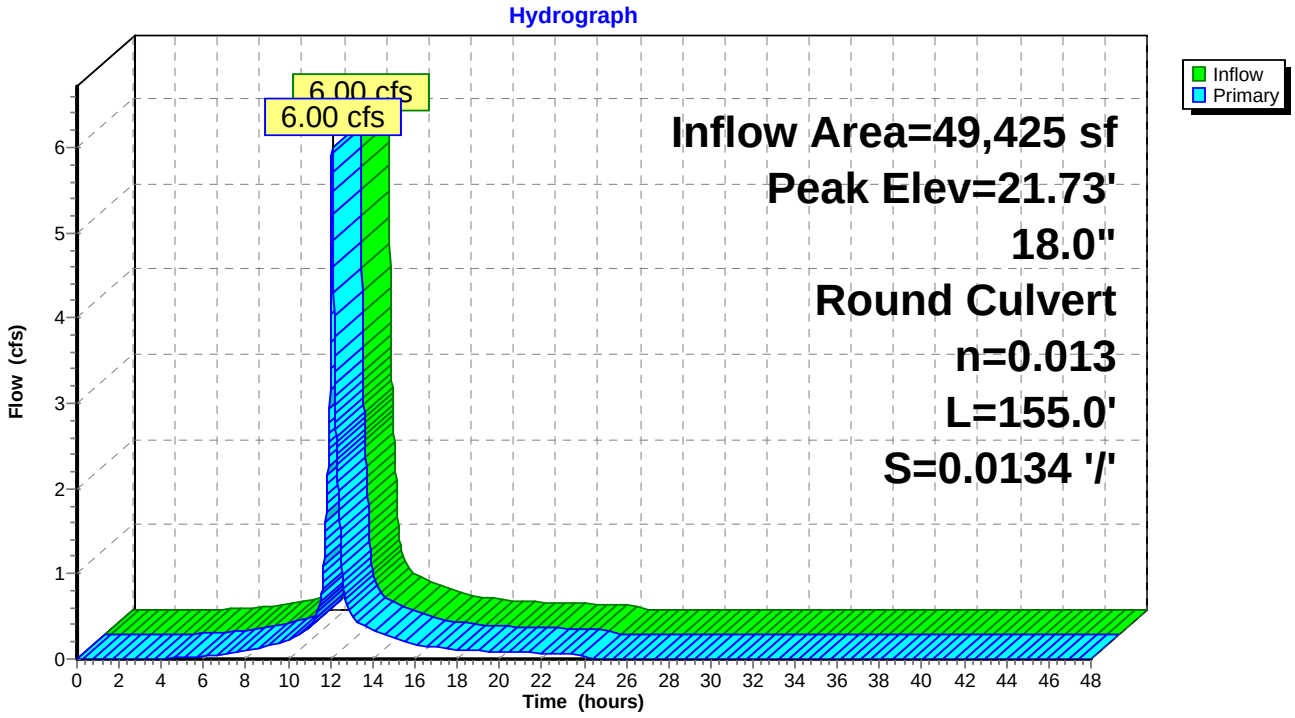
Inflow Area = 49,425 sf, 82.25% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.73' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.88 cfs @ 12.08 hrs HW=21.70' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.88 cfs @ 4.74 fps)

Pond 5P: CB 1668



Summary for Pond 6P: CBR 1709

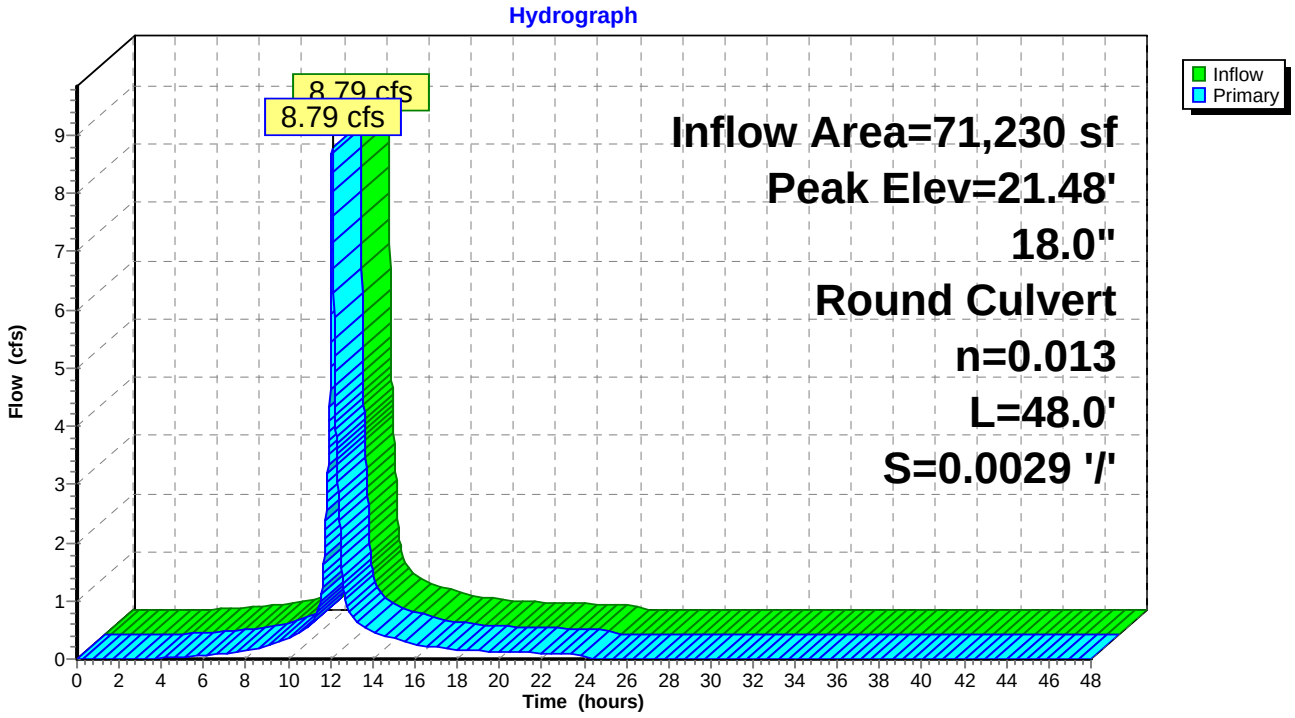
Inflow Area = 71,230 sf, 84.12% Impervious, Inflow Depth = 4.89" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.48' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.08 hrs HW=21.37' TW=20.37' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 8.53 cfs @ 4.83 fps)

Pond 6P: CBR 1709



Summary for Pond 7P: CB 12

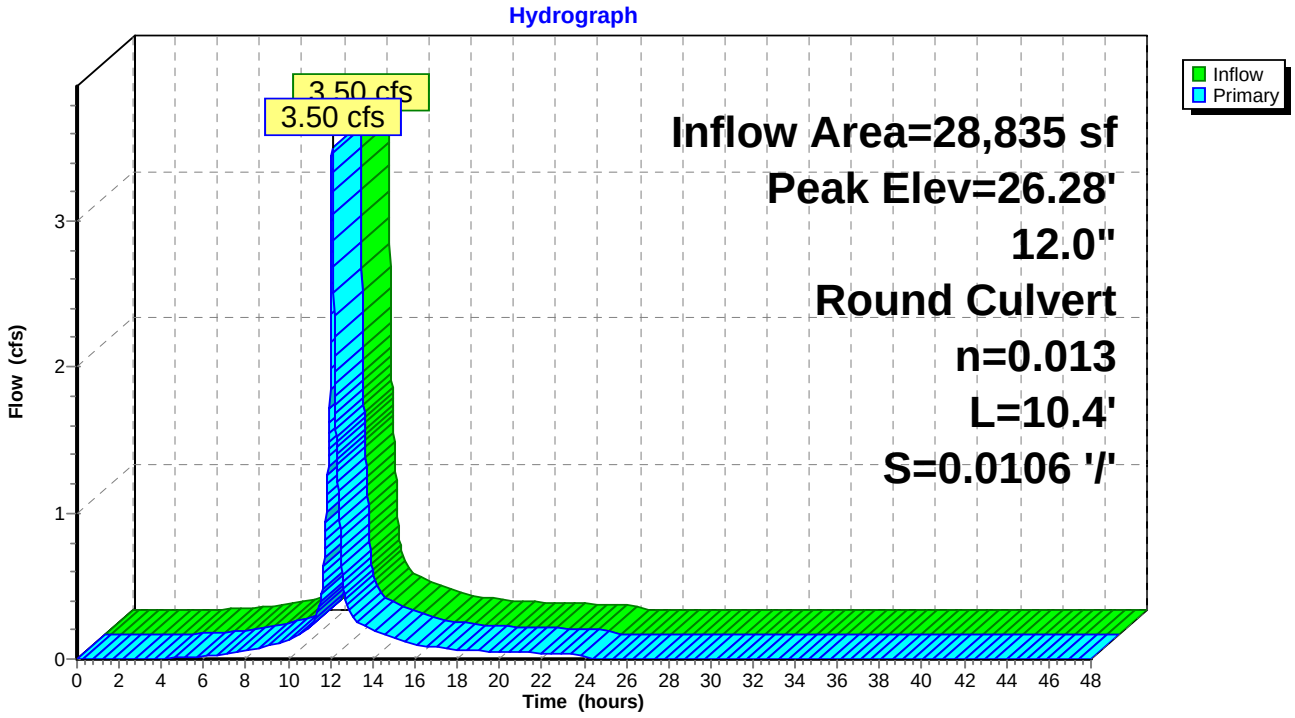
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.28' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.68'	**12.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.68' / 24.57' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=26.27' TW=25.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 4.45 fps)

Pond 7P: CB 12



Summary for Pond 8P: CBR 1708

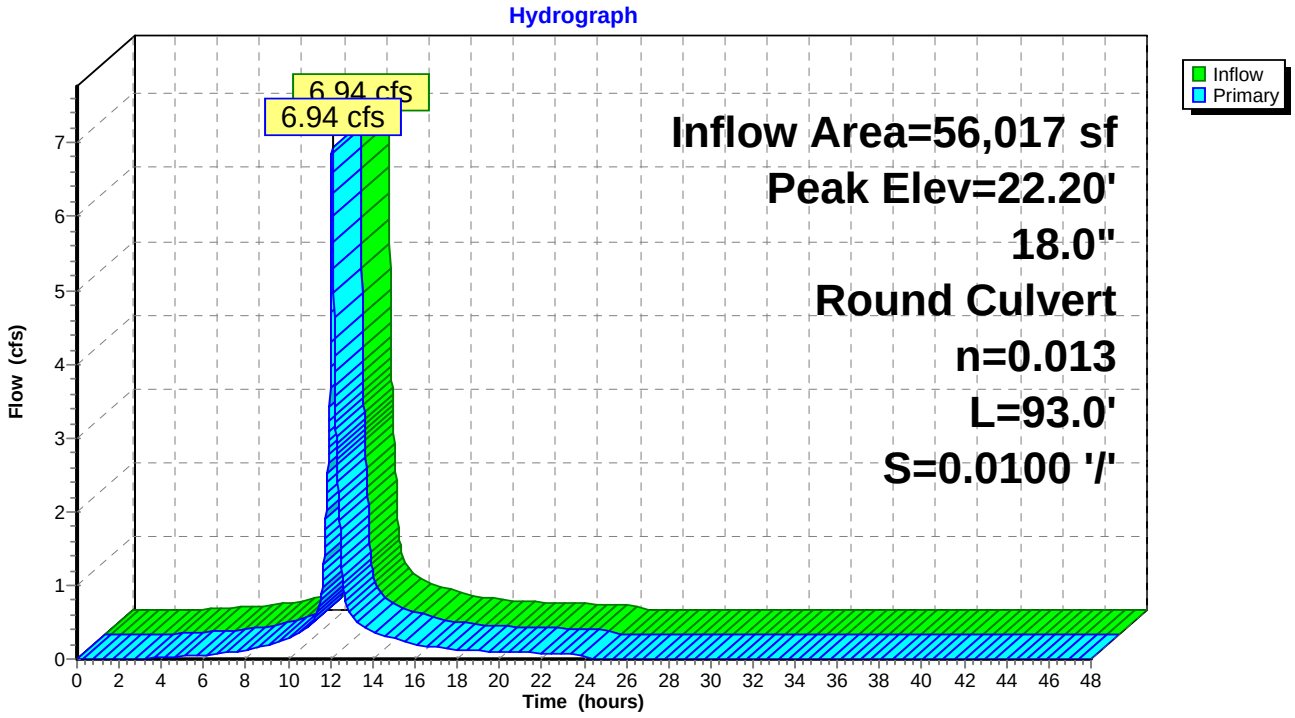
Inflow Area = 56,017 sf, 85.18% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf
Outflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.20' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.36 cfs @ 12.08 hrs HW=22.01' TW=21.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.36 cfs @ 3.60 fps)

Pond 8P: CBR 1708



Summary for Pond 9P: CB-11

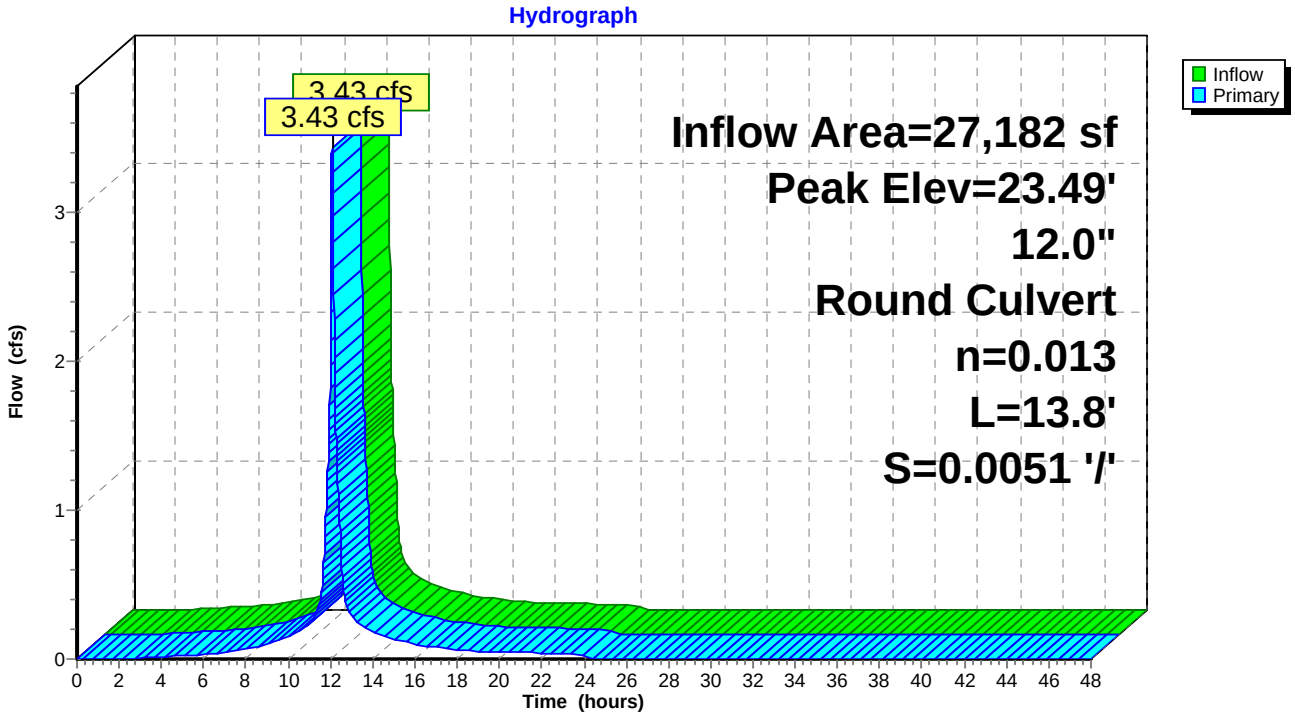
Inflow Area = 27,182 sf, 88.34% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.49' @ 12.10 hrs
Flood Elev= 27.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.47'	**12.0" Round Culvert** L= 13.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.47' / 21.40' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.42 cfs @ 12.08 hrs HW=23.32' TW=22.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.42 cfs @ 4.36 fps)

Pond 9P: CB-11



Summary for Pond 10P: CB-16

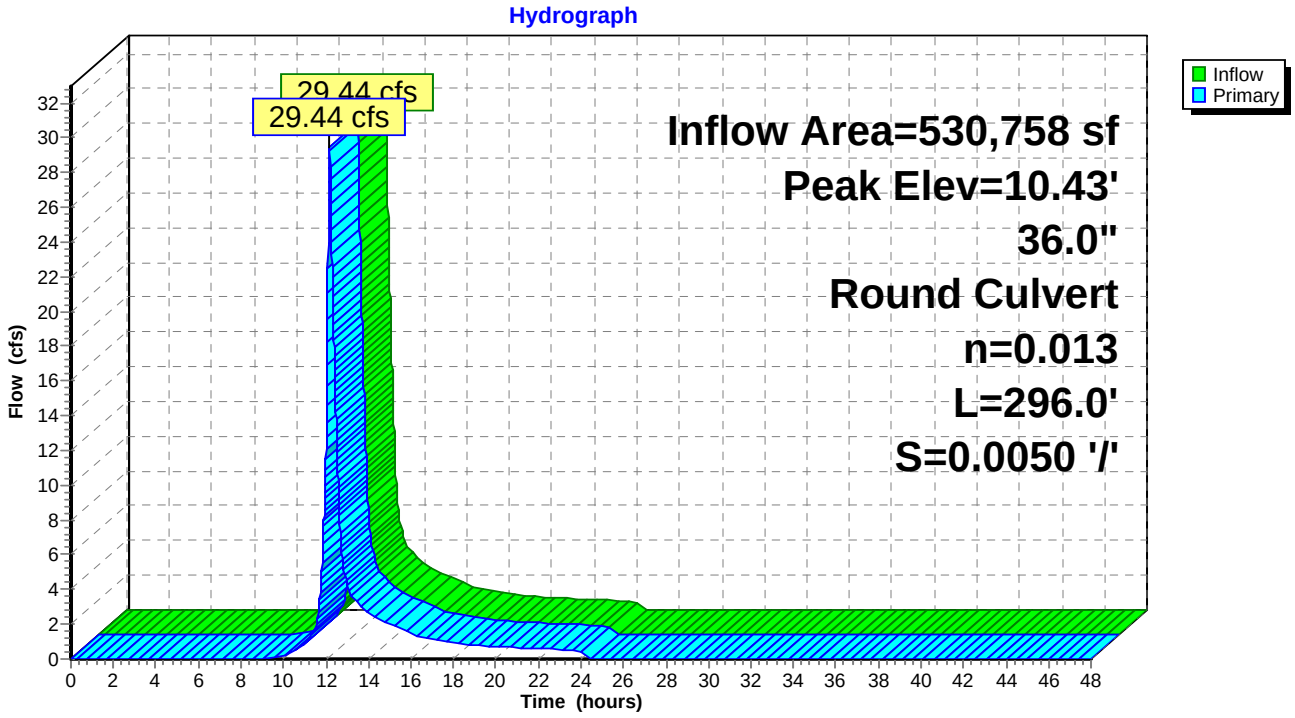
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.43' @ 12.17 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**36.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=10.43' TW=8.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 29.42 cfs @ 5.52 fps)

Pond 10P: CB-16



Summary for Pond 11P: DMH-1

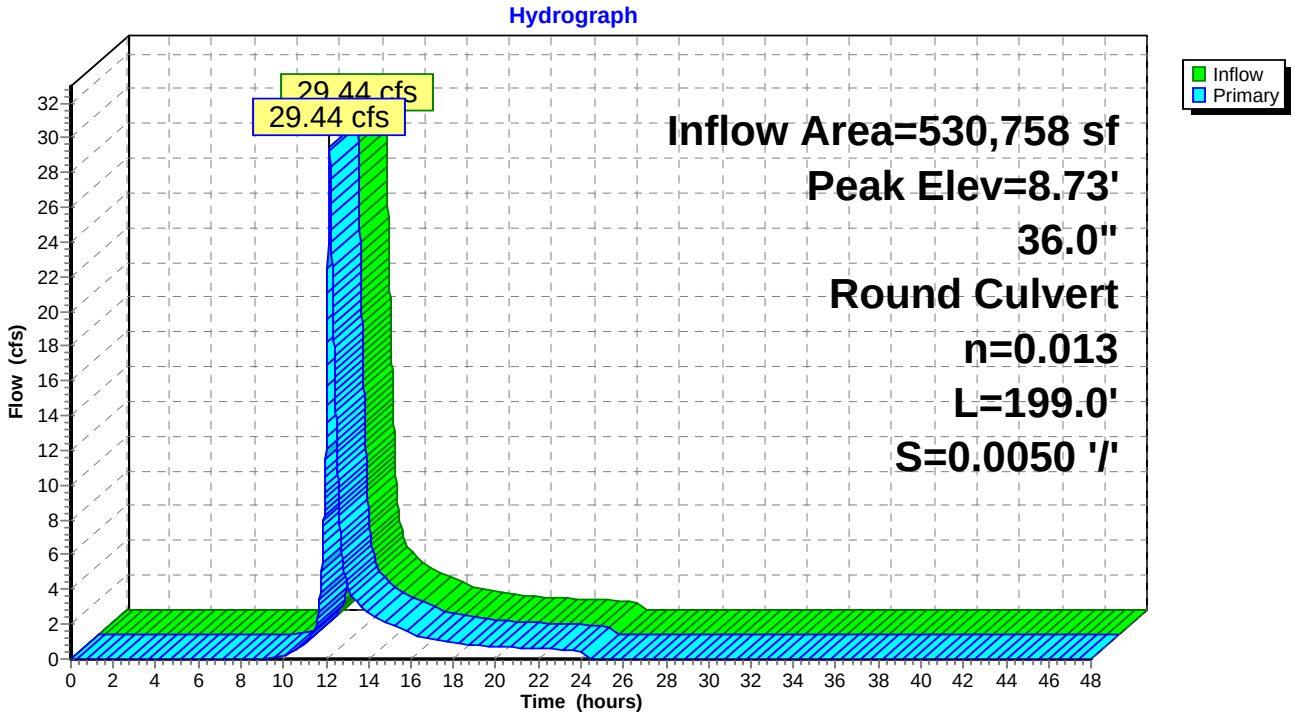
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 8.73' @ 12.17 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**36.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=8.73' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.42 cfs @ 4.41 fps)

Pond 11P: DMH-1



Summary for Pond 12P: CB-4

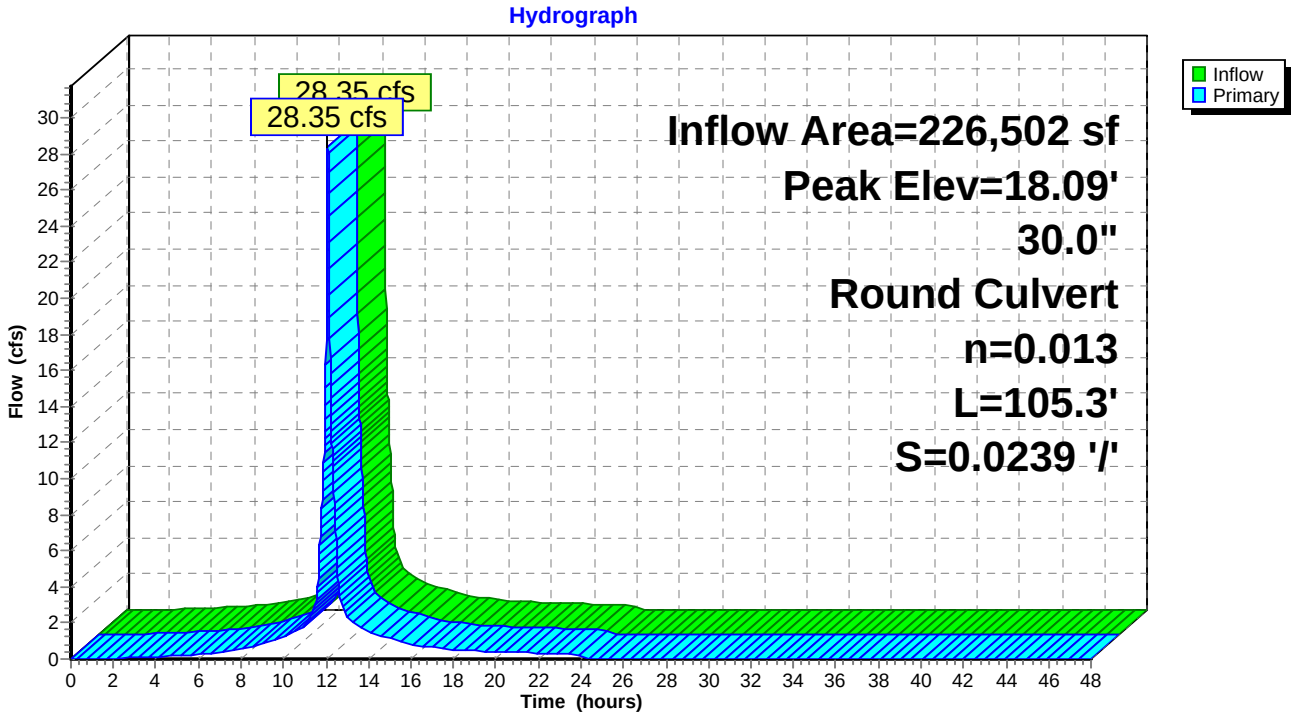
Inflow Area = 226,502 sf, 88.10% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf
Outflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.09' @ 12.09 hrs
Flood Elev= 20.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.28'	**30.0" Round Culvert** L= 105.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.28' / 11.76' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.21 cfs @ 12.08 hrs HW=18.06' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.21 cfs @ 5.75 fps)

Pond 12P: CB-4



Summary for Pond 13P: CB-7

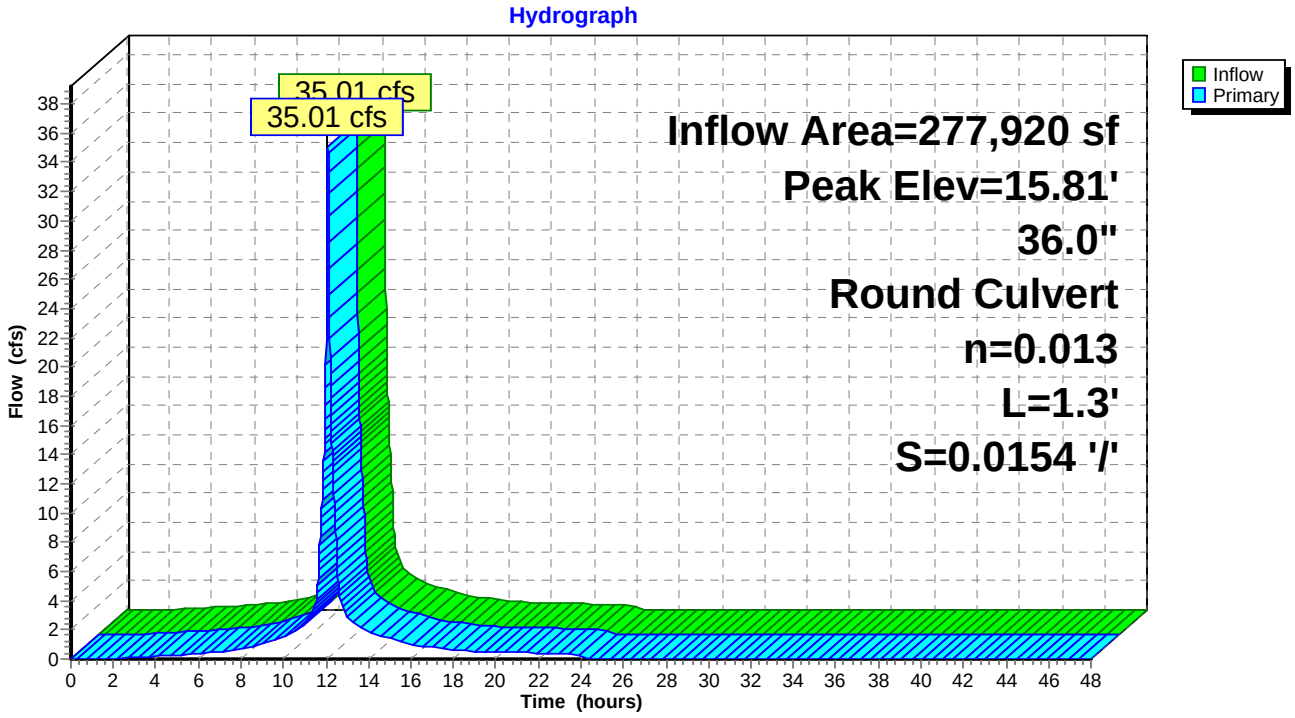
Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.81' @ 12.09 hrs
Flood Elev= 19.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.66'	**36.0" Round Culvert** L= 1.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.66' / 11.64' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=34.41 cfs @ 12.08 hrs HW=15.77' TW=14.13' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 34.41 cfs @ 4.87 fps)

Pond 13P: CB-7



Summary for Pond 14P: ICS-1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.29 cfs @ 12.08 hrs, Volume= 90,438 cf
Secondary = 8.33 cfs @ 12.16 hrs, Volume= 28,409 cf

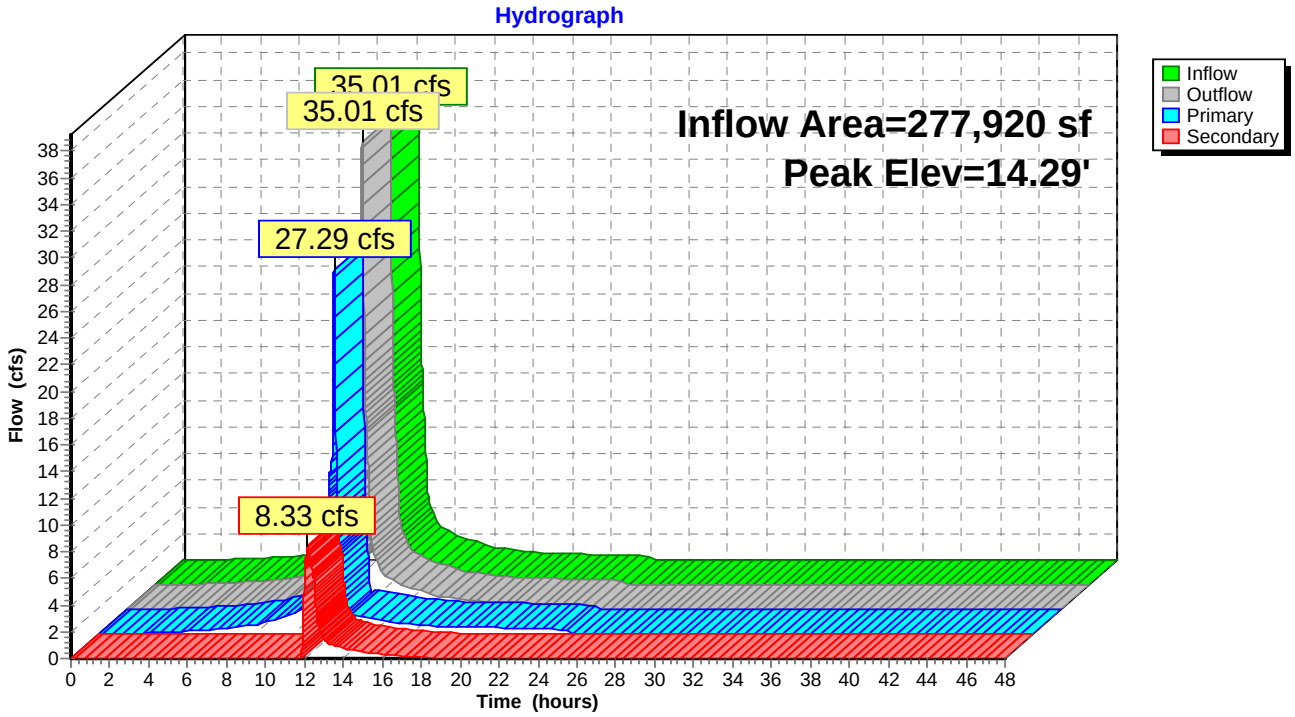
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.29' @ 12.14 hrs
Flood Elev= 19.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.54'	**24.0" Round Culvert X 4.00** L= 2.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.49' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	11.54'	**18.0" Round Bypass Culvert** L= 27.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.00' S= 0.0196 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	13.00'	**6.0' long Overflow Weir** 2 End Contraction(s)

Primary OutFlow Max=27.31 cfs @ 12.08 hrs HW=14.11' TW=13.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.31 cfs @ 2.17 fps)

Secondary OutFlow Max=7.01 cfs @ 12.16 hrs HW=14.28' TW=13.19' (Dynamic Tailwater)
└**2=Bypass Culvert** (Inlet Controls 7.01 cfs @ 3.97 fps)
└**3=Overflow Weir** (Passes 7.01 cfs of 26.50 cfs potential flow)

Pond 14P: ICS-1



Summary for Pond 15P: CB-6

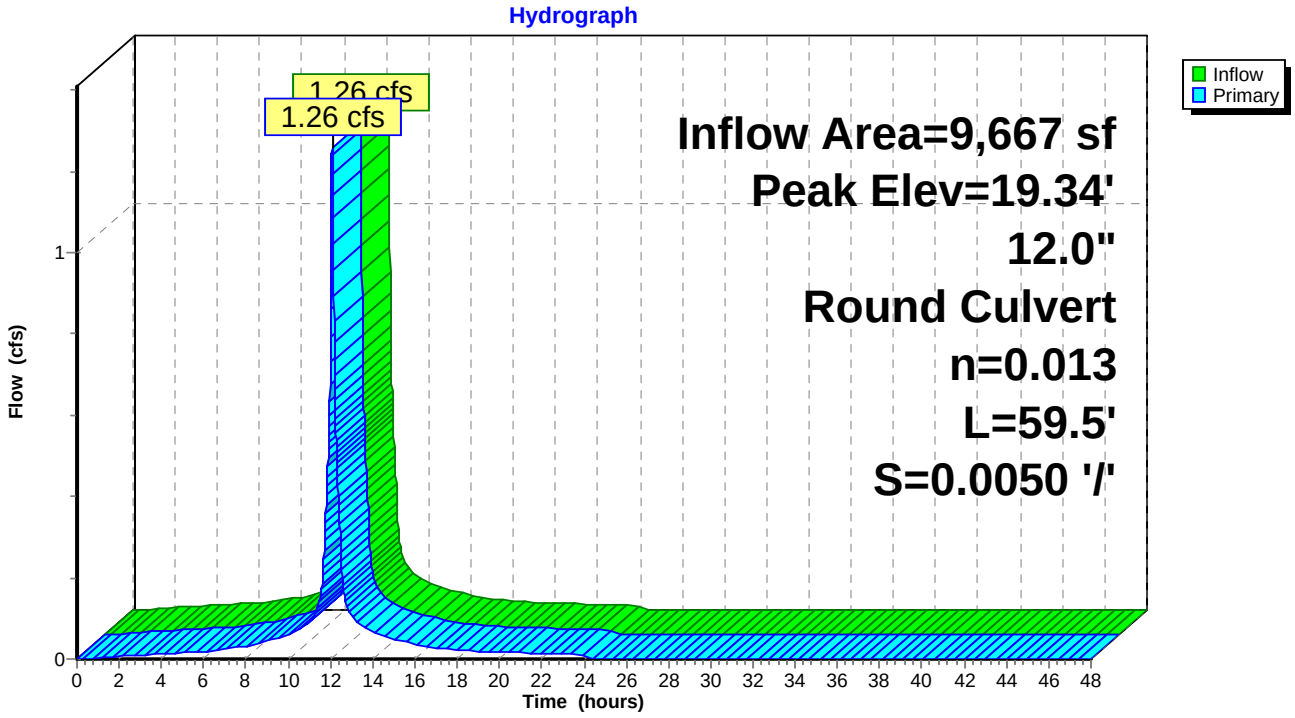
Inflow Area = 9,667 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.34' @ 12.10 hrs
Flood Elev= 20.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.06'	**12.0" Round Culvert** L= 59.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.06' / 14.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=19.19' TW=19.08' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.00 cfs @ 1.28 fps)

Pond 15P: CB-6



Summary for Pond 16P: CB-3

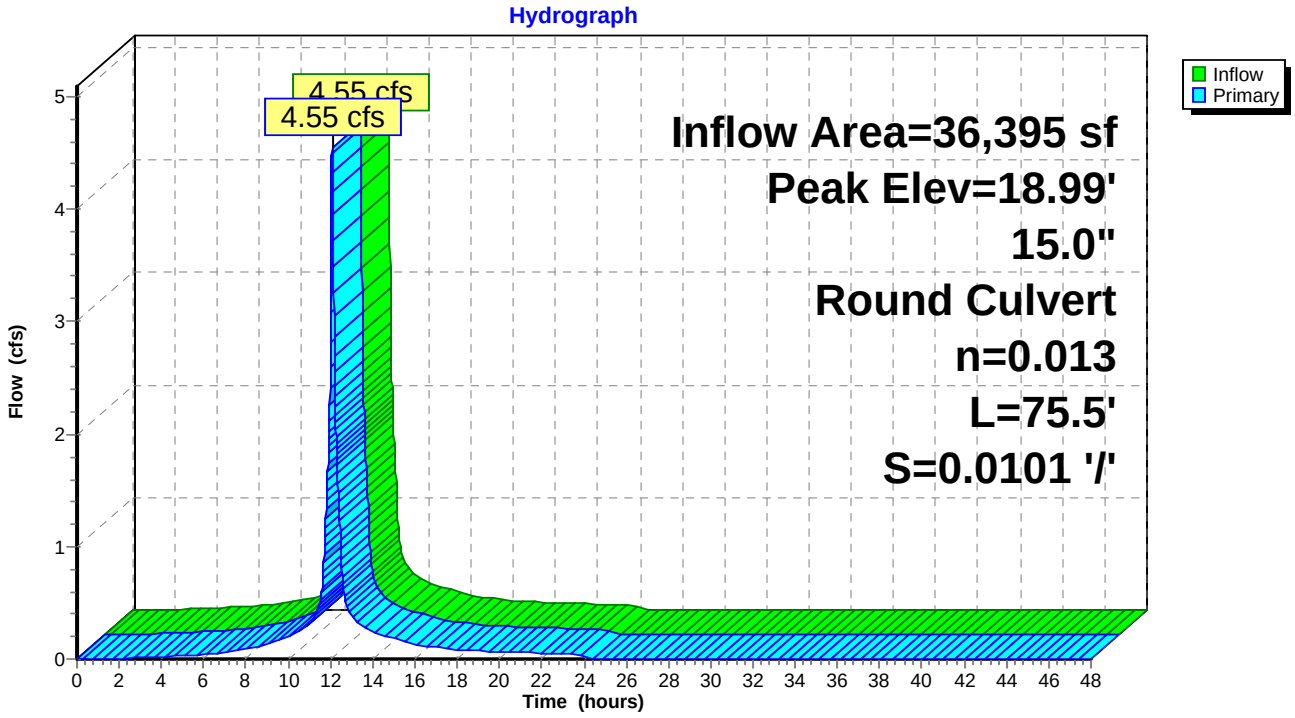
Inflow Area = 36,395 sf, 87.42% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf
Outflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.99' @ 12.09 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.14'	**15.0" Round Culvert** L= 75.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.14' / 14.38' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.36 cfs @ 12.08 hrs HW=18.93' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.36 cfs @ 3.55 fps)

Pond 16P: CB-3



Summary for Pond 17P: CB-2

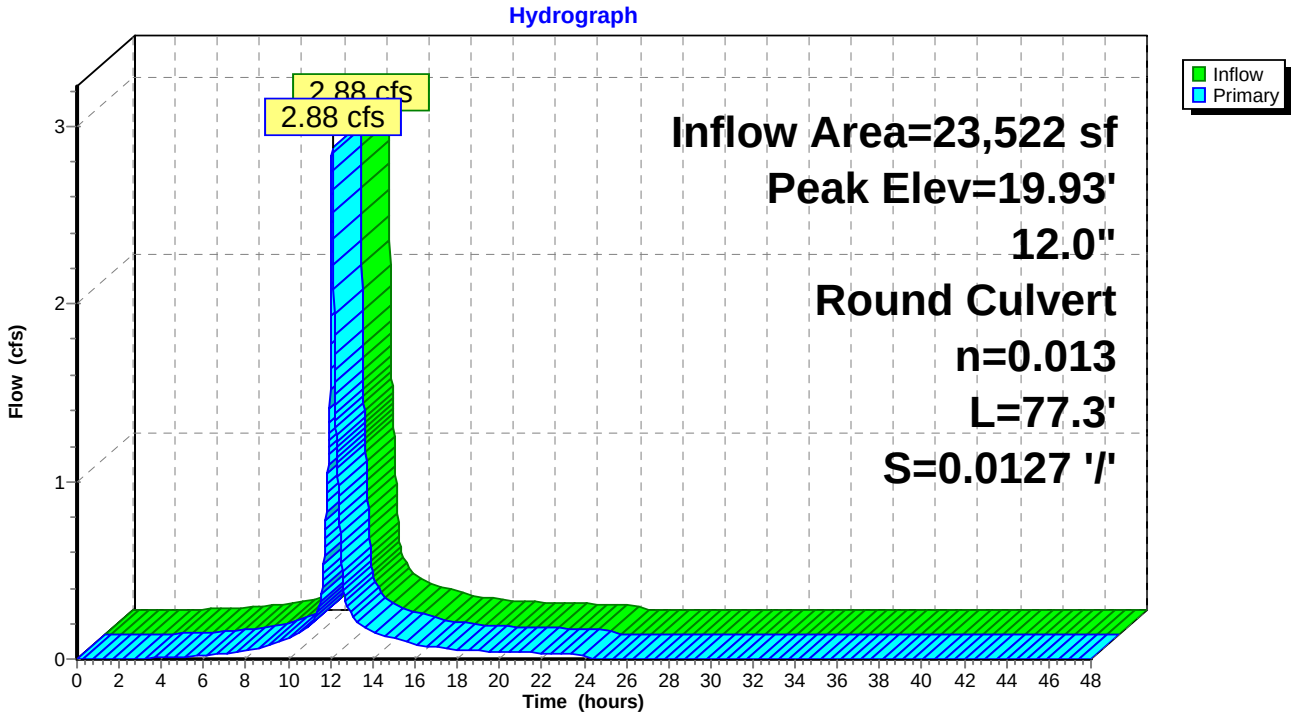
Inflow Area = 23,522 sf, 81.85% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf
Outflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.93' @ 12.10 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.22'	**12.0" Round Culvert** L= 77.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.22' / 15.24' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.08 hrs HW=19.81' TW=18.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.79 cfs @ 3.55 fps)

Pond 17P: CB-2



Summary for Pond 18P: CB-1

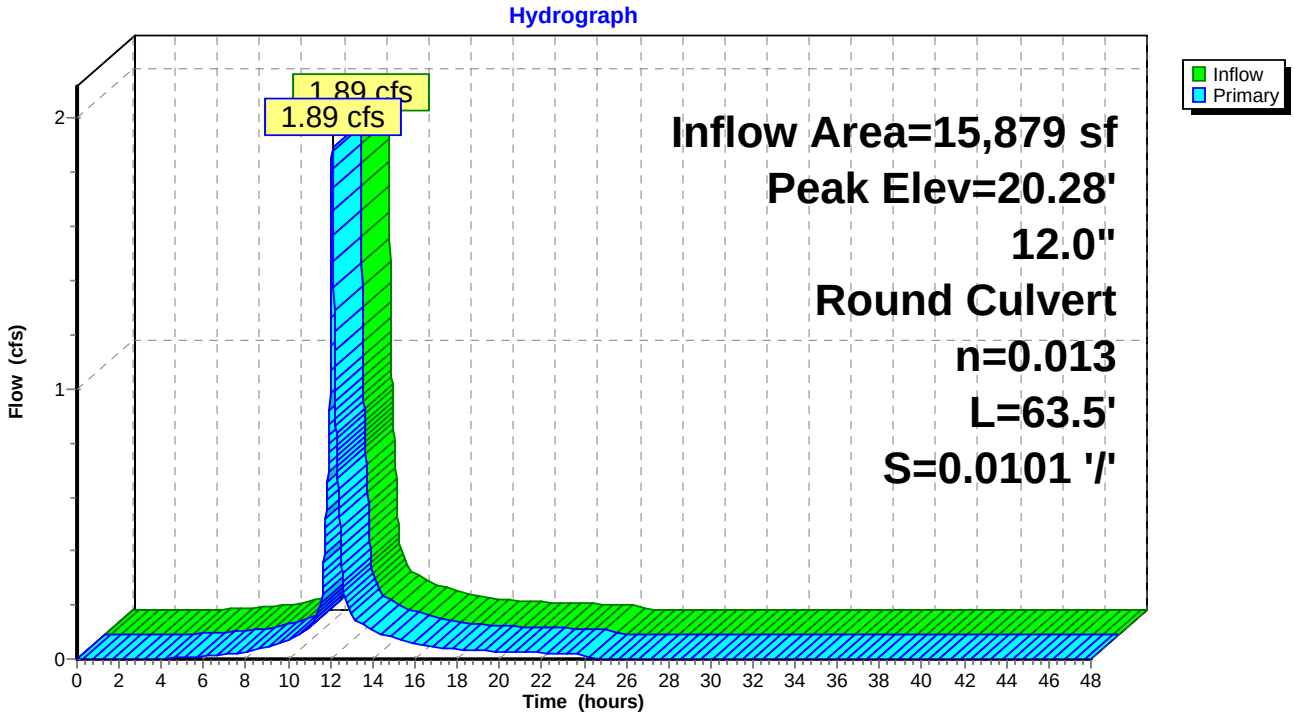
Inflow Area = 15,879 sf, 76.74% Impervious, Inflow Depth = 4.65" for 25-Year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.28' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.96'	**12.0" Round Culvert** L= 63.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.96' / 16.32' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.09 hrs HW=20.13' TW=19.83' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.64 cfs @ 2.09 fps)

Pond 18P: CB-1



Summary for Pond 19P: CB-8

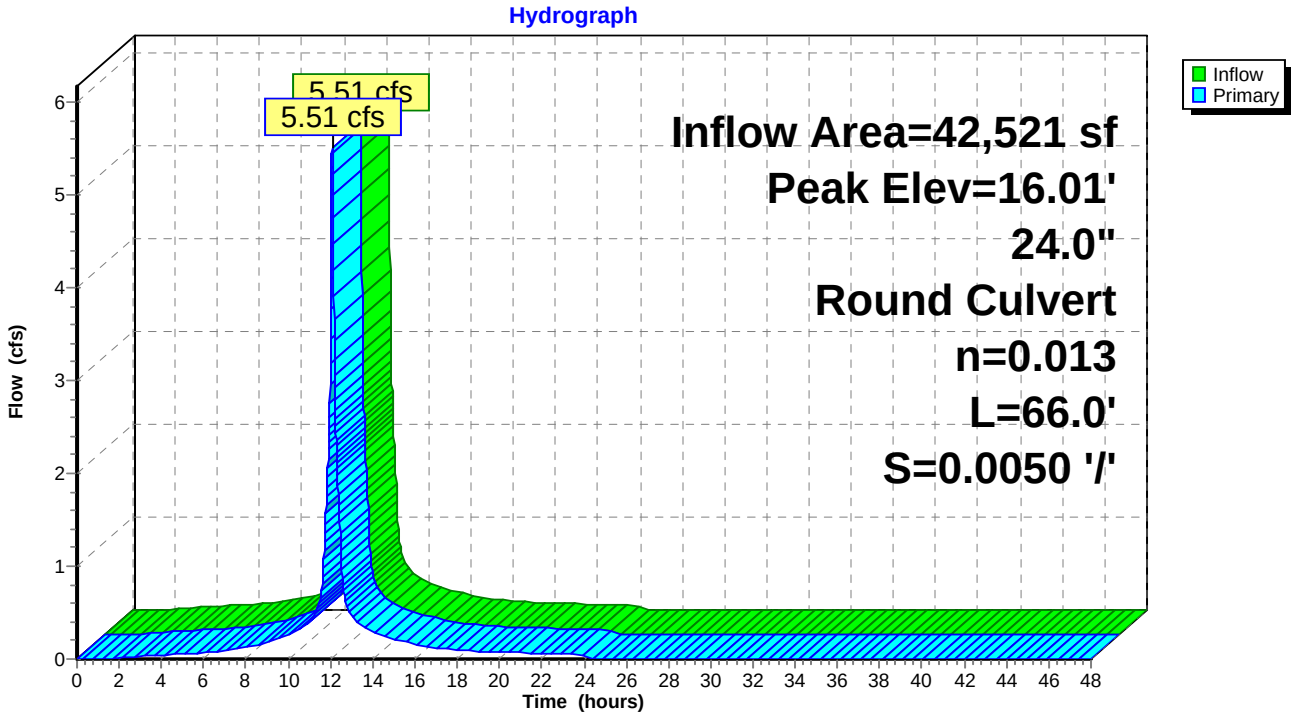
Inflow Area = 42,521 sf, 92.11% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf
Outflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.01' @ 12.09 hrs
Flood Elev= 18.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.09'	**24.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.09' / 11.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.29 cfs @ 12.08 hrs HW=15.96' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.29 cfs @ 1.69 fps)

Pond 19P: CB-8



Summary for Pond 20P: CB-9

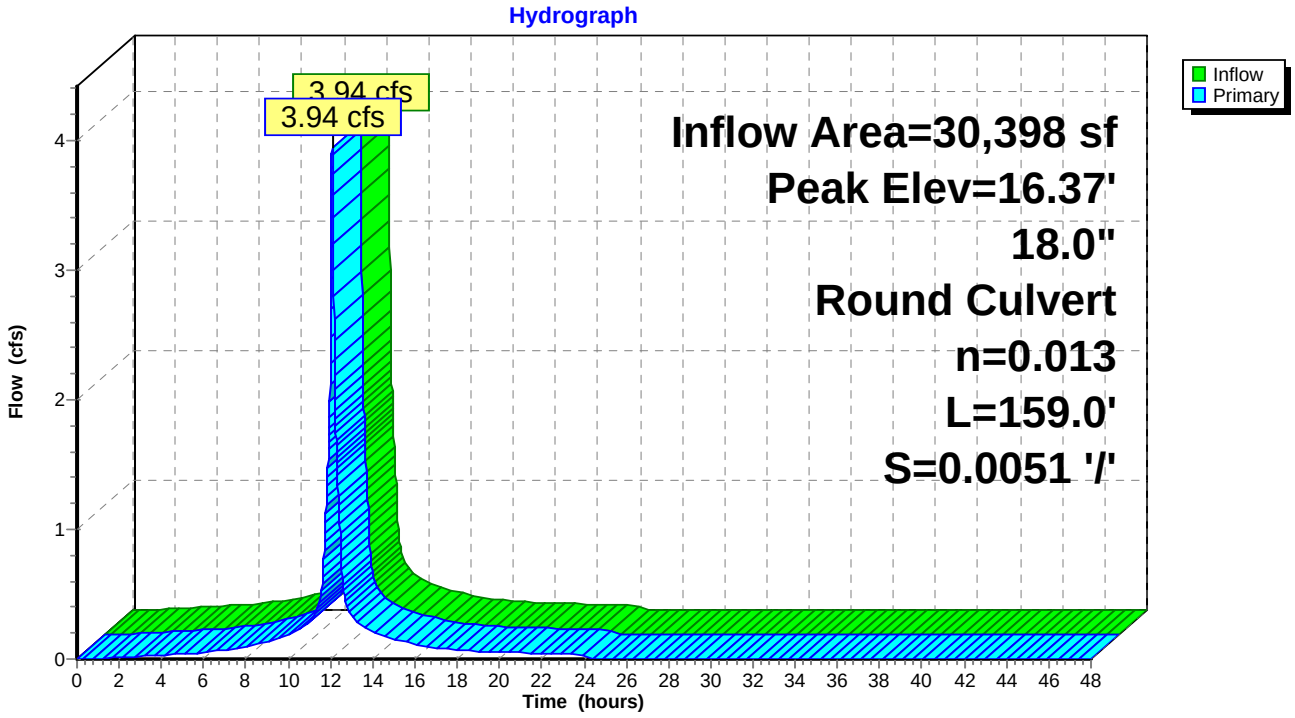
Inflow Area = 30,398 sf, 93.40% Impervious, Inflow Depth = 5.44" for 25-Year event
Inflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf
Outflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.37' @ 12.10 hrs
Flood Elev= 16.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**18.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.00' / 12.19' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=16.26' TW=15.96' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.50 cfs @ 1.98 fps)

Pond 20P: CB-9



Summary for Pond 21P: DMH-2

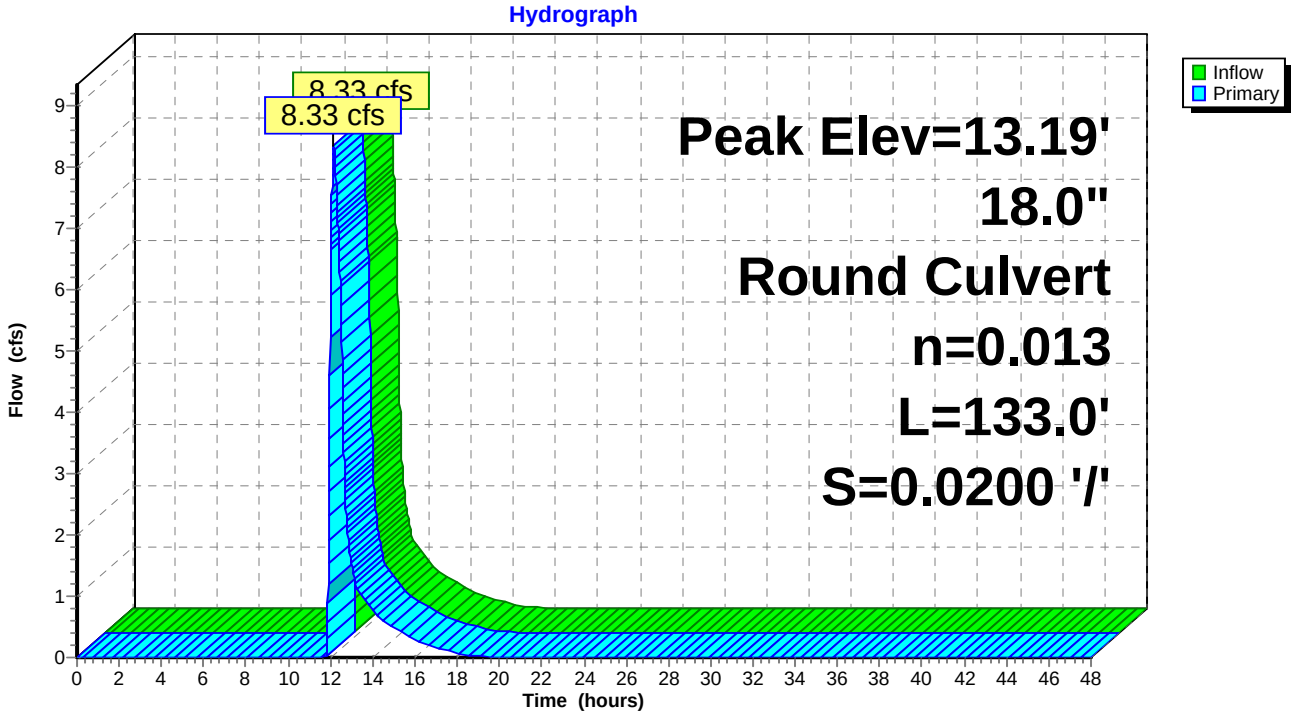
Inflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf
Outflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.19' @ 12.16 hrs
Flood Elev= 18.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.90'	**18.0" Round Culvert** L= 133.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.90' / 8.24' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.33 cfs @ 12.16 hrs HW=13.19' TW=10.24' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.33 cfs @ 4.71 fps)

Pond 21P: DMH-2



Summary for Pond 22P: DMH-3

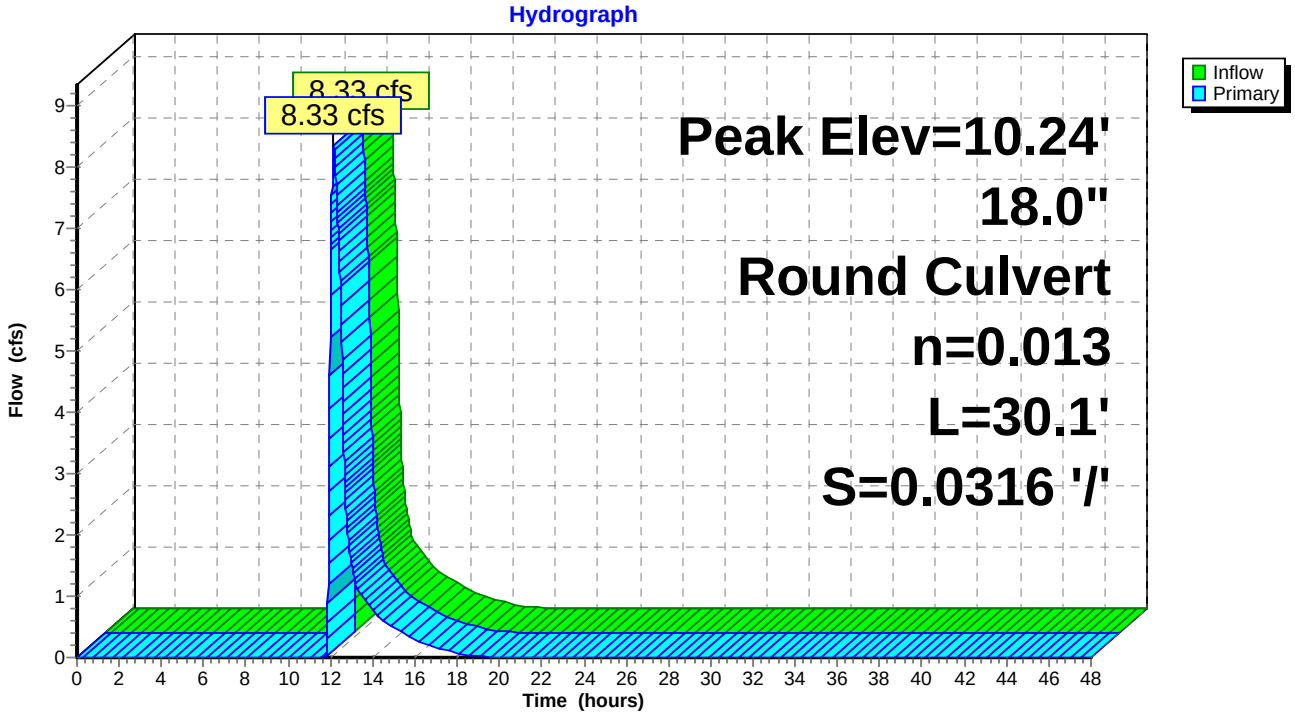
Inflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf
Outflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.24' @ 12.16 hrs
Flood Elev= 17.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**18.0" Round Culvert** L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.95' / 7.00' S= 0.0316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.33 cfs @ 12.16 hrs HW=10.24' TW=7.31' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.33 cfs @ 4.71 fps)

Pond 22P: DMH-3



Summary for Pond 23P: CBR 1380

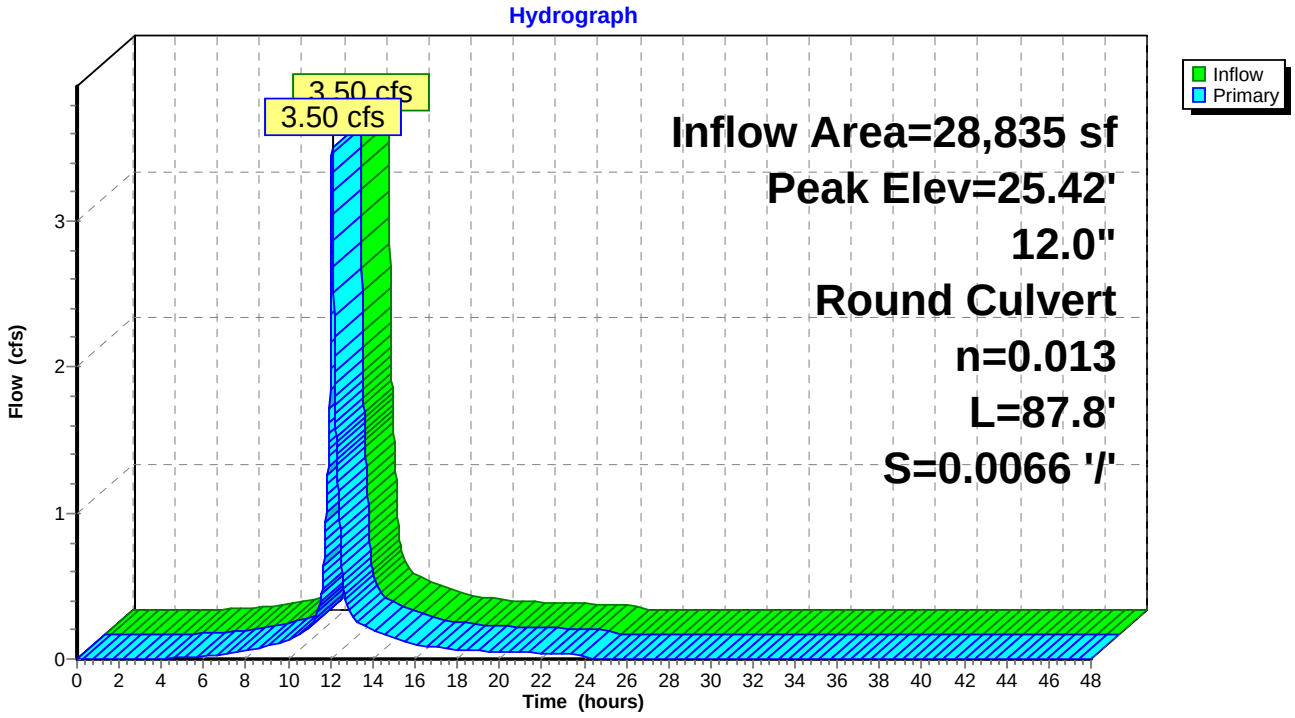
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.42' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.69'	**12.0" Round Culvert** L= 87.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.69' / 23.11' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=25.42' TW=23.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.50 cfs @ 4.45 fps)

Pond 23P: CBR 1380



Summary for Pond 25P: CBR 2113

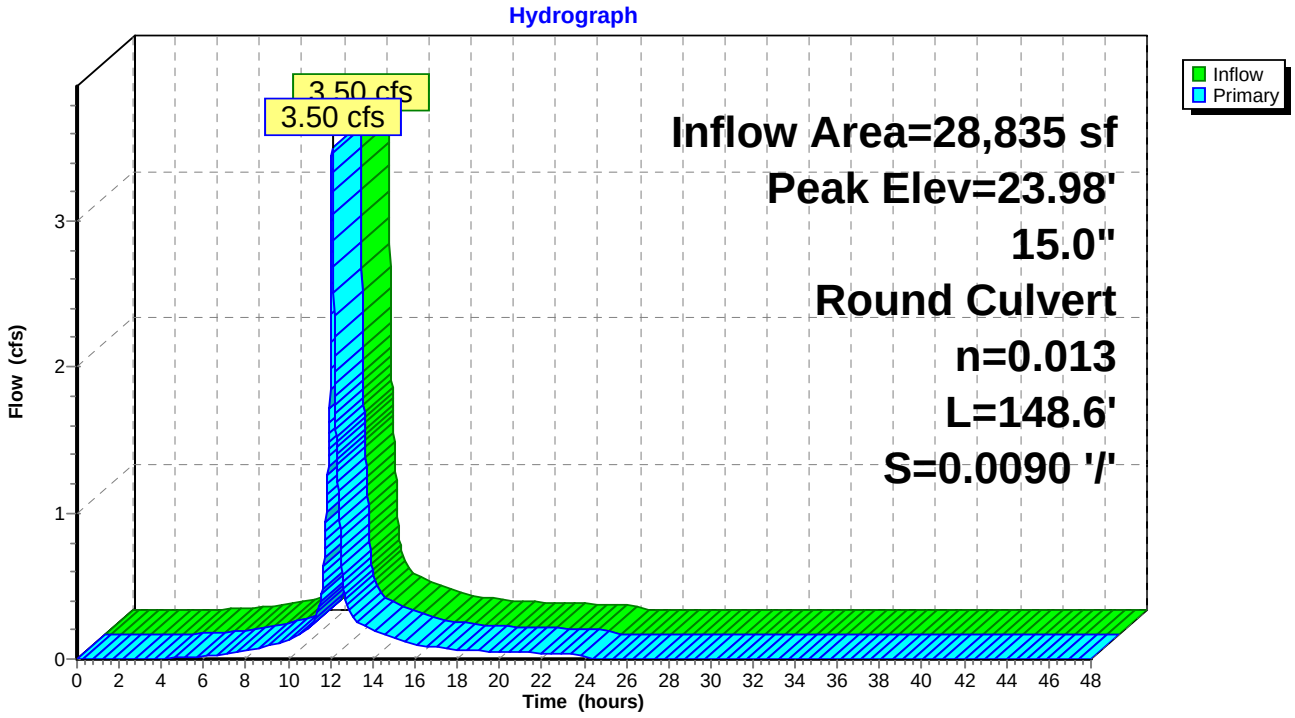
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.98' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=23.98' TW=22.02' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 2.92 fps)

Pond 25P: CBR 2113



Summary for Pond 26P: CB-5

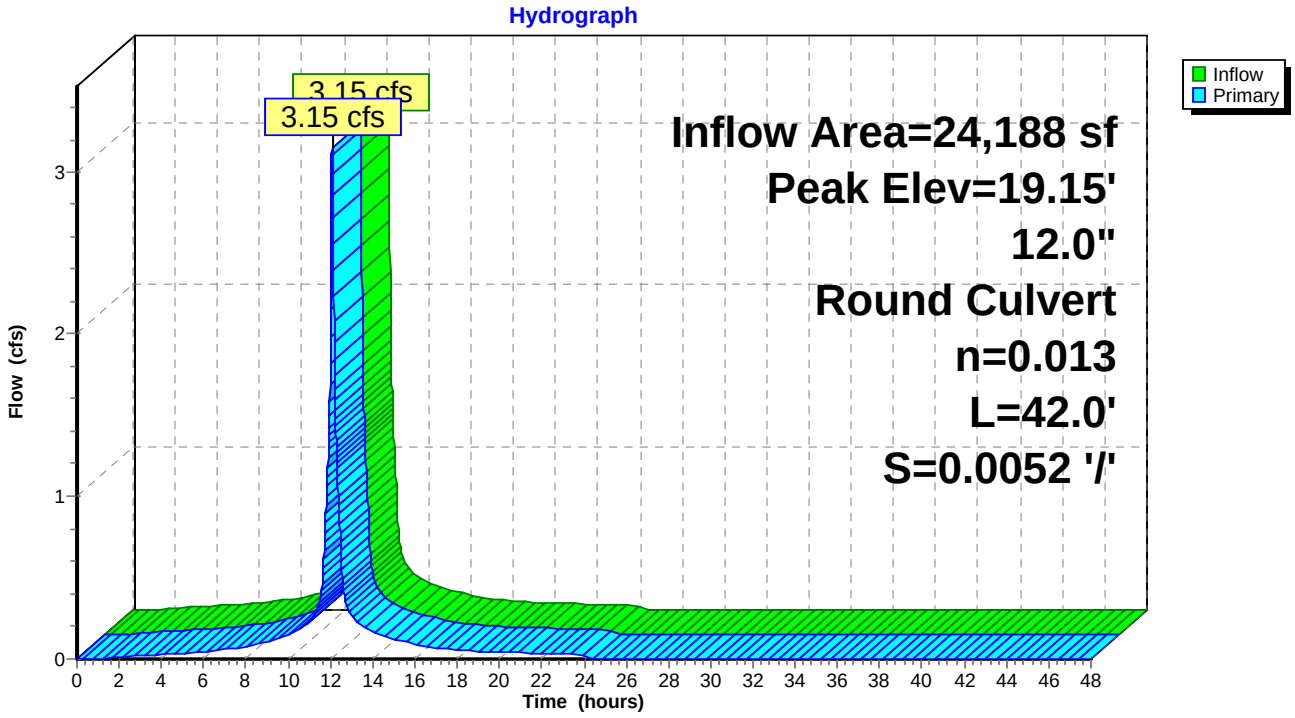
Inflow Area = 24,188 sf, 97.43% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf
Outflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.15' @ 12.09 hrs
Flood Elev= 20.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.66'	**12.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.66' / 14.44' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=19.08' TW=18.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.85 fps)

Pond 26P: CB-5



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 403,614 sf, 67.68% Impervious, Inflow Depth = 4.59" for 25-Year event
Inflow = 31.43 cfs @ 12.12 hrs, Volume= 154,517 cf
Outflow = 31.05 cfs @ 12.14 hrs, Volume= 154,517 cf, Atten= 1%, Lag= 1.3 min
Primary = 25.46 cfs @ 12.14 hrs, Volume= 150,582 cf
Secondary = 5.60 cfs @ 12.14 hrs, Volume= 3,935 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.31' @ 12.14 hrs Surf.Area= 2,875 sf Storage= 2,487 cf
Flood Elev= 9.00' Surf.Area= 3,742 sf Storage= 4,763 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min (966.5 - 966.0)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	4,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

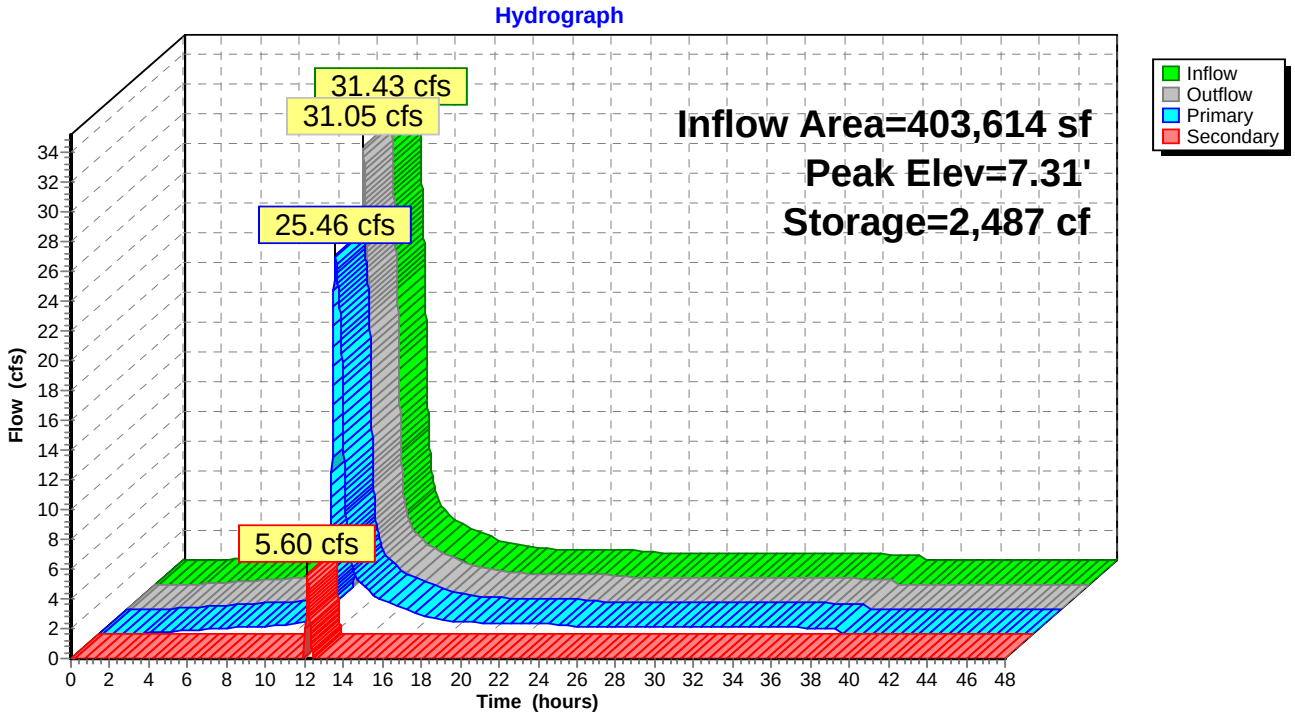
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	2,481	1,651	1,651
8.00	3,742	3,112	4,763

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=25.45 cfs @ 12.14 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 25.45 cfs @ 5.69 fps)

Secondary OutFlow Max=5.59 cfs @ 12.14 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 5.59 cfs @ 1.38 fps)

Pond EX WTLND: Existing Wetland



Summary for Pond SSF-1: Subsurface Sand Filter 1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 3.90" for 25-Year event
Inflow = 27.29 cfs @ 12.08 hrs, Volume= 90,438 cf
Outflow = 13.47 cfs @ 12.18 hrs, Volume= 90,441 cf, Atten= 51%, Lag= 6.0 min
Primary = 13.47 cfs @ 12.18 hrs, Volume= 90,441 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.17' @ 12.18 hrs Surf.Area= 20,084 sf Storage= 36,291 cf
Flood Elev= 19.43' Surf.Area= 20,269 sf Storage= 38,911 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 322.4 min (1,082.6 - 760.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.99'	19,065 cf	**133.00'W x 137.78'L x 3.50'H Field A Z=1.0** 67,509 cf Overall - 19,846 cf Embedded = 47,663 cf x 40.0% Voids
#2A	11.49'	19,846 cf	**ADS_StormTech SC-740 +Cap** x 432 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Rows of 18 Chambers
		38,911 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**24.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.00' / 7.00' S= 0.0294 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	8.15'	**3.0" Vert. UD Orifice** C= 0.600
#3	Device 2	8.15'	**6.0" Round Header Pipe** L= 3.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.10' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#4	Device 1	13.00'	**6.0' long Weir Wall** 2 End Contraction(s)
#5	Device 3	10.99'	**4.000 in/hr Filtration over Surface area**
#6	Device 4	11.49'	**24.0" Round Culvert** L= 3.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.49' / 11.44' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.46 cfs @ 12.18 hrs HW=14.16' TW=7.29' (Dynamic Tailwater)
- **1=Culvert** (Passes 13.46 cfs of 34.38 cfs potential flow)
  - **2=UD Orifice** (Orifice Controls 0.57 cfs @ 11.69 fps)
    - **3=Header Pipe** (Passes 0.57 cfs of 2.27 cfs potential flow)
      - **5=Filtration** (Passes 0.57 cfs of 1.86 cfs potential flow)
  - **4=Weir Wall** (Passes 12.89 cfs of 23.71 cfs potential flow)
    - **6=Culvert** (Inlet Controls 12.89 cfs @ 4.10 fps)

Pond SSF-1: Subsurface Sand Filter 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +48.0" End Stone x 2 = 137.78' Base Length
24 Rows x 51.0" Wide + 12.0" Spacing x 23 + 48.0" Side Stone x 2 = 133.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

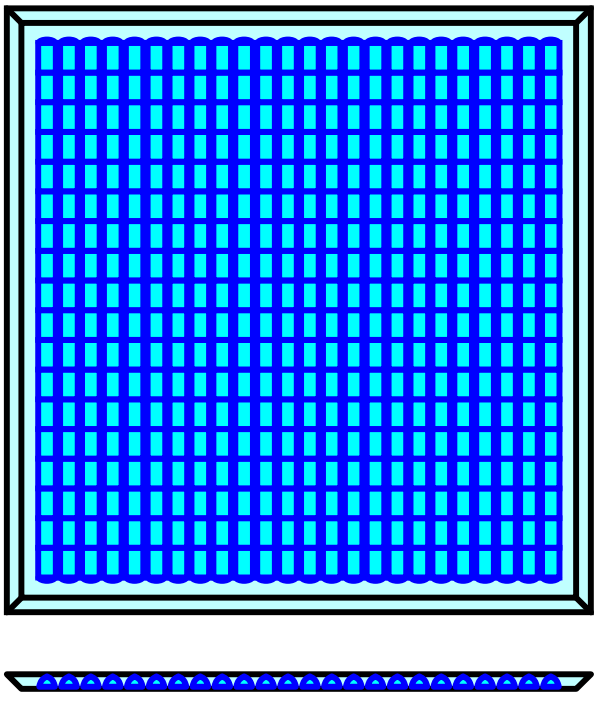
1.0 '/' Side-Z x Height = 42.0" Flare/Side
Base Length + Flare x 2 = 144.78' Top Length
Base Width + Flare x 2 = 140.00' Top Width

432 Chambers x 45.9 cf = 19,846.1 cf Chamber Storage

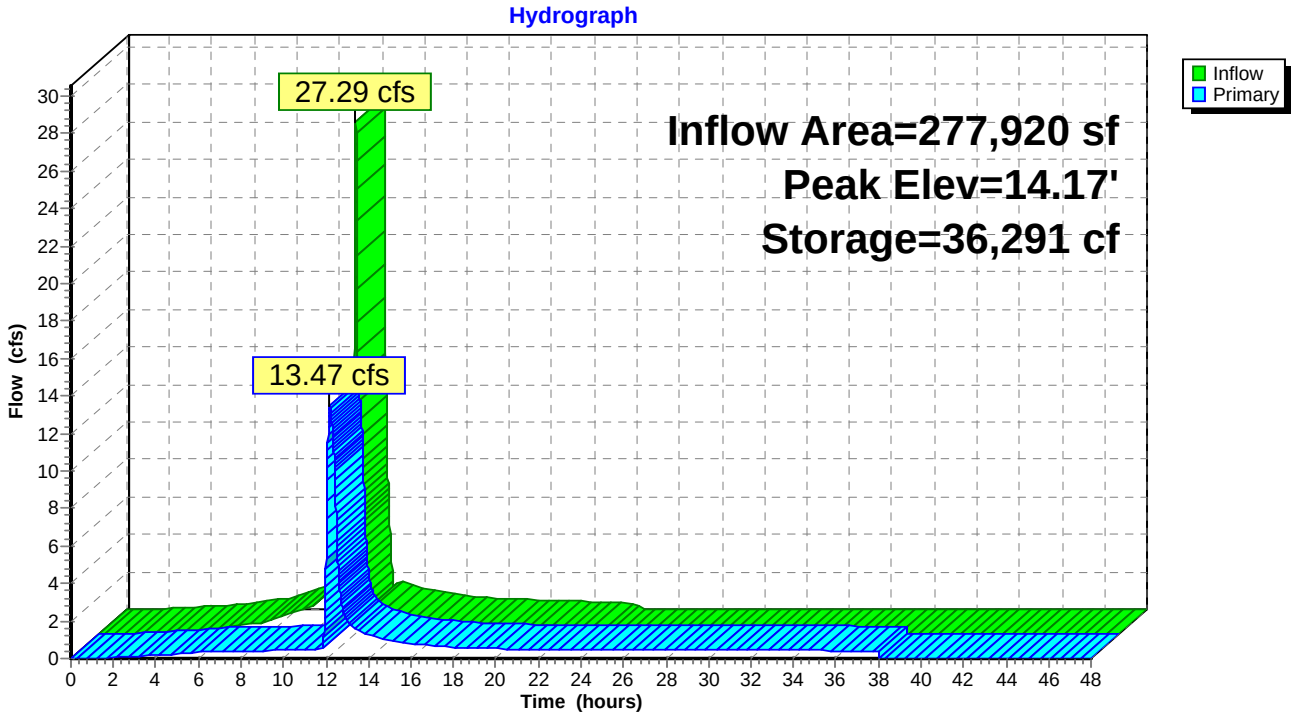
67,509.2 cf Field - 19,846.1 cf Chambers = 47,663.1 cf Stone x 40.0% Voids = 19,065.3 cf Stone Storage

Chamber Storage + Stone Storage = 38,911.3 cf = 0.893 af
Overall Storage Efficiency = 57.6%
Overall System Size = 137.78' x 133.00' x 3.50'

432 Chambers
2,500.3 cy Field
1,765.3 cy Stone



Pond SSF-1: Subsurface Sand Filter 1

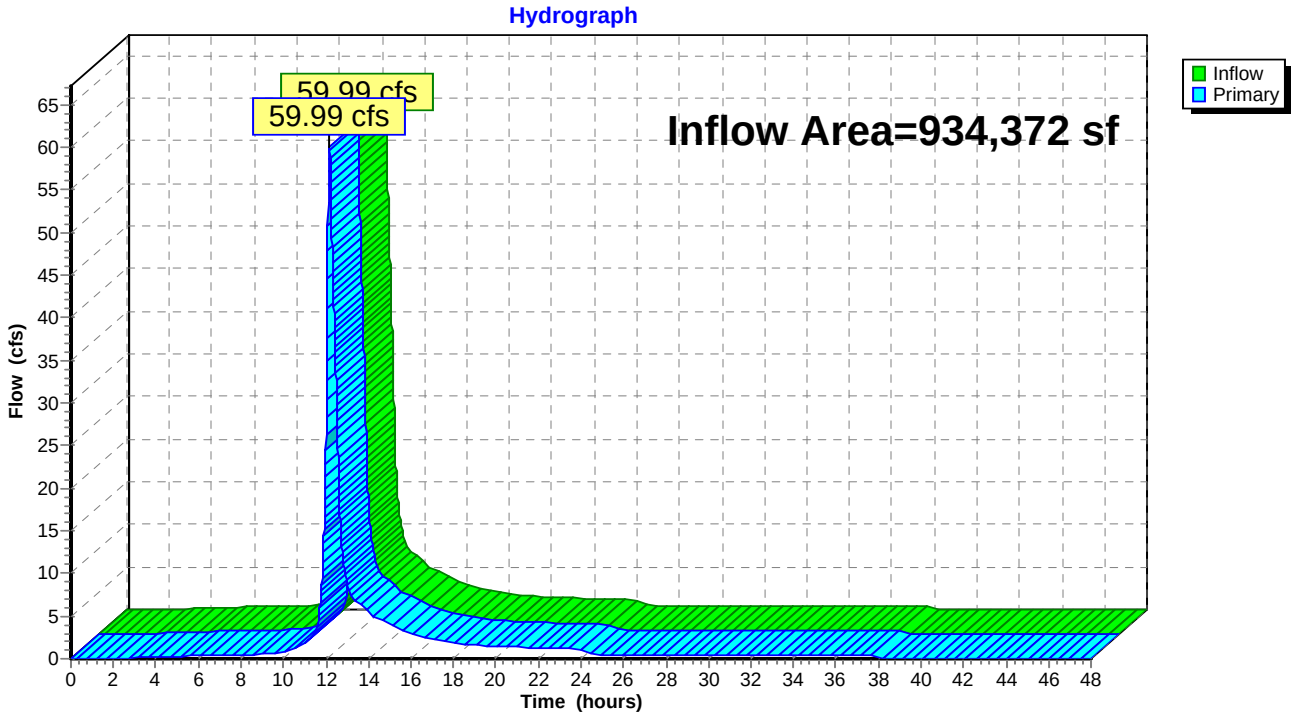


Summary for Link SP-1: Study Point 1

Inflow Area = 934,372 sf, 41.64% Impervious, Inflow Depth = 3.44" for 25-Year event
Inflow = 59.99 cfs @ 12.16 hrs, Volume= 267,628 cf
Primary = 59.99 cfs @ 12.16 hrs, Volume= 267,628 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

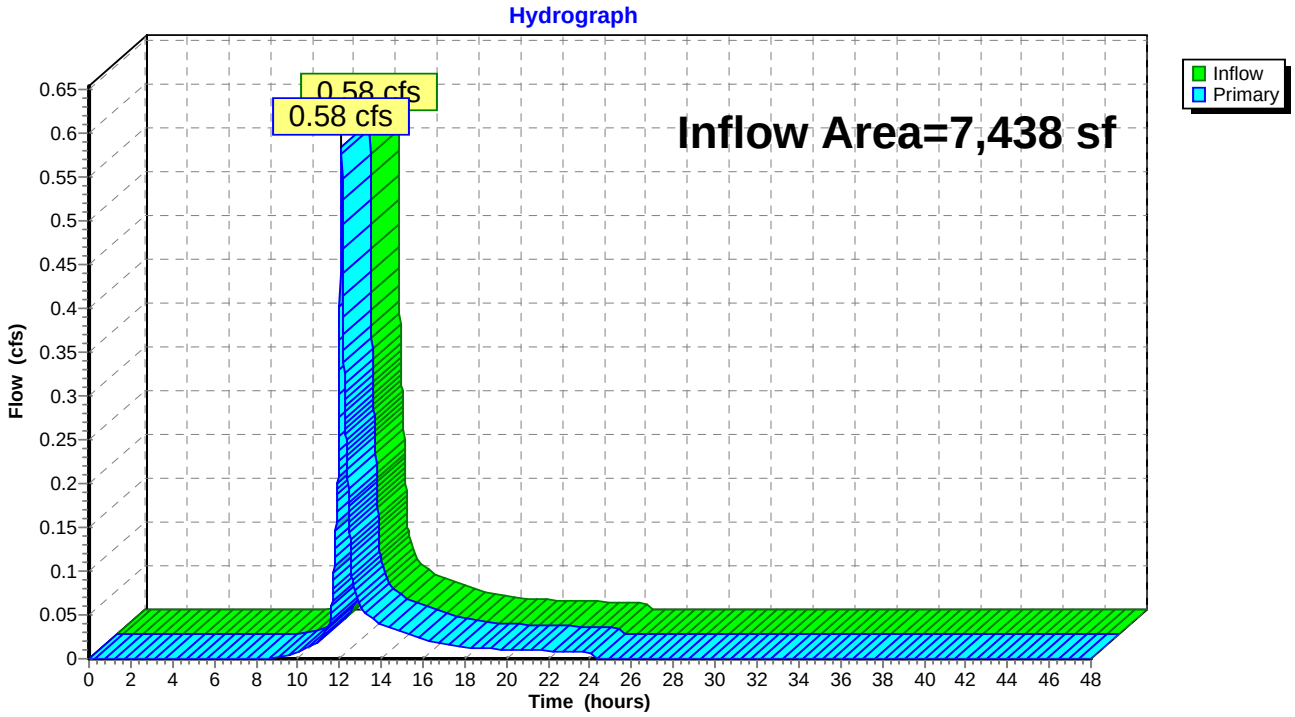


Summary for Link SP-2: Study Point 2

Inflow Area = 7,438 sf, 31.78% Impervious, Inflow Depth = 2.92" for 25-Year event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment D

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Portland Transportation Center
Thompson's Point Connector
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made

accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.

- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:

   - Clear accumulations of winter sand along access road at least once a year,

preferably in the spring.

- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Subsurface Sand Filter:

- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland Transportation Center
Thompson's Point Connector
Portland, Maine

This log is intended to accompany the Inspection, Maintenance and Housekeeping Plan for the proposed Portland Transportation Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality and MDEP. Qualified personnel familiar with the onsite drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Items	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

Subsurface Sand Filter				
	Inspection of subsurface structure following major storm events			Semi-Annually (during first year)
	Inspection after major storm to ensure proper function			Bi-Annually
	Remove sediment and debris			Annually
	Clean/repair outlets and chambers			When drawdown times in filter exceed 48 hrs

Section 13

Urban Impaired Stream Submissions

Section 13

Urban Impaired Stream Standard

Not Applicable. The proposed project is not within the watershed of an urban impaired stream.

Please refer to the Stormwater Management Report enclosed as part of Section 12 for more detailed information on the subject site.

Section 14

Basic Standards Submissions

Section 14

Basic Standards

Erosion & Sediment Control

The design of the expansion of the Portland Transportation Center parking has incorporated best management practices to minimize the potential for erosion and the transport of sediments from the construction activities. An Erosion and Sediment Control Plan has been prepared and is included in this section of the application and includes provisions for inspection, maintenance, and winter erosion control measures. Specific erosion control measures and their associated construction details are included on the design plans for the proposed development.

The site contractor for project will be responsible for the maintenance of all erosion and sedimentation control measures during the construction of the project, and the keeping of records. At a minimum, the appropriate and relevant activities for each of the erosion and sedimentation control measures will be performed on the prescribed schedule.

A. Siltation fencing needs to be inspected every seven days or after a major rainfall event to assure that debris or sediments do not reduce the effectiveness of the system. Any breeches in the siltation fencing should be repaired immediately. Any sediment which leaves the project site must be removed immediately. Siltation fencing shall be repaired in accordance with installation instruction shown on the project plan set.

B. Stabilized construction entrances shall be maintained in a condition which will prevent tacking or flowing of sediment onto public right-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled dropped washed or tracked onto public right-of-way must be removed immediately.

C. Following the temporary and/or final seeding the contractor shall inspect the work area semimonthly until the seeding has been established. Established means a minimum 85%-90% of areas vegetated with vigorous growth. Reseeding shall be carried out by the contractor with follow-up inspections in the event of any failures until vegetation is adequately established.

D. The contractor must install any added measures which may be necessary to control erosion/sedimentation from the site dependent on the site and actual weather conditions.

E. Maintenance measures shall be applied as needed during the entire construction cycle. After each rainfall, snow storm or period of thawing and runoff or at least every seven days, the contractor shall perform a visual inspection of all installed erosion control measures. The contractor shall perform repairs as needed to allow continued and proper functioning of the erosion control measure. The contractor shall provide the necessary regulating agencies with written documentation describing dates of inspections and the necessary follow up work to maintain erosion control measures meeting the requirements of the plan set.

F. Care should be taken not to disturb erosion control measures during snowplowing. Any damage to erosion control measures during plowing should be repaired immediately.

Section 15

Groundwater

Section 15

Groundwater

A. Narrative and Report

1. Location

   See this Section for a copy of a Maine Geologic Survey Bedrock, Surficial Geology and Sand & Gravel Aquifer map with the project location depicted.

2. Quantity

   There will be no groundwater use or underground wastewater disposal. The proposed project involves the expansion of an existing parking area. There will be no additional impacts to the amount of potable water currently provided to the existing facility by Portland Water District.

3. Sources

   The proposed project involves the expansion of an existing parking area for the Portland Transportation Center. The proposed expansion will not result in any additional sources of contamination at the site.

4. Measures to Prevent Degradation

   All impervious drainage areas associated with streets, drives and walkways are directed to stormwater management facilities designed to current DEP treatment standards.

B. Groundwater Protection Plan

Inspection and housekeeping plans have been prepared for the maintenance of the stormwater treatment facilities.

C. Monitoring Plan

Not applicable.

SEBAGO TECHNICS

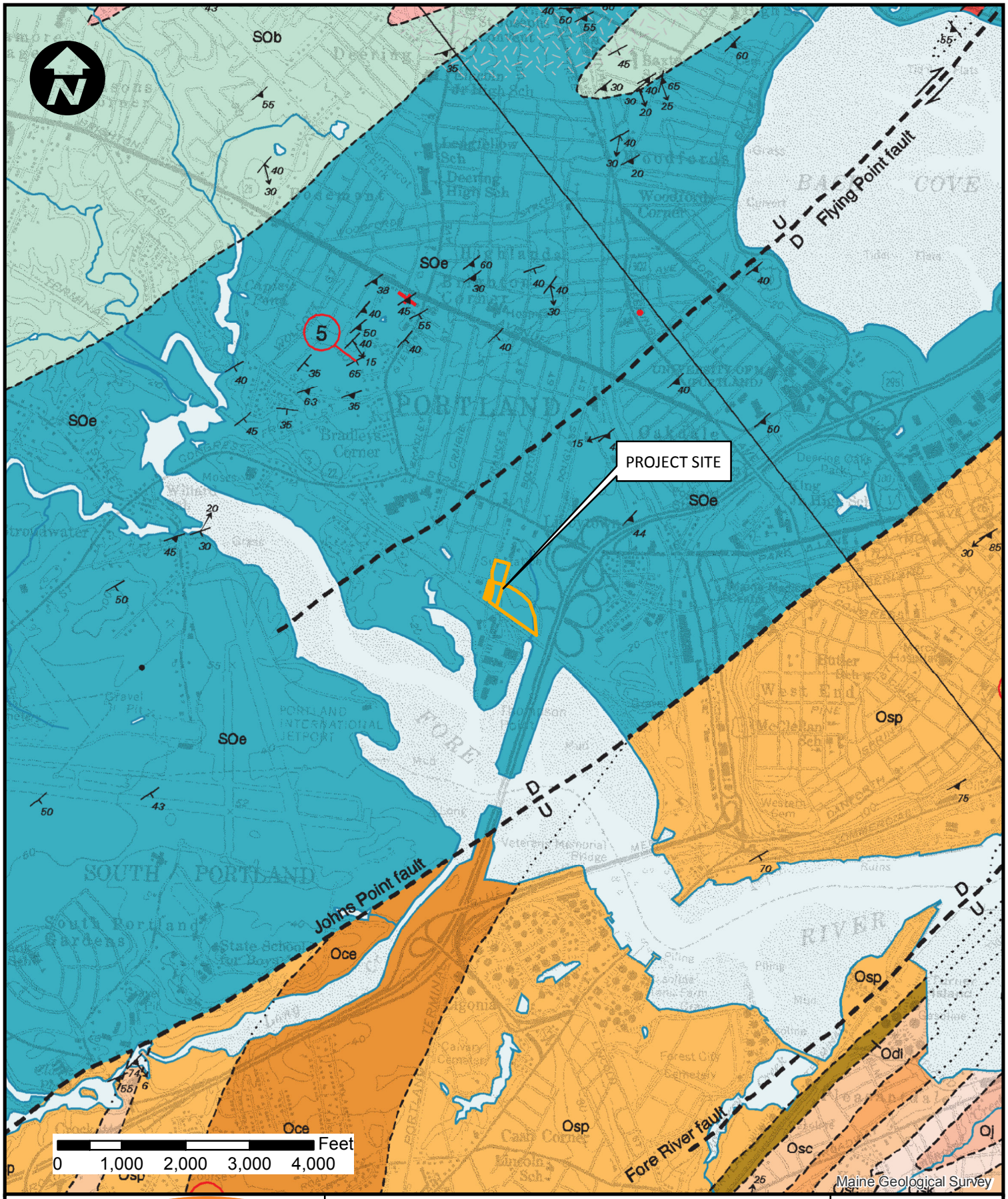
WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	AQUIFERS MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	Maine Geological Survey_ Aquifer Maps_24K_Portland West

99607_Aquifers Map.mxd

PROJECT NUMBER: 99607



SEBAGO TECHNICS

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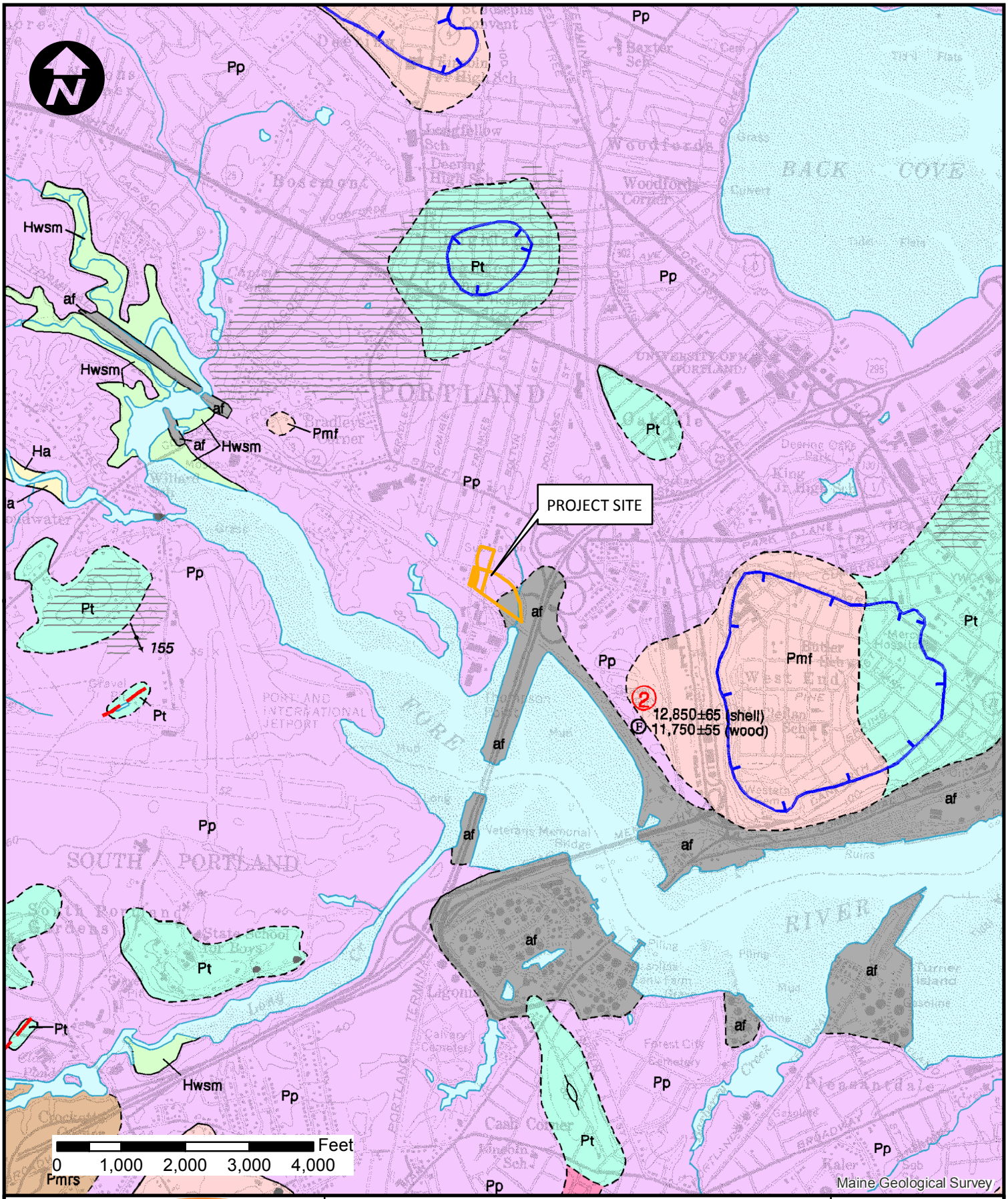
75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	BEDROCK GEOLOGY MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	Maine Geological Survey_Bedrock Geology Maps_24K_Portland West



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SURFICIAL GEOLOGY MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	Maine Geological Survey_ Surficial Geology Maps_24K_Portland West

Section 16

Water Supply

Section 16

Water Supply

A. **Water Supply Method**

The proposed project involves the expansion of an existing parking lot at the Portland Transportation Center. The proposed project will not require additional water capacity from the Portland Water District.

B. Subsurface Wastewater Disposal

Not applicable. No subsurface wastewater disposal areas are proposed.

The project site is serviced by municipal sanitary sewer; however, given that the proposed project involves the expansion of an existing parking lot at the Portland Transportation Center, no additional sanitary sewer capacity is needed.

C. Total Usage

No additional water usage is proposed as par to f this project.

Section 17

Wastewater Disposal

Section 17

Wastewater Disposal

A. On-Site Subsurface Wastewater Disposal Systems

Not applicable. No subsurface wastewater disposal areas are proposed.

The project site is serviced by municipal sanitary sewer; however, given that the proposed project involves the expansion of an existing parking lot at the Portland Transportation Center, no additional sanitary sewer capacity is needed

B. Nitrate-Nitrogen Impact Assessment

Not applicable. As no individual or common subsurface sewage disposal systems are proposed for this project, no hydrogeological or nitrate-nitrogen impact assessment is required.

C. Municipal Facility or Utility Company Letter

Not applicable. The proposed project involves the expansion of an existing parking lot at the Portland Transportation Center. The proposed project will not require additional water capacity from the Portland Water District.

D. Wastewater Discharge Information

The proposed development will not discharge any liquid waste into any stream, river, pond, lake or other body of water.

E. Storage or Treatment Lagoons

The proposed development will not include any lagoons, impoundments, ponds or similar structures for storage involving liquid waste other than storm water.

Please see the stormwater management plan in Section 12 for stormwater related water treatment

Section 18

Solid Waste

Section 18

Solid Waste

A. Estimated Quantities of Solid Waste

The proposed project involves the expansion of an existing parking lot. It is expected to generate average quantities of waste as follows:

Municipal Solid Waste:
The proposed project will not result in the generation of any additional municipal solid waste.

Construction Waste:
The proposed project will result in the generation of approximately 418 cy of construction waste.

B. Off-Site Disposal of Construction/Demolition Debris

The construction debris associated with the proposed project will be comprised mostly from the demolition of the existing paved parking lot areas, and will include dry material such as asphalt and concrete. Roughly 23,751 square feet of pavement and other demolition debris (including precast structures, pipes and curbing) is to be removed: approximately 293 cubic yards of pavement; 105 cubic yards of curbing; 10 cubic yards of structures; and 345 linear feet of pipe; for a total of **418 cubic yards** of waste solid. All construction debris will be transported to the Riverside Recycling Facility located at 910 Riverside St, Portland, ME 04103 by a licensed Non-Hazardous Waste Transporter, likely Casella Waste Systems

C. On-Site Disposal of Wood Waste/Land Clearing Debris

No tree clearing is proposed. The proposed parking lot expansion is to occur within an area of wetland that is to be filled prior to construction. All fill material brought to the site will be clean fill. There will be no on-site disposal of debris.

D. Special or Hazardous Waste

The proposed parking lot expansion will not require storage of any special or hazardous waste.

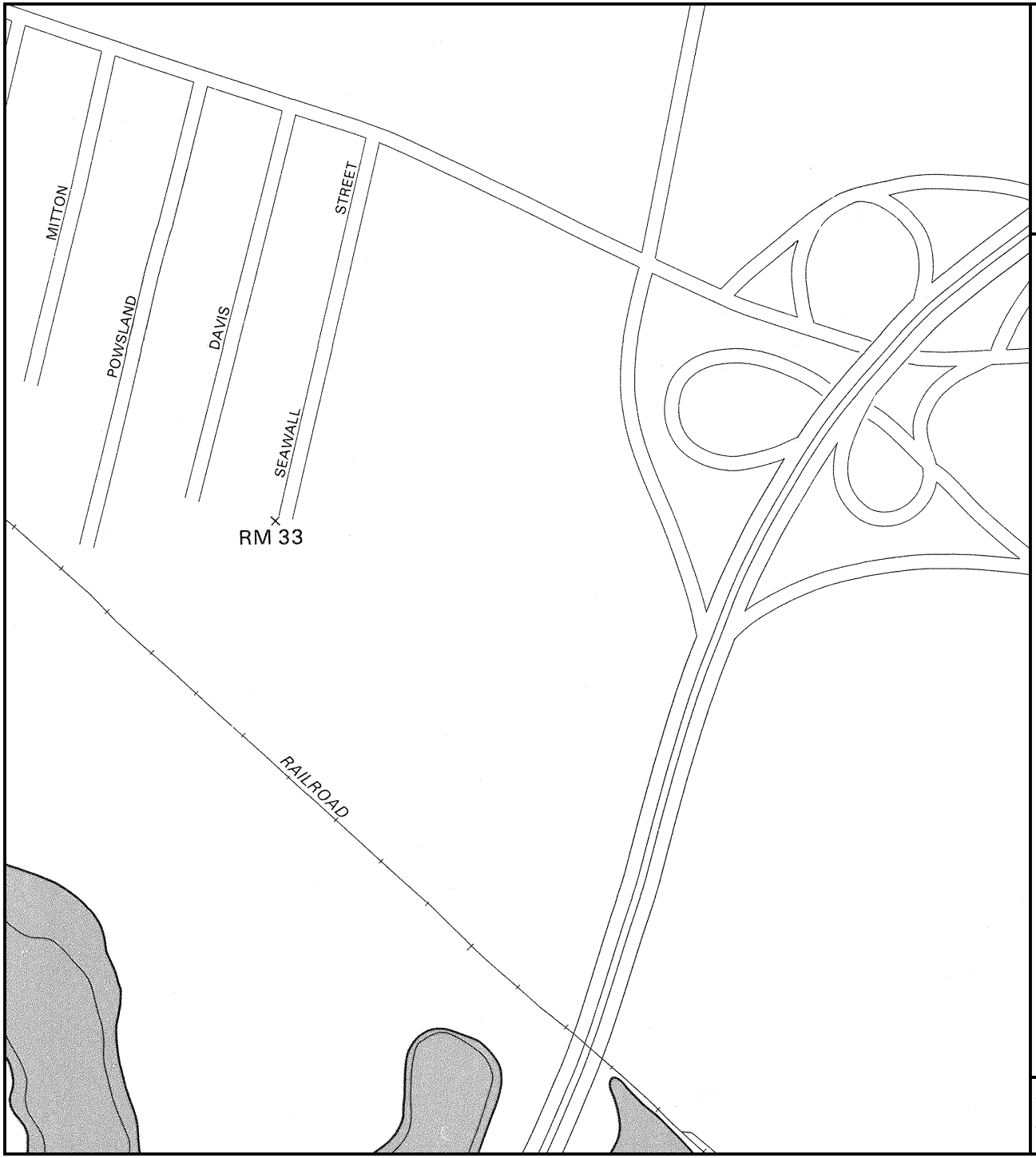
Section 19

Flooding

Section 19

Flooding

The Flood Insurance Rate Map (FIRM) for the City of Portland (Community Panel 230051 0013B, dated July 17, 1986) identifies the project site outside of any flood zone.



APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
PORTLAND, MAINE
CUMBERLAND COUNTY

PANEL 13 OF 17
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230051 0013 B

EFFECTIVE DATE:
JULY 17, 1986

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Section 20

Blasting

Section 20

Blasting

Given the nature of the site and the proposed project scope, it is not anticipated that blasting will be required. Should ledge be encountered during construction, a blasting plan will be submitted for approval that has been developed to be in compliance with the accepted limit for safe levels of blasting vibrations as developed by the U.S. Bureau of Mines as presented in Appendix B of the U.S. Bureau of Mines, RI 8507.

Blasting Requirements

Should blasting be necessary, we recommend that the following controls be implemented for the project:

The Contractor should comply with all applicable laws, rules, ordinances, and regulations of the federal government, the State of Maine, and the City of Portland governing transportation, storage, handling and use of explosives.

Prior to the start of rock excavation or blasting work, notices should be sent to residents and businesses in the area describing the blasting and rock excavation work, indicating the approximate schedule of work, and describing blasting procedures, mitigation measures, and blast warning signals.

Prior to the start of blasting work, pre-blast condition surveys should be conducted of all existing structures and conditions on the site, adjacent to the site, or in the vicinity of the site. These surveys should extend to such structures, wells, or an item that may be affected by the Contractor's blasting operations. As a minimum, condition surveys should be performed on all structures within 500 feet of anticipated blasting areas.

Prior to the start of blasting work, the Contractor should submit to the engineer for review a blasting plan containing details of proposed blasting and construction operations including:

A. Sequence and schedule of blasting rounds including the general sequence of drilling, blasting, excavating, etc.

B. Specifics of typical blast rounds and open cut blast rounds in deepest rock cut areas and areas closest to existing structures.

C. In each area specified, include the following blast round details:

- Diameter, spacing, burden, depth and orientation of each blast hole for each round design.
- Nomenclature and amount (in terms of weight and number of cartridges) of explosives and distribution of charge to be used within each hole, on each delay,

and the total for the blast.

- Nomenclature and type of detonators and delay pattern for the round.
- Type and location of stemming to be used in holes.
- Calculations of anticipated vibration levels at nearest adjacent structure or well.

D. Specifics of Test Blasts to check effectiveness and vibration characteristics of typical trench and open cut blasting rounds.

E. Methods of matting or covering the blast area to prevent fly rock and excessive air blast overpressure.

F. Name and qualifications of licensed blaster who will be on site at all times directly supervising the loading and detonation of each blast.

G. Name and qualifications of the person responsible for conducting pre-blast condition surveys.

H. Name and qualifications of the person responsible for monitoring and reporting blast vibrations.

I. Details of an audible advance signal system to be employed at the job site as a means of informing workers, Engineer, Architect, Owner, and the general public that a blast is about to occur. Details of access control during blasting.

The Contractor should conduct all blasting activity in such a manner that the peak particle velocity of ground vibration measured at the locations of the nearest structures or wells to the blast does not exceed the "safe limits" recommended by the U.S. Bureau of Mines as presented in Figure B-1 of Appendix B of U.S. Bureau of Mines, RI 8507.

The Contractor should conduct all blasting activities in such a way that sound levels from blasting shall not exceed the limits given in the Maine Department of Environmental Protection Rules, Chapter 375.10 (c)(4)(c).

# of Blasts Per Day	Sound Level Limit
1	129 dBL
2	126 dBL
3	124 dBL
4	123 dBL

Blast monitoring should be conducted by an independent firm trained in the use of a seismograph, and records should be analyzed and results reported by persons familiar with analyzing and reporting the frequency content of a seismograph record. A minimum of two (2) engineering seismographs shall be used for each blast, one each adjacent to the nearest off-site structures or wells which lie within a 300-foot radius of blasting activities.

Blast Monitoring Equipment: All instrumentation proposed for use on the project shall have been calibrated within the previous six (6) months to a standard traceable to the National Bureau of Standards. Characteristics of required instrumentation are listed below:

- Measure the three (3) mutually perpendicular components of particle velocity in the directions vertical, radial and perpendicular to the vibration source.

- Measure and display the maximum peak particle velocity component and air blast overpressure. These readings must be displayed and be able to be read in the field, immediately after each blast.

- Furnish a permanent time history record of particle velocity waveforms and air blast overpressure waveforms, so that frequency and time of maximum peak particle velocity or air blast overpressure can be determined.

Blast Monitoring Reports: Within 24 hours following each blast, the Contractor should submit to the Engineer a Blast Monitoring Report. Each Blast Monitoring Report should include all of the following applicable items:

- Blast round design data, as indicate in Section C of the Blasting Requirements.

- Blast Monitoring Location Plan, indicating the location of the blast, the monitoring locations, and the distances from the blast to monitoring locations.

- Vibration and air blast overpressure data from each seismograph, including a copy of the strip chart (or other permanent record of velocity/time waveform) with calibration and monitoring record marked with the date, time and location of the blast.

- In the event that the Contractor's design round results in ground vibrations and/or air blast overpressures exceed the blasting limit criteria presented herein, the Contractor should immediately revise the round design appropriately and submit the revised round design to the Engineer for review. Allow sufficient time for review.

- The Contractor should report to the Engineer in writing all blasting complaints received by the Contractor within 24 hours of receipt. Each blast complaint report should include the name and address of the complaint, time received, date and time of blast complained about, and a description of the circumstances, which led to the complaint. Upon receipt of a written complaint from a resident alleging damage from the blasting, the Contractor's representative or a representative of the Blaster's Insurance Company should investigate the claim and a written report should be issued to the homeowner, with a copy to the Engineer, of the results of the investigation and the response of the Contractor. This written report should be received by the resident and the Engineer within 15 work days of receipt of the written complaint.

Review by the owner and the owner's consultant of the blast designs and techniques shall not relieve the Contractor of his responsibility for the accuracy, adequacy and safety of the blasting, exercising proper supervision and field judgment and producing the results within the blasting limits required by the requirements.

Blasting shall be limited to between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday.

Blasting mats shall be utilized for all blast rounds detonated to prevent the throw of fly rock from the blasting area, unless the Contractor's independent professional engineer/seismologist determines that the overburden is sufficient enough to prevent fly rock.

Ammonium Nitrate Fuel Oil (ANFO) shall not be permitted for blasting.

At the start of blasting, the Contractor shall perform a series of test blast to establish a site-specific relationship between the charge weight per millisecond delay and peak ground vibration levels at various distances from the blast. The results of the test blasts will form the basis for selection of maximum permissible charge weights during production blasting.

Section 21

Air Emissions

Section 21

Air Emissions

The proposed development is not anticipated to generate adverse air emissions which could impact the developed area or abutting properties. Temporary emissions may occur during the construction of the project due to earth moving activities and construction equipment. These emissions are expected to be limited in nature and of short duration. Provisions for dust control, if needed during construction, have been included in the Erosion and Sediment Control Plan attached to Section 14 of this application.

Section 22

Odors

Section 22

Odors

Odor generation is expected to be insignificant and consistent with surrounding areas. Temporary limited odors may arise during construction as a result of construction equipment working on the site. This odor potential is short-term and also not expected to be significant.

Section 23

Water Vapor

Section 23

Water Vapor

This proposed site improvements will not generate water vapor emissions impacting the developed area or abutting properties.

Section 24

Sunlight

Section 24

Sunlight

The proposed project involves the improvements to the parking lot of an existing facility and will not impact the elevation profile of the site and therefore will not result in a sunlight impact to abutting properties.

Section 25

Notices

Section 25

Notices

A. Evidence That a Notice Has Been Sent

A notice was published in the Portland Press Herald on February 14, 2018 as well as forwarded via certified mail to the abutting property owners. Please see this Section for a copy of this notice.

A Public Informational meeting was held on February 26, 2018. Please see this Section for a copy of Form C, Public Notice Filing and Certification form.

B. List of Abutters

Please see this Section for the abutters list.

Portland Press Herald
Maine Sunday Telegram
pressherald.com

Classified Advertising Proof

Public Notice

Portland Transportation Center: Notice of Intent to File

Please take notice that the Portland Transportation Center, 100 Thompsons Point Road, Portland, ME 04102, 1-800-639-3317, is intending to file an application pursuant to the provisions of the Natural Resources Protection Act (Title 38 M.R.S.A. §§ 480-A thru 480-BB), and the Site Location of Development Act (Title 38 M.R.S.A. §§ 481 thru 490-SS) on or about March 2, 2018.

A public informational meeting will be held on February 26, 2018 at 5 p.m. at the Portland Transportation Center conference room, 100 Thompsons Point Road, Portland, Maine 04102.

The applications are for expansion of the existing parking area to relieve ongoing congestion related to increased demand. The expansion will include an additional 289 parking spaces, landscaping, and stormwater treatment at the following location:
100 Thompsons Point Road, Portland, Maine

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department of Environmental Protection ("the Department") in writing no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held by the Commissioner of the Department of Environmental Protection or the Board of Environmental Protection. Public comment on the applications will be accepted throughout the processing of the applications.

The applications will be filed for public inspection at the Department of Environmental Protection's office in Portland during working hours. A copy of this application may also be seen at the Portland City Hall Planning Division, 389 Congress Street, 4th floor, Portland, ME 04101.

Written public comments may be sent to the Maine Department of Environmental Protection regional office in Portland, where the applications are filed for public inspection.
MEDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04103.

PROJECT:
Portland Transportation Center
100 Thompson Point Rd
Portland

MEETING LOCATION:
Portland Transportation Center
100 Thompson Point Rd
Portland

MEETING DATE/TIME:
Monday,
February 26, 2018
5:00 PM

NAME	ADDRESS
Brian Brooks	One Canal Plaza, suite 500 Portland, ME 04101
DANA KNAPP	160 Sewall St. Portland, Me.
Erik Lema	32 Brentwood Rd. Cape Eliz, ME

Abutter List

Map/Lot	Owner Address
189/X001, 077/X001, 190/X001, 067/X001, 067/X002	MDOT 16 State House Station Augusta, ME 04333-0016
189/A031	Olympia Equity Investors II LLC P.O. Box 508 Portland, ME 04112
067/K017, 067/K016	Lawrence & Claudia Stoddard 47 Frederic St Portland, ME 04102
067/H014	Rin Sem 15 Huntress St Portland, ME 04102
067/K019, 076/A003	Avesta Fore River Housing LP 307 Cumberland Portland, ME 04101
067/K018	Zhanna Dzabiev 14 Independence Scarborough, ME 04074
076/A034, 190/C001	PTC 100 Sewall St Portland, ME 04102
067/K015	Rebecca & Curtis Barnes 35 Frederic St. Portland, ME 04102
076/A005	YC Portland LP 307 Cumberland Portland, ME 04101
067/K005	Zachary Barowitz 22 Huntress St Portland, ME 04103
202/A004	Forefront Partners I LP 501 Danforth St Portland, ME 04102

Map/Lot	Owner Address
202/A005	Northern New England Passenger Rail Authority 75 West Commercial St Portland, ME 04101
202/A002	Suburban Propane, LP P.O. Box 206 Tax Department Whippany, NJ 07981
076A/B002, 076/A033	Mercy Hospital 144 State St Portland, ME 04101
076A/A001	State of Maine 16 State House Station Augusta, ME 04333
075/B001	Inhabitants of the County of Cumberland 42 Federal St Portland, ME 04101

FORM C

PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. **"Abutter"** for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.

2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.

3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

   ATTACH a list of the names and addresses of the owners of abutting property.

CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on 2/26/18 (Date).

Approximately 3 members of the public attended the Public Informational Meeting.

Stephen S Sawyer Jr. — Signature of Applicant or Authorized Agent

2/27/18 — Date

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE **FORM A PAGE 1**
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.SA. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ **20 acre development** ☐ **Planning Permit** ☐ **Metallic Mining**	☐ **Marine Oil Terminal** ☐ **Structure** ☐ **Subdivision**	☐ **Major Amendment** ■ **Minor Amendment**

1. Name of Applicant:	Langdon Street Real Estate	**6. Name of Agent (if applicable):**	Sebago Technics, Inc
2. Applicant's Mailing Address:	7 Langdon Street Concord NH	**7. Agent's Mailing Address:**	75 John Roberts Rd, So Portland
3. Applicant's Daytime Phone #:	603-228-3535	**8. Agent's Daytime Phone # :**	207-200-2082
4. Applicant's Fax # (if available):	603-228-3524	**9. Agent's Fax # (if available):**	207-856-2206
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	bblunt@concordcoachlines.com	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	ssawyer@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	Portland Transportation Center Parking Expansion						
12. Map and Lot #'s:	**Map #:** 077	**Lot #:** A001	**13. Deed Reference #'s:**		**Book #:** 12719	**Page #:** 277	
14. Location of Project City/Town:	Portland	**15. County:**	Cumberland	**16. UTM Northing**		**17. UTM Easting**	
18. Brief Description of Project including total parcel size:	The proposed project involves the expansion of an existing parking lot associated with the Portland Transportation Center. Subject Parcel size is approximately 8.72 acres.						

19. Type of Direct Watershed: (Check all that apply)
☐ Lake not most at risk ■ River, stream or brook ☐ Coastal wetland
☐ Lake most at risk ☐ Urban impaired stream ☐ Wellhead or public water
☐ Lake most at risk, severely blooming ☐ Freshwater wetland

20. Name of Waterbody Project Site drains to:	Fore River		
21. Amount of Developed Area:	Total acres: 7.362	Existing Developed area: 4.42 acres	New Developed area: 2.9 acres
22. Amount of Impervious Area:	Total acres: 6.326	Existing Impervious areas 3.46 acres	New Impervious area: 2.8 acres

23. Development started prior to obtaining a license?:	☐ **Yes** ■ **No**				
24. .Development or any portion of the site subject to enforcement action?	☐ **Yes** ■ **No**	**If yes,** name of enforcement staff involved?			
25. Common scheme of development?:	☐ **Yes** ■ **No**	**26. Title, Right or Interest:**	☒ **own** ☐ **lease**	☐ **purchase option** ☐ **written agreement**	
27. Natural Resources Protection Act permit required?:	■ **Yes** ☐ **No**	**If yes:** ☐ **PBR**	☐ **Tier 1** ☐ **Tier 2**	☐ **Full Permit**	
28. Existing DEP Permit number (if applicable):	number unknown				
29. Names of DEP staff person(s) present at the pre-application meeting:	City Review				
30. Does agent have an interest in project? If yes, what is the interest?	☐ **Yes** ■ **No**				

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)"..

Signed: Stephen S Sawyer **Title** Senior Vice President Sebago Technics **Date:** 6/21/18

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed**_____ **Date:**_____

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: Stephen S Sawyer

Name (print): Stephen S. Sawyer

Date: 6/21/18

Re/Cert/Lic No.: ME 3736 PE

Engineer X

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

REPORT

17-0938 S

January 8, 2018

Explorations and Geotechnical Engineering Services

Proposed Amtrak-Concord Coach
Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
T: 207-657-2866

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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Appendix D Laboratory Test Results
Appendix E Computations

17-0938 S

January 8, 2018

Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Amtrak-Concord Coach Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Dear Steve:

In accordance with our Proposal, dated September 5, 2017, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included a review of available prior explorations, three test boring explorations, one hand boring exploration, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is an undeveloped, vegetated parcel located east of the existing Portland Transportation Center and west of the I-295 approach ramp in Portland, Maine. The site is principally occupied by low wet areas. We understand development plans

include a new, 507-space parking lot expansion. We understand proposed grades will roughly match that of the existing adjacent parking lot, then generally sloping down to the southeast, requiring tapered fills approaching 18 feet thick. A subsurface stormwater management gallery is proposed beneath the southern portion of the new parking lot. Proposed and existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

2.1.1 Current Explorations

Three test borings (B-101 through B-103) and one hand boring (HB-1) were made at the site on September 25 through 28, 2017 by S. W. Cole Explorations, LLC, a subsidiary of S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established in the field by S.W.COLE using measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.1.2 Prior Explorations

Five test borings (B-1 through B-5) were made on the southwest side of the rail alignment abutting the southern site boundary in 2010 as part of a prior study by S.W.COLE for a then proposed train maintenance facility. The approximate locations of these borings are shown on the "Exploration Location Plan" attached in Appendix B. Logs of these explorations are attached in Appendix C.

2.2 Field Testing

The test borings were drilled using a combination of solid stem auger and cased wash-boring techniques. The soils were sampled at 2 to 10 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. Pocket Penetrometer Testing (PPT) was performed where relatively stiff cohesive soils were encountered. Shelby tube sampling, Vane Shear Testing (VST), and rod probing were performed where softer cohesive soils were encountered. SPT blow counts, PPT and VST results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Atterberg Limits and moisture content test results are noted on the logs. The results of four, one-dimensional laboratory consolidation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Underlying pavement or surficial organics, the borings encountered a soils profile generally consisting of fill, overlying organic and bay mud deposits, overlying a relatively thick layer of glaciomarine clay, overlying glacial till and bedrock with depth. The principal soils are summarized below. Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Fill: The borings encountered fill extending to depths varying from about 4 to 23 feet. The fill consisted of very loose to medium dense sand with varying portions of silt and gravel. The fill at boring B-101 contained miscellaneous debris including brick, plastic and wood.

Organics and Bay Mud: Underlying the fill, the borings encountered deposits of organics and bay mud consisting of layered peat, relic marsh organics, and loose sands, silts and clays with shells and varying portions of organics. The bay mud varied in thickness from approximately to 3 to 27 feet, with peat layers up to about 5 feet thick.

Glaciomarine Soils: Underlying the organics and bay mud, the borings encountered glaciomarine silty clay. At several borings, the clay consists of an upper “crust” of hard to stiff brown and gray silty clay up to about 7 feet thick. The upper “crust”, where present, transitions to a relatively thick layer of softer gray silty clay extending to depths varying from about 47 to 65 feet. Vane Shear Testing performed on the gray silty clay indicates undrained shear strengths varying from approximately 490 to 1,000 psf. One-dimensional consolidation testing performed on the gray silty clay indicates the clay is overconsolidated by approximately 2 to 4 ksf. A layer of sand with varying portions of silt and gravel was present beneath the silty clay at several locations.

Glacial Till: Underlying the glaciomarine soils, several borings encountered up to about 4 feet glacial till, consisting of dense sand with varying portions of silt and gravel.

Bedrock: Underlying the glaciomarine soils and glacial till, where penetrated, the borings encountered bedrock at depths varying from about 64 to 71 feet.

3.2 Groundwater

Saturated soils and free water were encountered in the borings at depths varying from about 2 to 9 feet. Groundwater likely becomes perched on the relatively impervious silts and clays encountered at the test borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- The site is underlain by compressible relic organics, peat, bay mud and a relatively thick layer of softer gray silty clay which will settle during and after construction. To reduce post-construction settlement, we recommend the site be preloaded prior to the installation of utilities, storm water drainage systems and surface finishes including paving, landscaping and lighting. We understand a preload period of 12 to 18 months is available.

- We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material. Similarly, the rail tracks may require re-ballasting to re-level the tracks after preloading.

- We recommend the site be instrumented with settlement platforms and a vibrating wire piezometer prior to filling to help monitor and forecast settlement progress

during and after the preload period. Additionally, we recommend survey points be established along the rail alignment and monitored throughout preloading.

- Imported Gravel Borrow, Granular Borrow, Common Borrow, and pavement gravels will be needed for construction.

4.2 Settlement and Stability

4.2.1 Settlement

The bay mud, organics and softer gray silty clay underlying the site are compressible under new loading from the proposed site fills. Based on the subsurface findings and proposed construction, we estimate that settlement may approach several feet during the preload period and several inches post-construction.

4.2.2 Global Stability

We performed global stability analysis for the fill slope along the rail alignment. The stability evaluation was made using a two-dimensional stability model and SLOPE/W computer software. Our global stability analysis utilized a method of slices assuming moment equilibrium, and was based on: 1) our current understanding of the project; 2) subsurface information obtained at the explorations; and, 3) proposed and existing site grades shown on Sheet 1. Our analysis indicates a safety factor of about 1.3 during filling and post-construction. Safety factors of 1.3 are considered acceptable for slopes supporting paved areas. Based on our analysis, the factors of safety against a deep rotational failure are at or above the acceptable thresholds for the proposed construction provided the geotechnical recommendations presented herein are followed. Slope stability output graphics are attached in Appendix E.

4.3 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Prior to site filling, tree and shrub growth should be cut off at ground surface; surficial organics, wetland mat, topsoil, and grassy growth may remain in place where greater than 5 feet below proposed finished grade. Existing utilities should be removed and rerouted

from the fill area. Site filling should commence by placing a minimum of three feet of compacted MaineDOT 703.19 Granular Borrow for Underwater Backfill, or as much as required to fill one foot above free water, over the prepared subgrade. Above this elevation, MaineDOT 703.18 Common Borrow may be used to construct the fill embankment up to one-foot below pavement subgrade. The embankment should be capped with at least one-foot of MaineDOT 703.20 Gravel Borrow prior to placing pavement subbase and base gravels.

We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material prior to paving. Similarly, the railroad tracks may require re-ballasting to re-level the tracks during fill placement and after preloading.

Instrumentation and Monitoring: We recommend settlement plates and a vibrating-wire piezometer be installed after the initial lift of Granular Borrow is installed. We recommend the contractor furnish and install the settlement plates. Survey readings on the settlement plates should be obtained by the contractor on installation and weekly during filling. The settlement plates must be referenced to a benchmark established at least 100 feet away from the fill area. The piezometer should be installed by S.W.COLE and monitored weekly during filling. After site is filled, the settlement plates and piezometer should be read monthly and reviewed by S.W.COLE to monitor preload progress and assess appropriate complete dates and remaining post-construction settlement. Details of the geotechnical instruments (settlement monitoring plates and piezometer) are illustrated on Sheets 1 and 2 in Appendix B.

Preload Duration: At this time, we estimate a preload duration of 12 to 18 months will be required to consolidate the compressible soils beneath the site. The final determination of completion of the preload period should be made by S.W.COLE based upon readings from the geotechnical instruments (settlement monitoring plates and piezometers).

4.4 Excavation and Dewatering

Excavation work will generally encounter surficial organics and fills. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and

grading activities should ideally occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the wetland mat or native silt and clays. Low ground pressure tracked equipment will be needed and temporary haul roads overlying geotextile fabric may be necessary.

Groundwater and free standing should be anticipated in the wetland areas. Dewatering prior to filling is not anticipated, as the site is proposed to be raised above free standing water. The contractor should anticipate temporary dewatering for utilities installed below the level of the existing wetlands.

Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Granular Borrow: The initial lifts of fill to raise grades in the wetland area should consist of at least 3 feet, and at least 1 foot above free water, of sand meeting the requirements of 2014 MaineDOT Standard Specification 703.19 Granular Borrow for Underwater Backfill.

Common Borrow: Fill to raise grades above the Granular Borrow and up to one-foot from bottom of pavement subbase should be non-organic compactable earth meeting the requirements of 2014 MaineDOT Standard Specification 703.18 Common Borrow.

Gravel Borrow: Fill to raise grades within one foot of pavement subbase should be sand and gravel meeting the requirements of 2014 MaineDOT Standard Specification 703.20 Gravel Borrow.

Structural Fill: Backfill for structures, such as light pole bases, should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 6

Reuse of Site Soils: The non-organic on-site soils may be suitable for reuse as Common Borrow, provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not generally exceed 12 inches. We recommend that fill be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Fill must not be placed on frozen soil; and once placed, soil must be protected from freezing.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light service truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2014 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 19.0 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	15 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. If embankments are not constructed using non-frost susceptible fill or in the absence full depth excavation of frost susceptible soils and replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, as well as to provide testing services for soils, concrete, and asphalt construction materials.

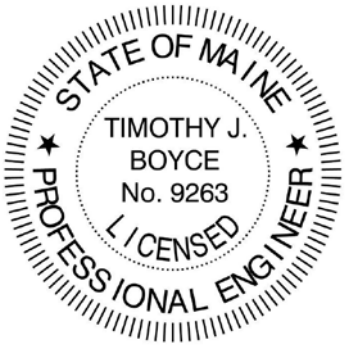
5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed Amtrak-Concord Coach Parking Lot Expansion at the Portland Transportation Center at 100 Thompsons Point Road in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures

LEGEND:

- APPROXIMATE BORING LOCATION
- PROPOSED SETTLEMENT MONITORING PLATFORMS
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED SURVEY MONITOR POINTS

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALED PLAN OF THE SITE ENTITLED "PRELIMINARY SITE LAYOUT AND GRADING PLAN," PREPARED BY SEBAGO TECHNICS, INC., DATED OCTOBER 2017.
2. BORINGS B-101 THROUGH B-103 AND HB-1 WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. BORINGS B-1 THROUGH B-5 WERE PERFORMED UNDER THE DIRECTION OF S. W. COLE ENGINEERING, INC. IN 2010.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 80 160 Feet

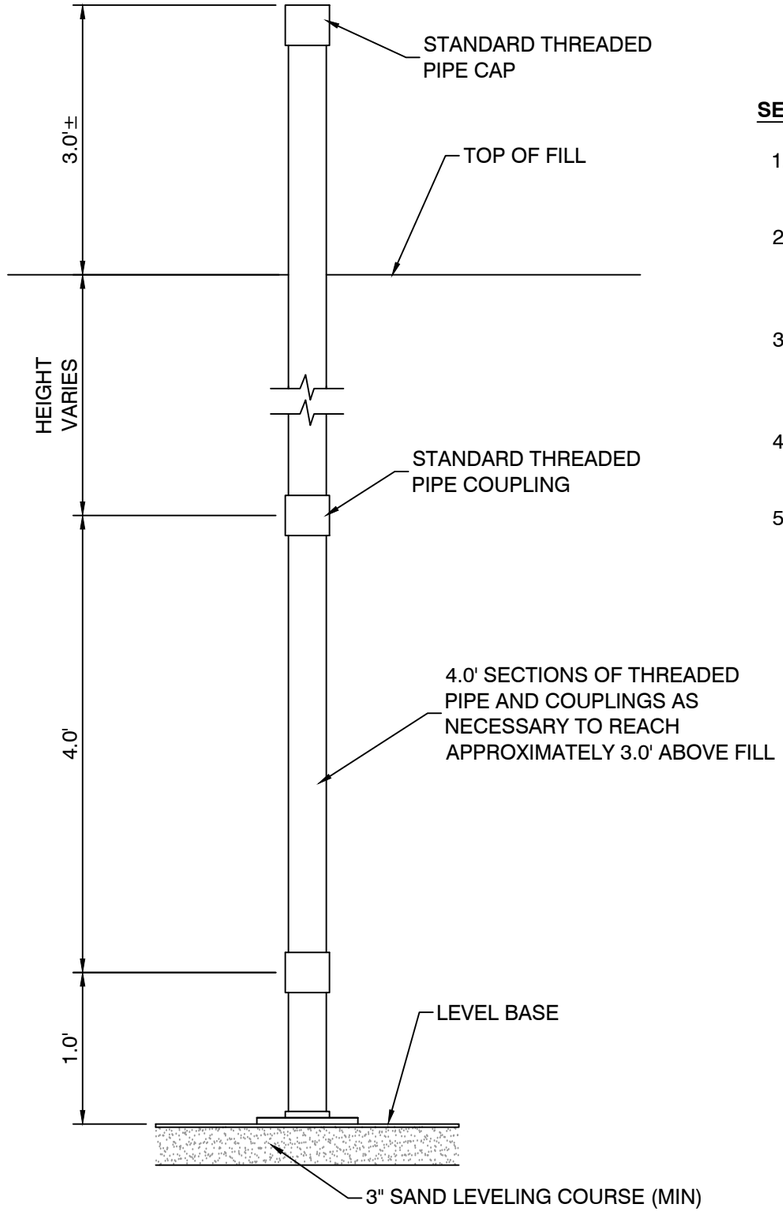
S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

EXPLORATION LOCATION PLAN

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	1" = 80'
Date :	12/01/2017	Sheet:	1

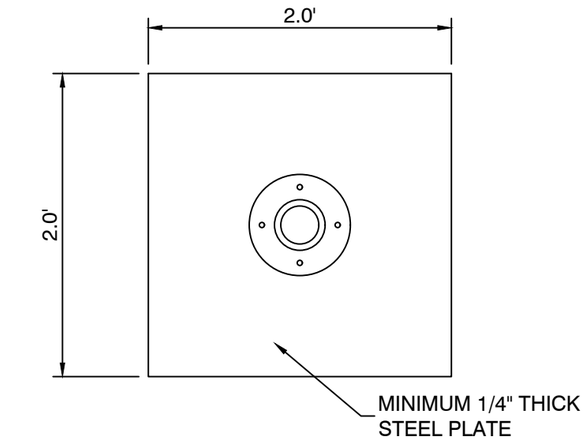


SETTLEMENT MONITORING PLATFORM INSTALLATION AND DETAIL

NOT TO SCALE

SETTLEMENT MONITORING PLATFORM NOTES:

1. SEE SHEET 1 FOR SETTLEMENT MONITORING PLATFORM LOCATIONS.
2. A COMPACTED 3" SAND LEVELING COURSE SHALL BE CONSTRUCTED UNDERNEATH BASES OF SETTLEMENT PLATES.
3. RECORD ELEVATION OF BASE AND TOP OF RISER AT TIME OF INSTALLATION, RECORD ELEVATION OF RISE AT EACH EXTENSION
4. AFFIX PLATE NUMBERS TO RISER PIPES AS SP-1 THROUGH SP-4.
5. CONTRACTOR SHALL TAKE CARE NOT TO DISTURB SETTLEMENT PLATES AFTER THEY HAVE BEEN INSTALLED. DISTURBED PLATES SHALL BE REPLACED.



SETTLEMENT PLATE - STEEL BASE CONSTRUCTION

NOT TO SCALE

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

INSTRUMENTATION DETAILS

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	As Noted
Date :	12/01/2017	Sheet:	2

APPENDIX C

Exploration Logs and Key

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 26' +/- | **TOTAL DEPTH (FT):** 67.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
25			1D		0-2	24/15	7-14-8-5			0.5 6"+/- ASPHALT Medium dense, brown SAND and gravel, some silt (FILL) 1.8 Loose, gray gravelly silty SAND with shells, brick, plastic, wood fragments (FILL)		
20	5		2D		5-7	24/15	3-3-6-5				▽	
15	10		3D		10-12	24/15	6-4-2-3					
10	15		4D		15-17	24/4	2-1-3-4					
5	20		5D		20-22	24/0	2-2-5-5			23.0 Loose, dark brown PEAT (Relic Wetland Deposit)		
0	25		6D		25-27	24/12	2-3-4-7					
			7D		27-29	24/24	10-15-23-26			27.2 Medium dense, gray clayey SAND and silt with organics 28.0 Hard, gray-brown sandy SILT and CLAY		
-5	30		8D		30-32	24/20	8-16-20-25	q_P=9 ksf				
										33.5 Medium, olive-brown silty CLAY		
-10	35		9D		35-37	24/6	4-4-6-7	q_P=1 ksf				
										38.5 Medium to soft, gray silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
-15			10D		40-42	24/24	WOH-WOH-1-2					
	45		1V		45-45.8	9		S_V=0.86/0.05ksf		Medium to soft, gray silty CLAY		
-20			1V'		45.8-46.6	9		S_V=1.08/0.17ksf				
	50											
-25												
	55		2V		55-55.8	9		S_V=0.49/0.03ksf				
-30			2V'		55.8-56.6	9						No Vane Rotation @ 2V'
										56.5 Probable gray silty CLAY with frequent SAND layers		
	60											
-35												
										63.0 Dense, gray silty SAND and GRAVEL		
	65		11D		65-67	24/11	30-25-23-31					
-40										67.0 Bottom of Exploration at 67.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 14' +/- | **TOTAL DEPTH (FT):** 49.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1D		0-2	24/10	2-4-7-14			Loose, brown SAND and silt with rootlets		
										1.5 Very loose to loose, brown SAND, some silt, trace gravel (FILL)		
10	5		2D		5-7	24/14	4-3-3-2					
5	10		3D		10-12	24/16	2-1-1-2				▽	
										13.0 Loose, dark gray clayey SILT with organics		
0	15		4D		15-17	24/16	1-3-6-6	q_P=5 - 6.5 ksf		16.0 Very stiff, brown silty clay with sand seams		
-5	20		5D		20-22	24/18	3-5-5-6					
-10	25		6D		25-27	24/24	WOH-WOH-2-1			23.5 Medium, gray silty CLAY with sand seams/layers		
-15	30		1U		30-32	24/24		W_L=43 W_P=23 w =44.5 % S_V=0.93/0.18ksf				
-20			1V		32-32.8	9						No Vane Penetration @ 1V'
	35		1V'		32.8-32.8	0						
-25												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/22		W_L=34 W_P=19 w =36.2 %		Medium, gray silty CLAY with sand seams/layers		
-30	45		2V		42-42.8	9						No Vane Rotation @ 2V
										47.0 Probable glacial till or bedrock		
-35										49.0 Bottom of Exploration at 49.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 12' +/- | **TOTAL DEPTH (FT):** 64.5 | **LOGGED BY:** P. Otto / E. Walker
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 5 ft 9/26/2017 Soils saturated below 5'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
10			1D		0-2	24/16	3-5-7-12			Medium dense, brown silty SAND, some gravel with rootlets top 12" (FILL)		
										4.0		
5	5		2D		5-7	24/15	1-1-1-1			Very loose, gray layered coarse SAND and silty CLAY with shells and few organics	▽	
0	10		3D		10-12	24/16	1-1-1-1			11.5 Loose, dark gray clayey SILT with shells and few organics		
										14.0 Soft to medium, gray silty CLAY with shells		
-5	15		4D		15-17	24/24	WOH					
-10	20		5D		20-22	24/24	WOH					
-15	25		1V		25-25.8	9		S_V=0.93/0.09ksf				
			1V'		25.8-26.6	9		S_V=0.89/0.12ksf				
-20	30		1U		30-32	24/10		W_L=40 W_P=20 w =21 %		31.0 Stiff to very stiff, gray silty CLAY, some sand		
			6D		32-34	24/24	7-10-11-16					
-25	35									38.0 Medium, gray, silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/24		W_L=45 W_P=23				
-30			2V		42-42.8	9		w =46.4 % S_V=0.92/0.14ksf				
			2V'		42.8-43.6	9		S_V=0.92/0.13ksf				
	45											
-35												
	50		3U		50-52	24/24		W_L=37 W_P=21				
-40			3V		52-52.8	9		w =40.4 % S_V=0.92/0.16ksf				
			3V'		52.8-53.6	9		S_V=0.91/0.20ksf				
	55									Roller Cone Probe Below 53.6'		
-45												
	60											
-50										63.0 Probable Granular Soils - Advance by Roller Cone		
										64.0 Probable Boulder or Bedrock - Advance by Roller Cone		
										64.5 Refusal at 64.5 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: HB-1
SHEET: 1 of 1
PROJECT NO. 17-0938
DATE START: 9/28/2017
DATE FINISH: 9/28/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 7' +/- | **TOTAL DEPTH (FT):** 17.0 | **LOGGED BY:** P. Otto
DRILLING CO.: S.W. Cole Engineering, Inc. | **DRILLER:** P. Otto | **DRILLING METHOD:**
RIG TYPE: Hand Auger/Tile Probe | **AUGER ID/OD:** N/A / N/A | **SAMPLER:**
HAMMER TYPE: N/A | **HAMMER WEIGHT (lbs):** N/A | **CASING ID/OD:** N/A /N/A | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** N/A
WATER LEVEL DEPTHS (ft): ▽ 2 ft 9/28/2017 Free Water Below 2' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
5										Vegetation / Organics		
										1.0 Gray, clayey sandy SILT with shells and organics	▽	
	5									5.0 Gray, clayey sandy SILT		
0										Becomes More Clayey with Depth		
	10									Advance by Tile Probe Below 10'		
-5												
	15									15.0 Probable Sand Layer - Advance by Tile Probe		
-10										17.0 Bottom of Exploration at 17.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
	1D	24"	14"	2.2'	12	7	8	9		BROWN AND BLACK SILTY SAND WITH SOME GRAVEL WITH COAL AND ASH (FILL)
	2D	24"	16"	4.2'	13	7	6	6		~ MEDIUM DENSE TO LOOSE ~
	3D	24"	18"	7.0'	4	3	2	3	6.3'	
	4D	24"	20"	9.0'	2	2	2	3	8.7'	ORANGE-BROWN SILTY FINE SAND ~ LOOSE ~
	5D	24"	10"	12.0'	1/12"		1/12"		12.0'	GRAY SILTY FINE SAND WITH OCCASIONAL SILT SEAMS ~ VERY LOOSE ~
										~ FREQUENT ORGANICS/PEAT IN WASH WATER 12' - 15' ~ ~ SOFT/LOOSE ~ GRAY CLAYEY SILT WITH FREQUENT ORGANICS AND PEAT SEAMS
									16.0'	w = 71.0%
	6D	24"	24"	17.0'	1/12"		1/12"			GRAY SILTY CLAY WITH VERY FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
									20.0'	
	1U	24"	24"	22.0'	PISTON SAMPLER					GRAY SILTY CLAY
	1V			22.8'	3-5/8" X 7" VANE					Sv = 0.90 KSF / 0.19 KSF
	1V'			23.6'	3-5/8" X 7" VANE					Sv = 0.93 KSF / 0.16 KSF ~ MEDIUM ~
										~ TRACE SHELL FRAGMENTS 35' - 37' ~
	7D	24"	24"	37.0'	WOH/24"					w = 52.0%

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
	8D	24"	24"	47.0'	WOH/24"					~ MEDIUM ~
	9D	24"	24"	57.0'	WOR/24"					
									64.0'	
	10D	24"	16"	67.0'	7	7	8	10	67.0'	GRAY SAND WITH SOME SILT AND SOME GRAVEL ~ MEDIUM DENSE ~
									71.3'	INCREASED RESISTANCE - FREQUENT COBBLES AND GRAVEL POSSIBLE GLACIAL TILL SOILS
									73.5'	PROBABLE BEDROCK ADVANCE BY ROLLER CONE
										BOTTOM OF EXPLORATION @ 73.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-2**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3" +/-	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN GRAVELLY SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	18"	2.2'	6	6	9	24	2.0'	BLACK SILTY SAND WITH TRACE GRAVEL WITH COAL & ASH (FILL) ~MED. DENSE~
										ORANGE BROWN SAND WITH SOMES SILT (FILL)
									6.0'	~ LOOSE ~
	2D	24"	18"	7.0'	5	6	3	4	7.0'	BROWN CLAYEY SILTY SAND ~ LOOSE ~
	3D	24"	14"	9.0'	2	3	3	4		GRAY SILTY FINE SAND
	4D	24"	6"	12.0'	1	1	1	1		~ LOOSE ~
									15.0'	
	5D	24"	22"	17.0'	1	1/12"		1		w = 70.2%, O = 7.8%
										DARK BROWN PEAT WITH FREQUENT GRAY CLAYEY SILT LAYERS
										~ VERY LOOSE ~
									20.3'	
	6D	24"	24"	20.0'	1/12"		1	1		GRAY SILTY CLAY WITH FREQUENT SHELLS
										~ MEDIUM ~
	7D	24"	24"	27.0'	1	1	1	1	27.0'	
										BOTTOM OF EXPLORATION @ 27.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:	NQ	2"		

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN SILTY GRAVELLY SAND (FILL) ~ MEDIUM DENSE ~
	1D	24"	10"	2.2'	6	5	9	9	2.0'	BLACK SILTY SAND WITH ASH (FILL) ~ MEDIUM DENSE ~
	2D	24"	12"	4.2'	6	8	9	9		BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE TO LOOSE ~
	3D	24"	16"	7.0'	4	2	3	4	6.5'	
	4D	24"	10"	9.0'	4	4	7	8	8.6'	BROWN SILTY CLAYEY SAND ~ LOOSE ~
									10.0'	ORANGE-RED MEDIUM SAND WITH SOME SILT ~ MEDIUM DENSE ~
	5D	24"	16"	12.0'	1	1	1	1	15.0'	GRAY CLAYEY SILT WITH OCCASIONAL FINE SAND SEAMS, VERY FREQUENT DARK BROWN ORGANIC/PEAT SEAMS ~ VERY LOOSE ~
									15.5'	DARK BROWN PEAT ~ STRONG ORGANIC ODOR ~ ~ VERY LOOSE ~
	6D	24"	22"	17.0'	1	1	2	2		w = 118.0%, O = 18.4% GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS, VERY FREQUENT ORGANIC/PEAT SEAMS ~ MEDIUM ~
	1V			20.0'	3-5/8" X 7" VANE				20.0'	VANE SHEAR ATTEMPTED @ 20' - NO PENETRATION
	7D	24"	20"	22.0'	1	2	4	6	25.0'	GRAY CLAYEY SILT WITH OCCASIONAL SAND SEAMS, FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
	8D	24"	22"	27.0'	7	9	10	10	30.0'	BROWN SILTY CLAY WITH FREQUENT SILT SEAMS q_p = 4.5 KSF ~ VERY STIFF ~
	9D	24"	24"	32.0'	1/12"		1/12"			GRAY SILTY CLAY
	1U	24"	24"	37.0'	PISTON SAMPLER					
	2V			37.8'	3-5/8" X 7" VANE					S_v = 1.06 KSF / 0.21 KSF ~ STIFF ~
	2V'			38.6'	3-5/8" X 7" VANE					S_v = 1.11 KSF / 0.21 KSF

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
										~ MEDIUM TO SOFT ~
	10D	24"	24"	52.0'	WOH-24"					
	11D	24"	24"	62.0'	1	1	1	1		
									65.4'	
										INCREASED RESISTANCE @ 65.4'
									68.0'	PROBABLE GRANULAR GLACIAL TILL SOILS
									69.5'	BEDROCK - ADVANCE BY ROLLER CONE
										BEDROCK - SEE ROCK CORE LOG
	R1	5.0'	3.3'	74.5'					74.5'	RQD = 57%
										BOTTOM OF EXPLORATION @ 74.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-4**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 3'
WATER MEASURED IN PIEZOMETER @ 3.6' 7/30/10

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRASS AND DARK BROWN SILTY SAND (FILL)
	1D	24"	16"	2.0'	3	3	4	7	2.0'	~ LOOSE TO MEDIUM DENSE ~
	2D	24"	14"	4.0'	8	9	11	8		BROWN TO ORANGE-BROWN MEDIUM TO COARSE SAND (FILL)
										~ MEDIUM DENSE ~
									6.0'	
	3D	24"	16"	7.0'	7	5	3	2	6.7'	BLACK COAL AND ASH (FILL) ~ LOOSE ~
	4D	24"	14"	9.0'	1	2	3	3		GRAY SILTY CLAY WITH FREQUENT SAND SEAMS
	5D	24"	16"	12.0'	1	1	1	1		~ MEDIUM ~
										w = 41.3%
									15.0'	
	6D	24"	20"	17.0'	1	2	2	1		w = 141.4%, O=27.4%
										DARK BROWN PEAT WITH CLAYEY SILT AND SILTY CLAY LAYERS
										~ STRONG ORGANIC ODOR ~
										~ VERY LOOSE ~
	7D	24"	14"	22.0'	1	1	1	1	22.0'	
										BOTTOM OF EXPLORATION @ 22.0'
										PIEZOMETER INSTALLED:
										2" PVC SCREEN 15.0' - 5.0'
										2" PVC RISER 5.0' - GROUND SURFACE
										FILTER SAND 22.0' - 4.0'
										BENTONITE SEAL 4.0' - 3.0'
										DRILL CUTTINGS 3.0' - GROUND SURFACE
										ROADBOX CAP INSTALLED

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-4**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-5**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 3'
SOILS SATURATED BELOW 5'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									2.0'	BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	16"	2.2'	8	9	11	8		BROWN SAND WITH SOME SILT AND SOME GRAVEL (FILL)
									4.0'	~ MEDIUM DENSE ~
	2D	24"	10"	4.2'	5	6	7	8		q_p=8 KSF
										~ ORGANICS @ 6-7' ~
	3D	24"	18"	7.0'	2	2	2	2		q_p=3 KSF
										GRAY-BROWN LAYERED CLAYEY SILT AND SANDY SILT
										~ LOOSE ~
	4D	24"	18"	18.0'	1	1	2	2	12.0'	q_p=0.5-1 KSF
										ROD PROBE 12.0' - 60.4'
										NO ROD PROBE ADVANCE BY WEIGHT OF MAN
										HYDRAULIC PUSH: 12.0' - 59.5'
										140 LB. HAMMER:
										59.0' - 59.5' - 38 BLOWS
										59.5' - 60.0' - 39 BLOWS
										60.0' - 60.4' - 100 BLOWS, HAMMER BOUNCING
										ROD PROBE REFUSAL @ 60.4'
										PROBABLE BEDROCK, POSSIBLE BOULDER

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-5**

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY / PORTLAND, ME

BORING NO.: B-3

CLIENT: VHB, INC.

PROJECT NO.: 09-0538

LOGGED BY P. Otto DATE: 8/3/2010 SHEET 1 OF 1

CHECKED BY E. Walker DATE: 8/3/2010 CORE SIZE NQ

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (FT)	CORE RECOVERY (FT)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
70.5		69.5					
71.5	R1	5.0	3.3	57	FAIR		Eliot Formation - Dark gray Phyllite, trace pyrite and/or muscovite mica; moderately hard; fine grained; fresh to very slightly weathered. Contains quartz veins up to 2½ inches thick and thin calcite veins. Low to moderate fracture angles between 0-45 degrees from horizontal. Foliation at 30-40 degrees from horizontal.
72.5							
73.5							Probable zone of core loss, rock fragment left in borehole.
74.5		74.5					BOTTOM OF EXPLORATION @ 74.5'

S.W.COLE ENGINEERING, INC. • Geotechnical Engineering • Field & Lab Testing • Scientific & Environmental Consulting

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to ½" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

S.W.COLE ENGINEERING, INC.

Consolidation Test

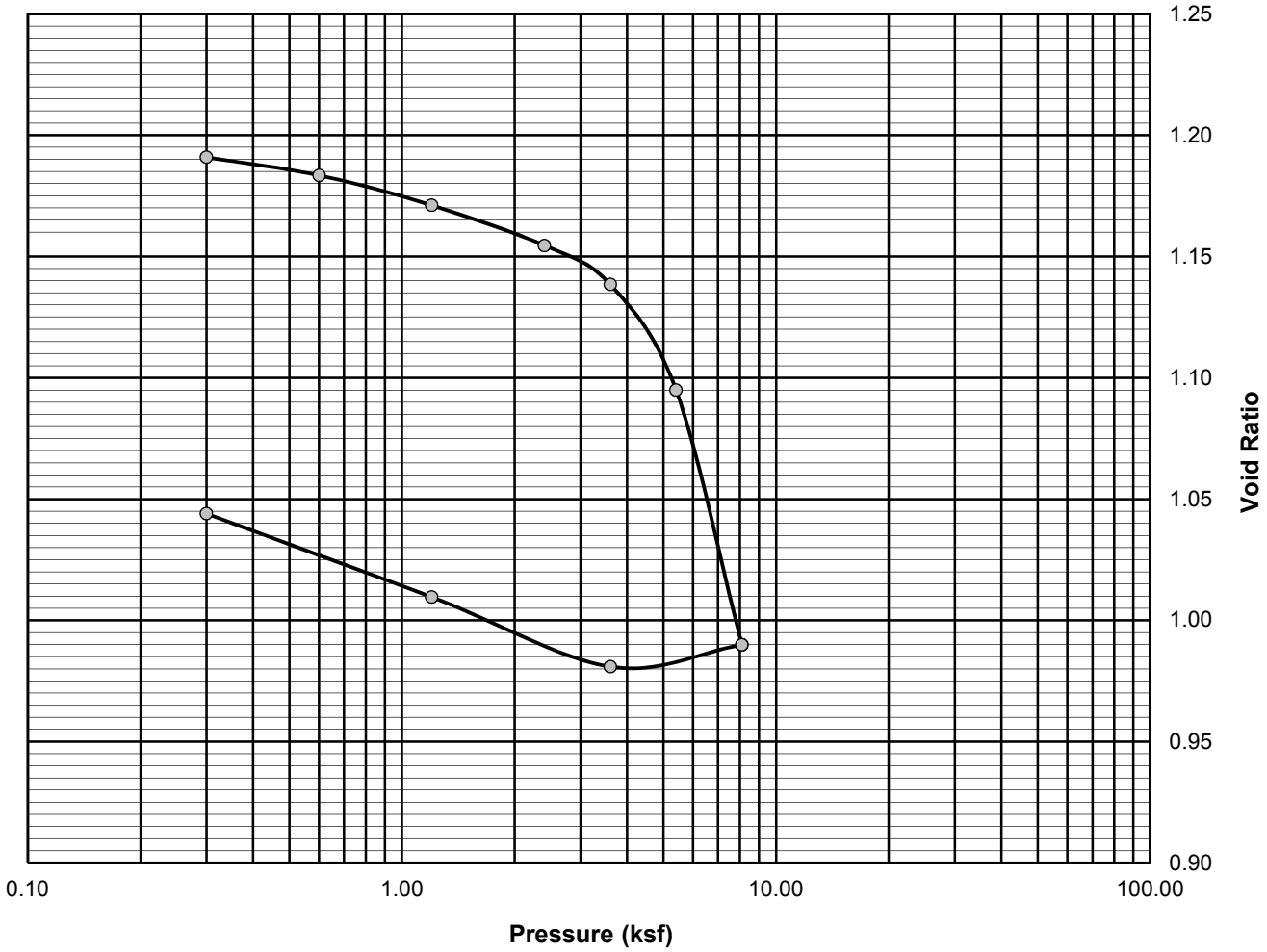
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21062B
Date: 10/11/2017

Boring: B-102
Sample: 1U
Depth: 30-32'

P_C =	4.8 KSF +/-
C_C =	0.6
C_R =	0.05
w =	44.5%
W_L =	43
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21063B
Date: 10/11/2017

Boring: B-102
Sample: 2U
Depth: 40-42'

P_C =	6.8 KSF +/-
C_C =	0.56
C_R =	0.03
w =	36.2%
W_L =	34
W_P =	19

Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

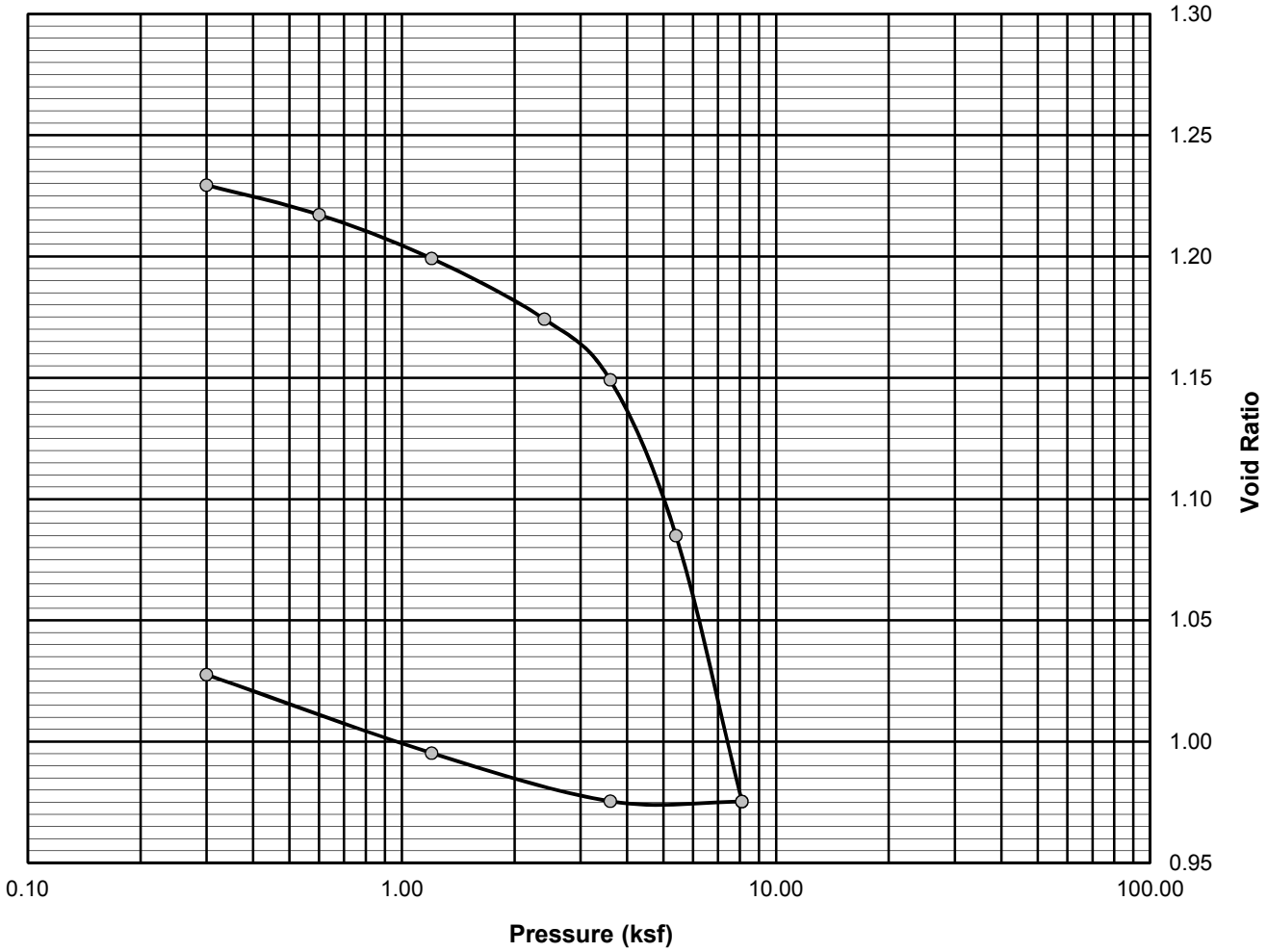
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21065B
Date: 10/11/2017

Boring: B-103
Sample: 2U
Depth: 40-42'

P_C =	4.3 KSF +/-
C_C =	0.62
C_R =	0.06
w =	46.4%
W_L =	45
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

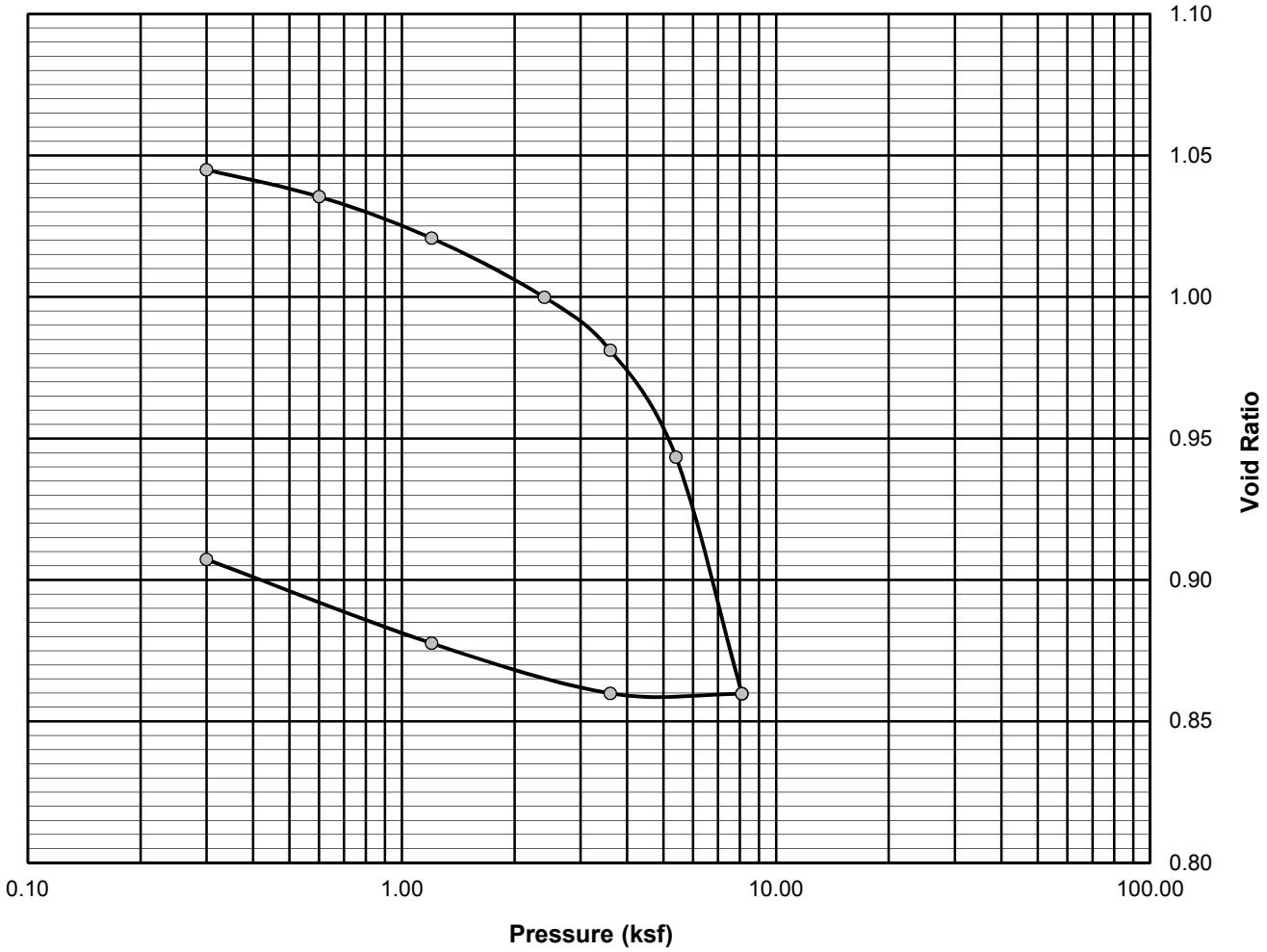
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21066B
Date: 10/11/2017

Boring: B-103
Sample: 3U
Depth: 50-52'

P_C =	4.8 KSF +/-
C_C =	0.48
C_R =	0.04
w =	40.4%
W_L =	37
W_P =	21

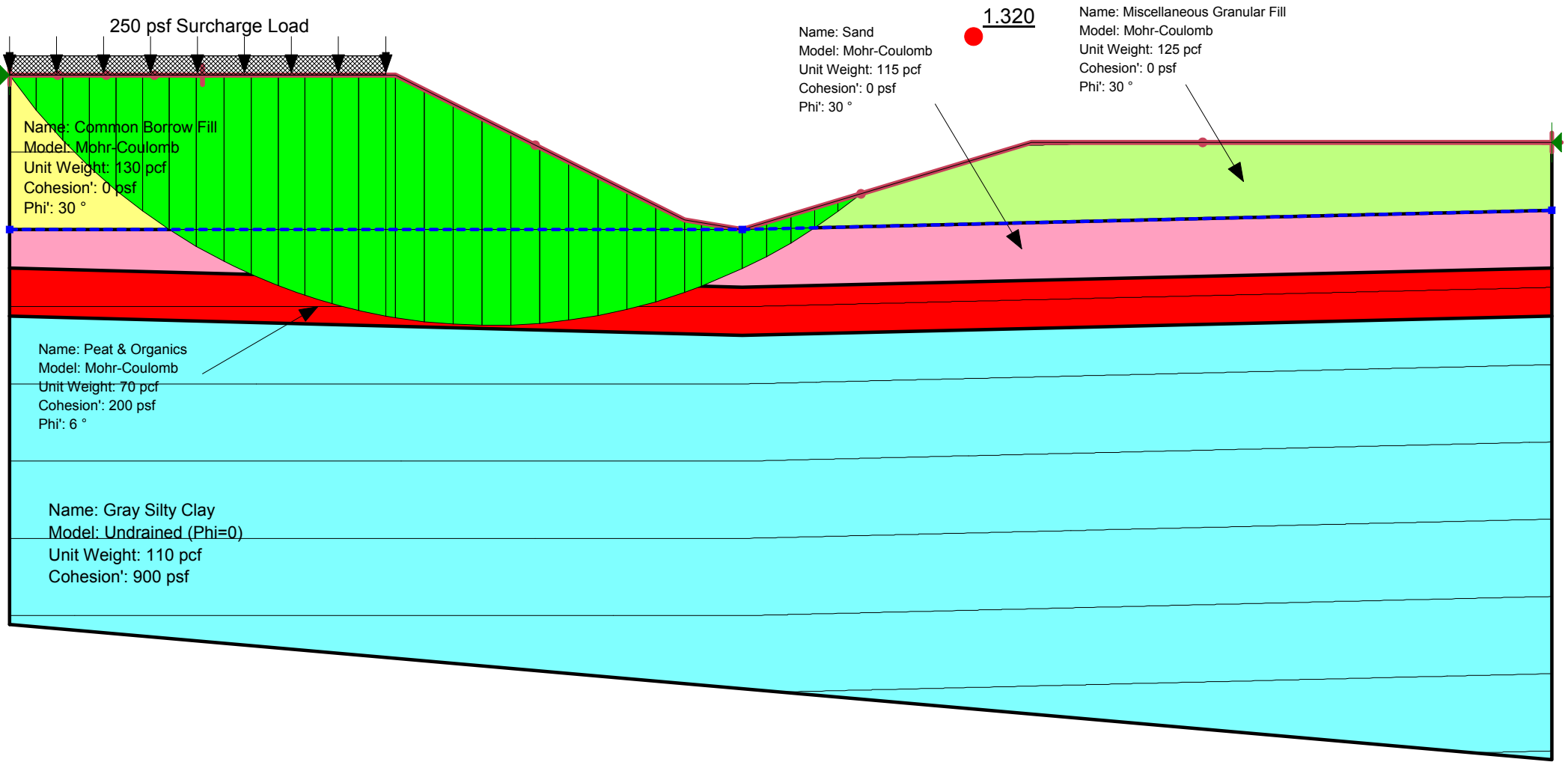


Comments:

EMW
Reviewed By

APPENDIX E

Computations


250 psf Surcharge Load
1.320
Name: Sand
Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Miscellaneous Granular Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Common Borrow Fill
Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Peat & Organics
Model: Mohr-Coulomb
Unit Weight: 70 pcf
Cohesion': 200 psf
Phi': 6 °
Name: Gray Silty Clay
Model: Undrained (Phi=0)
Unit Weight: 110 pcf
Cohesion': 900 psf

99607

Portland Transportation Center Preload Construction Phase

The proposed parking lot will be located on what is currently the undeveloped portion of the Portland Transportation Center property to the east of the existing parking lot. This area consists of vegetated side slopes and wetlands. Based on the recommendations of the geotechnical engineer, it will be necessary to preload the proposed developed area for a period of approximately 12-18 months to eliminate the majority of the anticipated settlement that will occur from the weak underlying soils before any permanent drainage structures or pavement is installed. Prior to the placement of any preload material, trees and shrubs will be removed down to ground level, leaving as much vegetation along the perimeter of the preload area to minimized the potential for erosion. A stormwater bypass pipe will be installed to direct runoff that currently drains onto the property from offsite around the perimeter of the preload area to the existing 36-inch diameter culvert that flows under the railroad tracks. The initial preload fill will consist of a three foot thick sand layer placed directly onto the cleared wetland area. From there, common borrow material will be installed to an elevation of one-foot below the proposed elevation of the parking lot subbase gravel. One foot of gravel borrow will be installed upon the preload fill prior to the installation of the pavement subbase and base gravels. After the subbase and base gravels are installed 3 inches of reclaimed asphalt pavement will be installed to cap the fill and help minimize erosion during the preload phase. The preload phase will also include the removal of an existing detention pond for replacement with a drainage ring as noted.

During the preload phase, stormwater from the existing building and parking lots that currently flow to the existing detention basin will be detained and treated by constructing a “drainage ring” within the footprint of the detention basin. The drainage ring will be constructed by installing an open bottom 8-foot diameter perforated concrete structure surrounded by crushed stone. The concrete structure will be perforated to allow stormwater to pass through the sides of the structure to the surrounding crushed stone. The concrete structure will be installed on a base of crushed stone over a sand filter layer. Runoff stored above in the structure and crushed stone will filter through the sand layer for treatment. Perforated pipes installed in crushed stone under the sand filter layer will be installed to collect the treated stormwater and direct it to the existing 36-inch culverts under the railroad tracks. Perforated pipes will also be installed above the sand layer to convey runoff from larger storm events. The drainage ring is a temporary BMP during the preload phase of the project.

During the preload phase of approximately 12-18 months, surface runoff from the immediate preload area will be treated by constructing two underdrained soil filters in the south east corner of the preload area. Sediment forebays will be constructed adjacent to each of the underdrained soil filters to pretreat the stormwater prior to overflowing into the underdrained soil filter. Stormwater will then pass through a layer of mulch and a layer of soil filter media before being collected in the underdrain pipes. The proposed underdrained soil filters have been designed to generally conform to the Maine Department of Environmental Protection’s (MeDEP) Chapter 500 Stormwater Standards. Underdrained soil filters are a temporary BMP during the preload phase of the project.

The permitting design plans supporting our application have been expanded to illustrate this interim construction. Please refer to Sheets 8, 9 and 10.

June 20, 2018
99607

Mr. Ben Viola
Maine Department of Environmental Protection
Southern Maine Regional Office
312 Canco Road
Portland, ME 04103

Response to Review Comments
Portland Transportation Center

Dear Mr. Ben Viola:

Enclosed are the revised plans and documents addressing the review comments for the above referenced project received on June 1, 2018. The text of the comments are provided for reference, followed by our response.

1) Application Form -
   a) Please have the applicant add the parcel size to box 18 of the application form.

      Sebago Response: The parcel size has been added to box 18 of the application form

   b) Please have the applicant check off "Type of Direct Watershed" in box 19 of the application form.

      Sebago Response: The type of watershed has been added to the application.

2) Applicant needs to explain preload situation in the project description narrative. During the preload portion of the project the applicant needs to be meeting stormwater law at all times.

   Sebago Response: A preload narrative has been included with the resubmission material.

3) Maintenance Plan –

   a. Whereas the project will be phased, and the preload is one of the phases, we will need to review the maintenance plan for the preload or interim period.

      Sebago Response: A preload section has been added to the maintenance plan

   b. Please have the applicant add sweeping of the parking areas to the maintenance plan narrative for both the interim and final design.

      Sebago Response: Winter sand removal is addressed in the Post-Preload Construction Phase and the Post Construction sections under Winter Sanding.

c. The sand filter require a 5 year maintenance contract. This should be stated in the maintenance plan along with a draft of the proposed contract.

Sebago Response: A 5 year maintenance contract has been added to the submission documents

4) Design Plans –

a. We will need to review preload plans which were not provided in the application.

Sebago Response: Preload plans have been added to the plan set.

b. Sheet 10 of 16 – The 12" nyloplast basins on the last isolator rows chambers look like the inspection ports which look like the proposed drainage manholes called out in the legend. This could cause confusion in the field during construction. Please have the applicant provide distinguishing symbols for these items.

Sebago Response: The inspection port symbols have been scaled down to more accurately depict the size of the inspection ports. After consulting with engineers from ADS/StormTech it was determined that only one access point to each isolator row is necessary if the chamber system is over 150 feet. Since the total length of the chamber system is approximately 129 feet the Nyloplast basins have been removed from the plans and replaced with inspection ports.

5) Sheets 8 and 9

a. I could not locate a stabilized construction on these plans. Please have the applicant add a stabilized construction.

Sebago Response: The stabilized construction entrance is located on Sheet 11 (formerly sheet 9), north of the existing detention pond.

b. There appears to be areas missing filter barrier on the new embankments. Filter barrier is meant to trap water and allow particles in the water to settle out behind the silt barrier. The silt barrier on these plans appear to direct the flow without detaining water to allow for particles to settle. Turning the downhill ends of the silt barrier uphill to trap water or adding check dams will allow particles to settle out.

Sebago Response: Additional filter barriers were added to the plans. Stone check dams were also added to the plans. A stone check dam detail was added to the detail sheets

c. Which plan (s) best show snow storage for both preload and final design?

Sebago Response: Snow storage is shown on sheet 7 for the final design and was added to Sheet 9 for the preload design

6) The narrative, in section 12. Stormwater Management, the last sentence of the third paragraph under item H. Stormwater Quality Management (General Standard), appears to say that an impervious liner is not needed for the subsurface sand filter. However on sheet 16 of 16 an impervious liner is shown for the subsurface sand filter. I believe the liner is necessary. Please correct the narrative to reflect the liner being used.

   Sebago Response: The stormwater narrative has been revised to indicate that a liner will be used for the subsurface sand filter.

7) HydroCAD Model - The modeling of the outlet from the subsurface sand filter does not appear to match the design shown on sheet 10 of 16. Please have the applicant take another look at the modeling of the subsurface sand filter outlet.

   Sebago Response: The modeling of the outlet control structure has been revised in HydroCAD.

Sincerely,

SEBAGO TECHNICS, INC.

Craig A. Burgess, P.E.
Senior Project Engineer

CAB:bjb

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION C STATE AND FEDERAL APPROVALS

THE PROJECT WILL REQUIRE AN AMENDMENT TO THE CURRENTLY HELD SITE LOCATION OF DEVELOPMENT PERMIT. THIS REVIEW AND AMENDMENT WILL BE DONE VIA CITY DELEGATED REVIEW AUTHORITY.

THE PROJECT WILL ALSO REQUIRE A MAINE DEP NRPA PERMIT AND US ARMY CORPS PERMIT FOR THE PROPOSED WETLAND FILL.

THESE REVIEWS WILL BE CONCURRENT WITH CITY SITE PLAN REVIEW.

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO ATTENTION OF

MAINE GENERAL PERMIT (GP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

CORPS PERMIT # NAE-2018-00520
CORPS GP ID# 18-143
STATE ID# NRPA

DESCRIPTION OF WORK:
Fill 88,427 s.f. (2.03 acres) of freshwater wetlands adjacent to the Fore River at Portland, Maine in order to construct an expanded parking area for the Portland Transportation Center. This work is shown on the attached plans entitled "PORTLAND TRANSPORTATION CENTER" in 19 sheets dated "02/05/18" and "02/20/18".

LAT/LONG COORDINATES : 43.653079° N -70.290347° W USGS QUAD: PORTLAND WEST, ME

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine General Permit (GP).** Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GP carefully, including the GP conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 38 of the GP (page 16) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP on October 13, 2020. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 13, 2021.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [X], ISSUED [ ], DENIED [ ] DATE_____

APPLICATION TYPE: PBR:___, TIER 1:_____, TIER 2 :_____, TIER 3: X , LURC: _____ DMR LEASE: _____ NA: _____

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 3/15/18 LEVEL OF REVIEW: CATEGORY 1:_____ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10_____, 404 X 10/404_____, 103_____

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Augusta, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0

Jay L. Clement
JAY L. CLEMENT
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

for Michael C. Hirsh 5/3/18
FRANK J. DEL GIUDICE DATE
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

US Army Corps of Engineers
New England District

PLEASE NOTE THE FOLLOWING CONDITIONS FOR DEPARTMENT OF THE ARMY GENERAL PERMIT NO. NAE-2018-00520

1. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.

2. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form(s) to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals).

3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

4. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.

5. All tree cutting shall occur between October 16 and April 19 of any year to the maximum extent practicable and no tree cutting shall occur between June 1 and July 31 of any year in order to minimize potential impacts to federally listed northern long eared bats.

6. Mitigation shall consist of payment of $760,470.48 to the Natural Resource Mitigation Fund. The completed ILF Project Data Worksheet which must be mailed with a cashier's check or bank draft, made out to "Treasurer, State of Maine", with the permit number noted on the check. The check and worksheet should be mailed to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. No project construction may begin until the permittee provides the Corps with a copy of the check, with the permit number noted on the check. The ILF amount is only valid for a period of one year from the date on the authorization letter. After that time, the project would need to be reevaluated and a new amount determined.

MAINE IN-LIEU-FEE (ILF)
PROJECT IMPACT WORKSHEET

DEP Invoice # *Filled in by ILF Administrator in Augusta*

Project name: Langdon Street Real Estate, Inc.; Parking area expansion; Portland Transportation Center

Permittee(s): Langdon Street Real Estate, Inc.

DEP/Corps permit #: /NAE-2018-00520 *Attach a copy of the permit*

DEP/Corps Project Manager: J. McGill/J. Clement

ILF Fee Amount: $760,470.48

Check Date: *Filled in by ILF Administrator in Augusta*

Project address: Thompsons Point Connector; Portland, Maine *Attach a locus map*

Biophysical region - Section: Mid Coast Maine

Biophysical region - Subsection: Casco Bay Coast

Total impact area subject to compensation: 88,427 SF (2.03 acres)

Resource(s) impacted:

Resource Types (list all that apply)	**Functions & Values** (for wetland impacts) (list all that apply, by resource type)	**Types of Impacts** (list all that apply, by resource type)	**SF Impacted** (by resource type)	**Linear FT of Streams Impacted (for Corps use)**
PEM	WH, FF, STR, NR, PE	Filling	88,427	NA
		Total impacts:	88,427	

Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, etc), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)

Wetland Functions & Values: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); recreation (R); education/scientific value (ESV); uniqueness/heritage (UH); and visual quality/aesthetics (VQ); wildlife habitat (WH)

Types of Impacts: May include: filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.

Portland Transportation Center
Proposed Parking Expansion

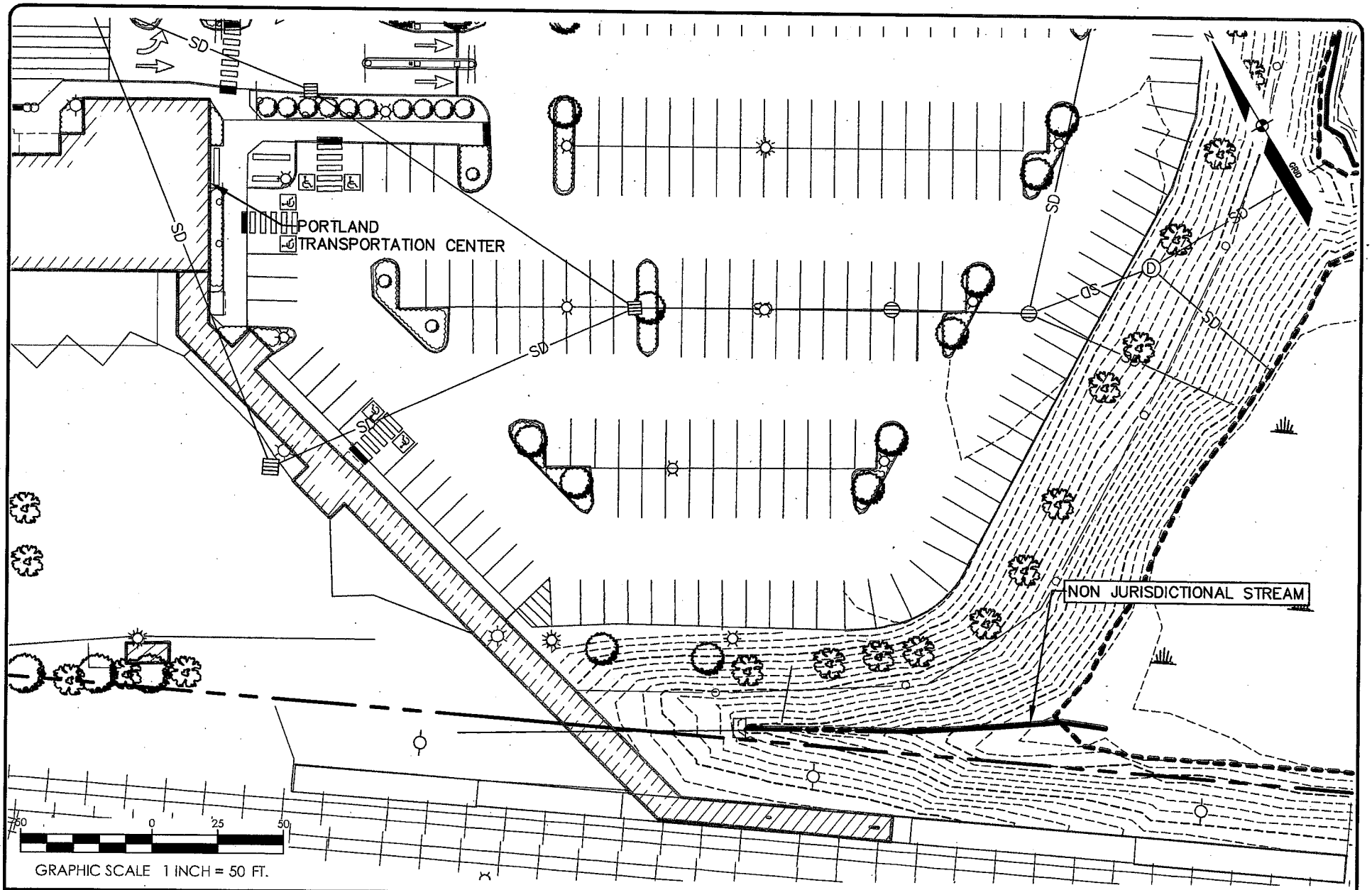
Portland, Maine

0 250 500 1,000 1,500 2,000 Feet

N

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Portland West 43.653079, -70.290347



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TECHNICS
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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

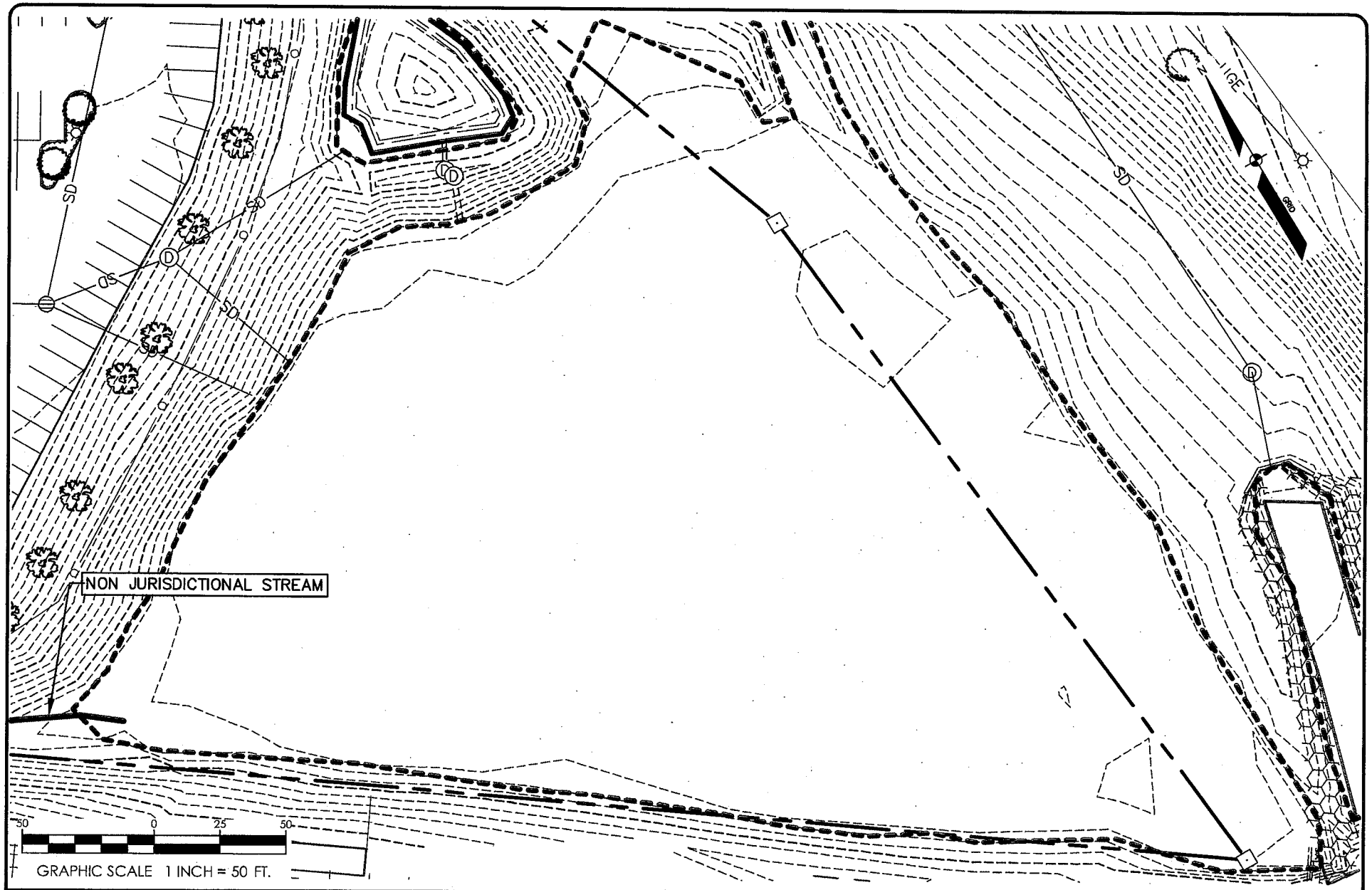
EXISTING SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: 1"=50'
DATE: 02/05/18
SHEET: 1 OF 3

99607 NRPA EC Figures.dwg, TAB: NRPA-1



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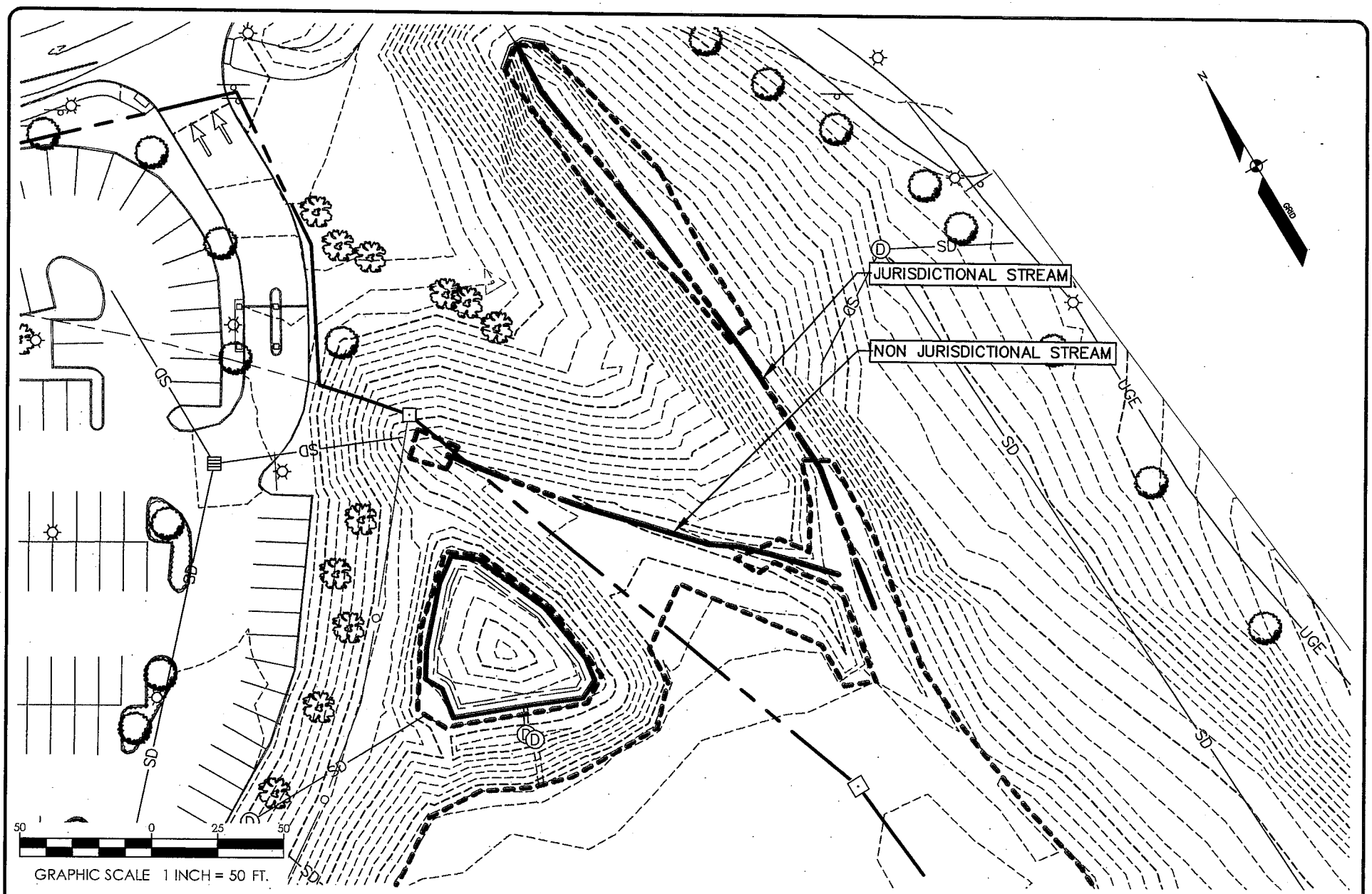
SCALE: 1"=50'
DATE: 02/05/18
SHEET: 2 OF 3



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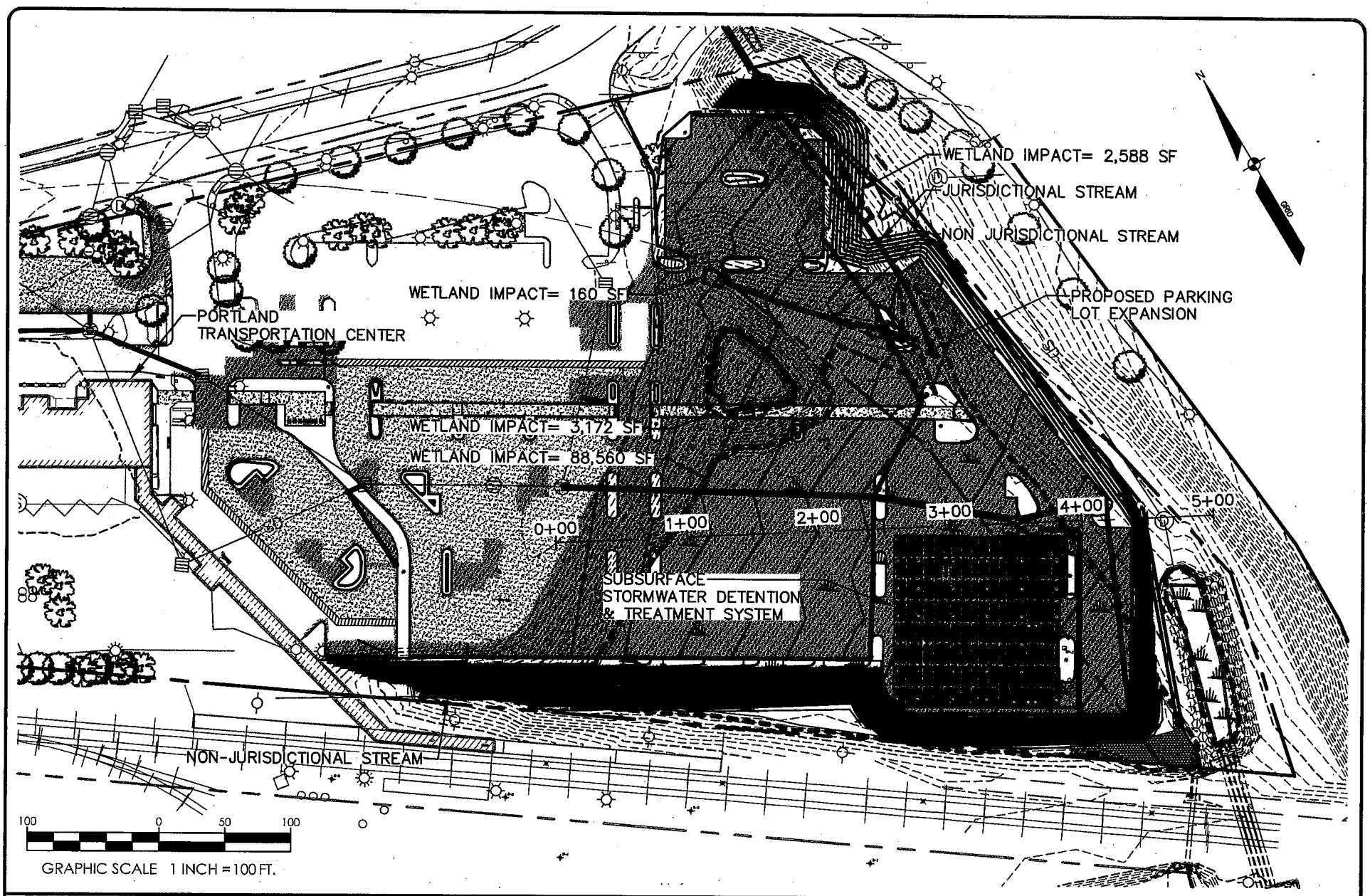
EXISTING SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: 1"=30'
DATE: 02/05/18
SHEET: 3 OF 3

99607 NRPA EC Figures.dwg, TAB: NRPA-3



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SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

SCALE: SCALE

DATE: 02/05/18

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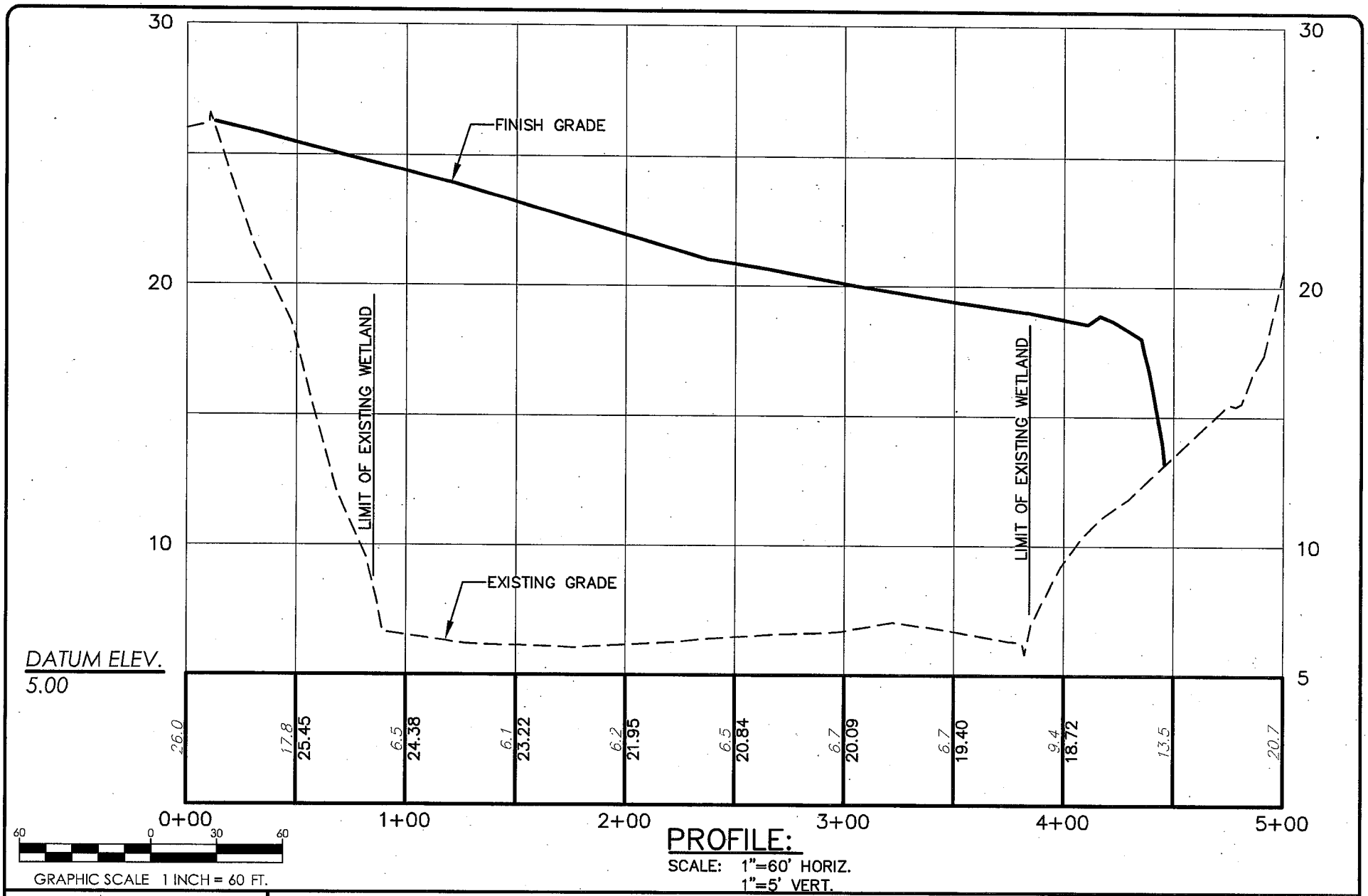
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
1 OF 2

99607 NRPA Figures.dwg, TAB: NRPA–1 (8.5x11)



PROFILE:

SCALE: 1"=60' HORIZ.
1"=5' VERT.

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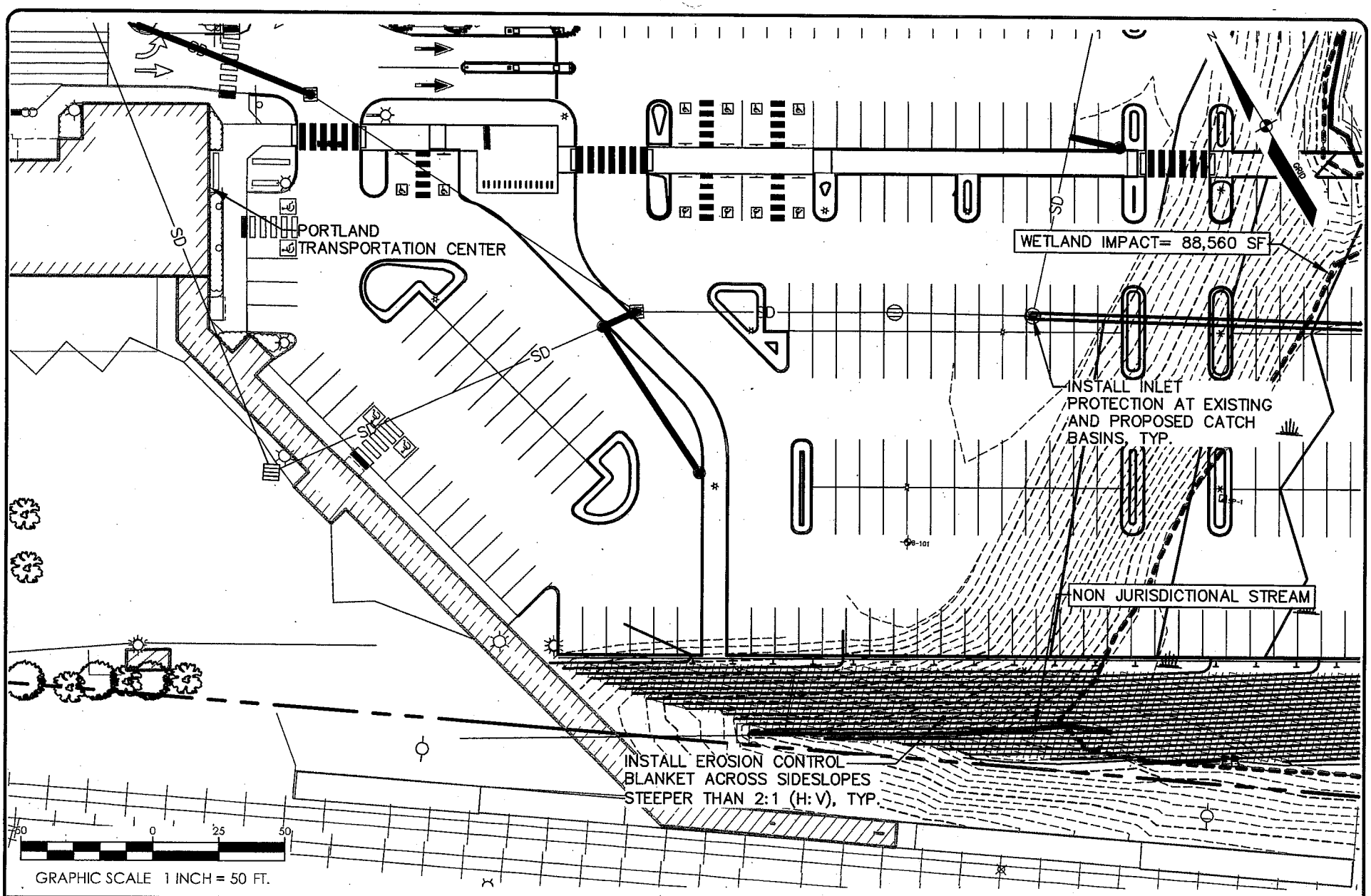
PROFILE
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: AS SHOWN
DATE: 02/05/18
SHEET: 2 OF 2

99607 NRPA Figures.dwg, TAB: NRPA-2 (8.5x11)



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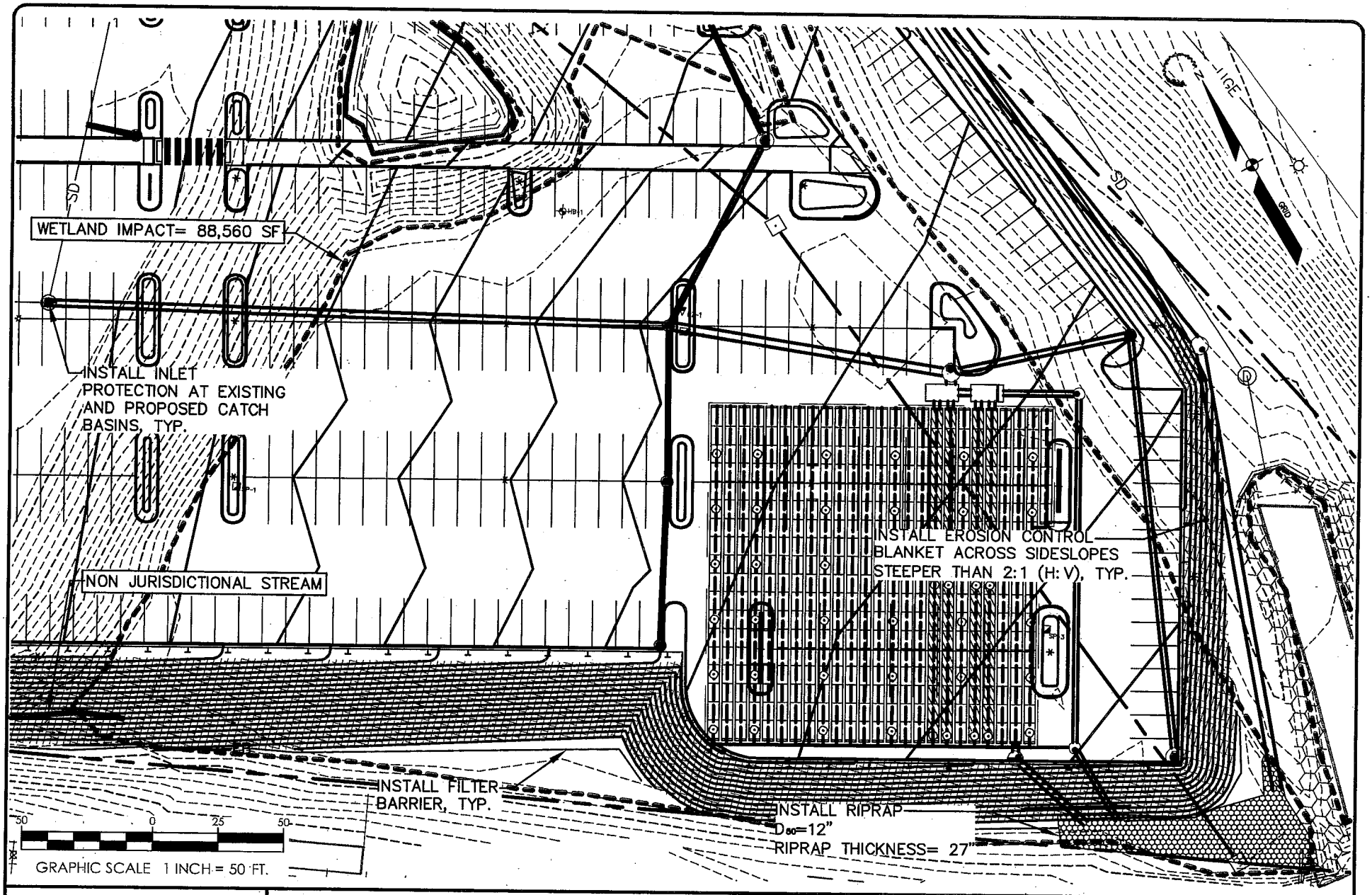
SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: 1"=50'
DATE: 02/05/18
SHEET: 1 OF 3



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SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

SCALE: 1"=50'

DATE: 02/05/18

LOCATION:
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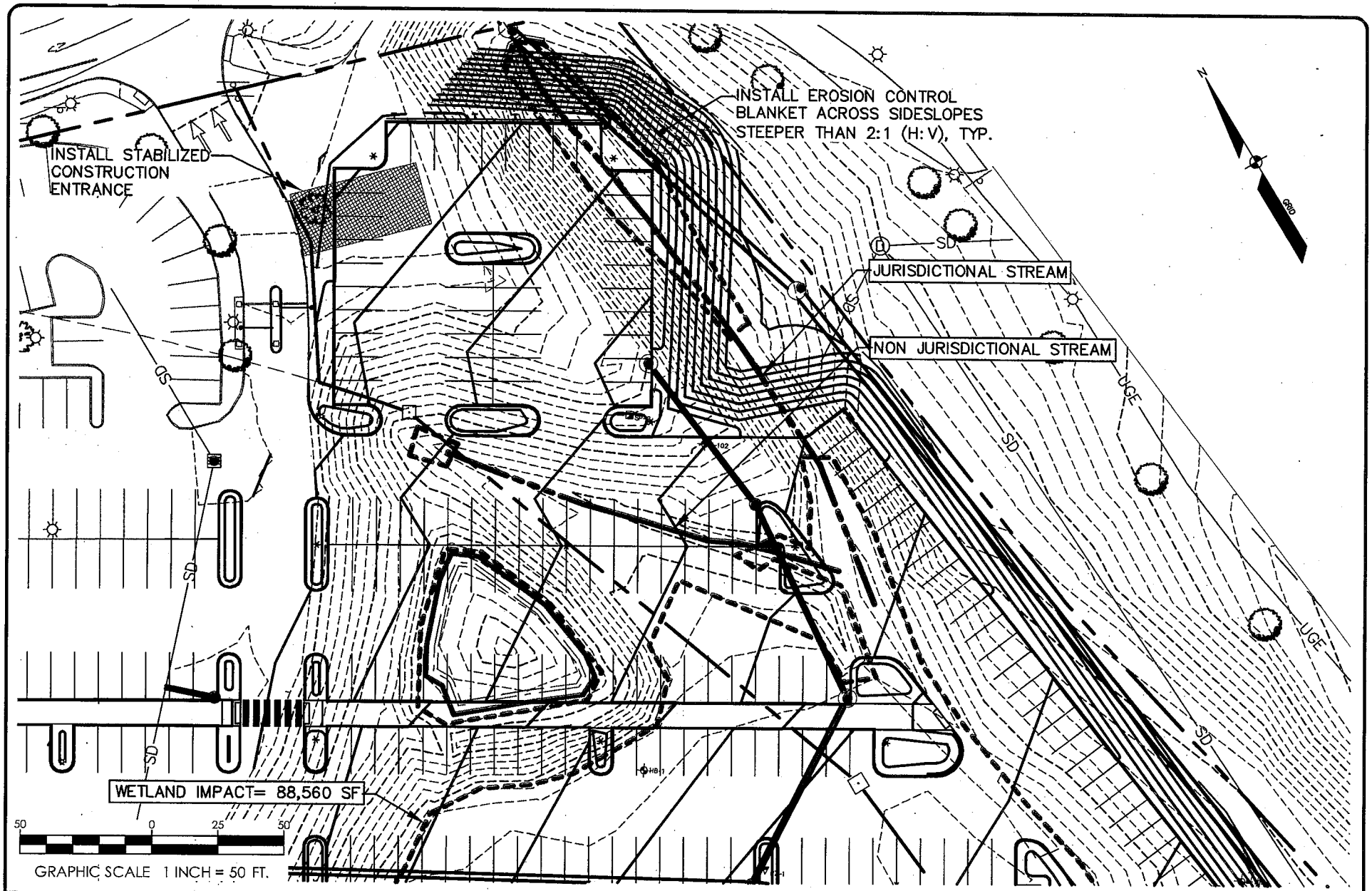
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET: 2 OF 3



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SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

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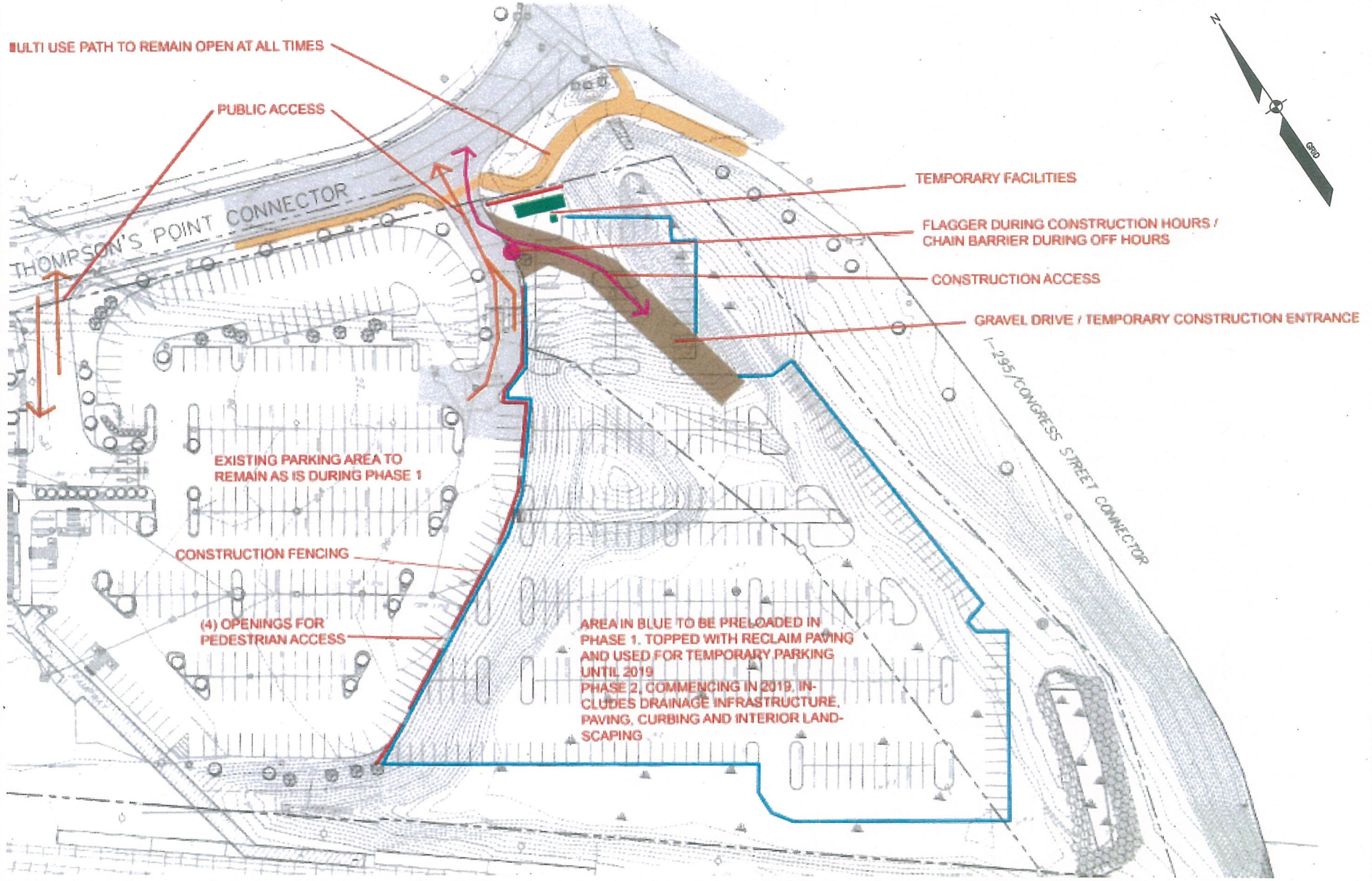
SCALE: 1"=30'
DATE: 02/05/18
SHEET: 3 OF 3

99607 NRPA GU Figures.dwg, TAB: NRPA-3



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CONSTRUCTION MANAGEMENT PLAN - PHASE 1
OF PORTLAND TRANSPORTATION CENTER

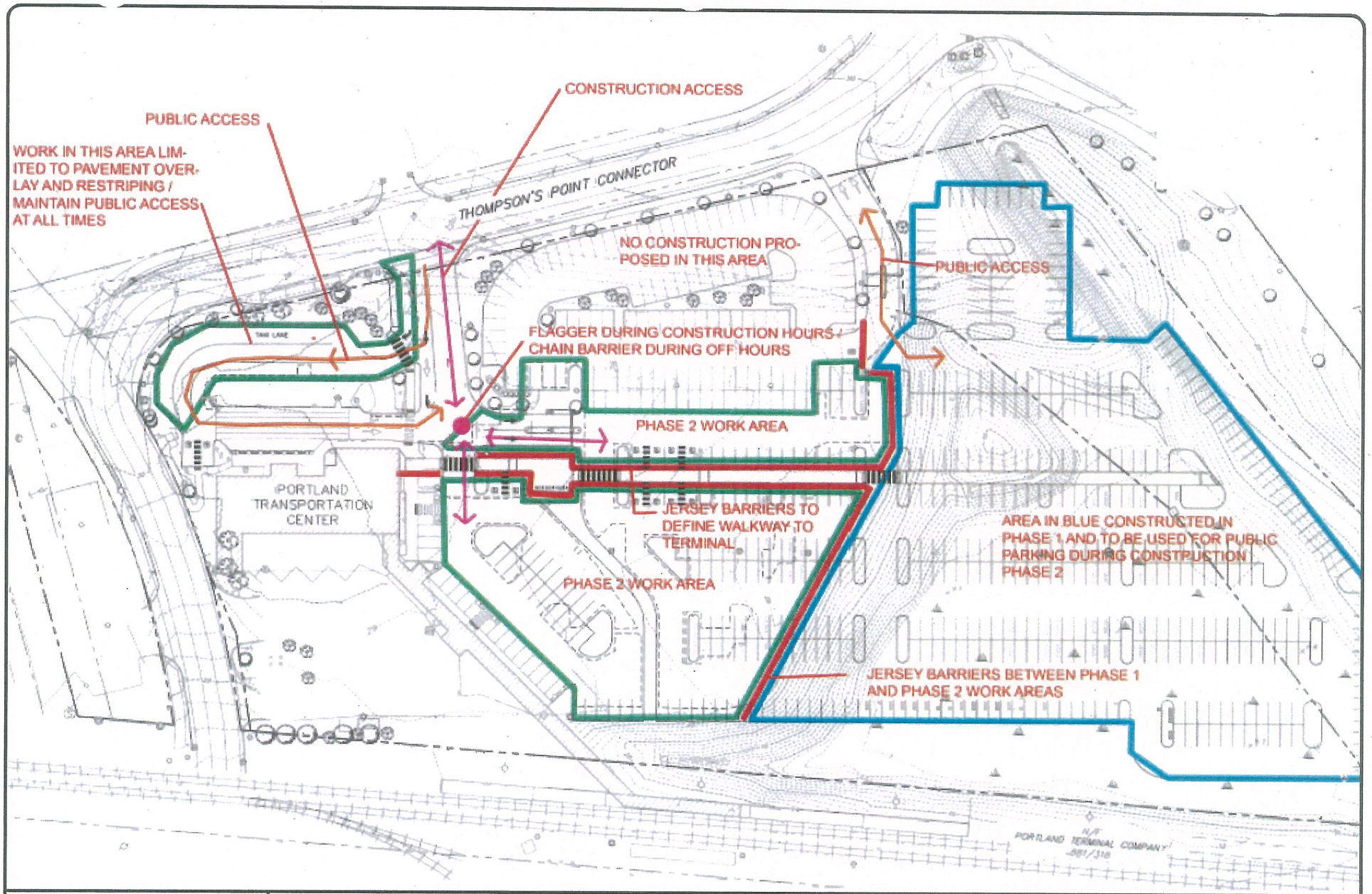
SCALE: 1"=100'

DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
1 OF 4



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CONSTRUCTION MANAGEMENT PLAN - PHASE 2
OF PORTLAND TRANSPORTATION CENTER

SCALE: 1"=100'

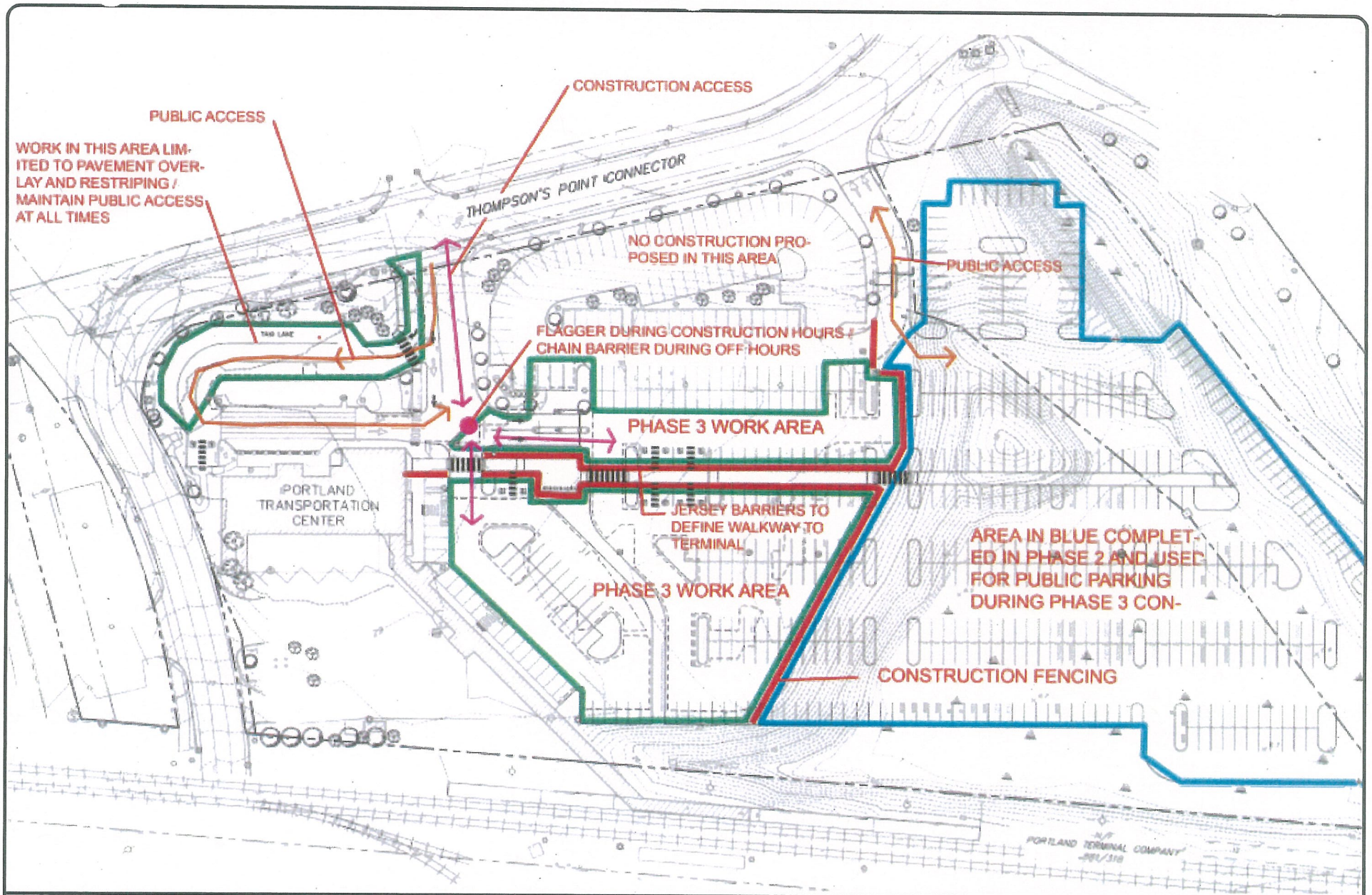
DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
2 OF 4

99607 NRPA Construction Management Figures.dwg, TAB: NRPA-2 (8.5x11)



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CONSTRUCTION MANAGEMENT PLAN - PHASE 3
OF PORTLAND TRANSPORTATION CENTER

SCALE: 1"=100'

DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET: 3 OF 4

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.

2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.

3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)

5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.

6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.

7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.

8. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN SEPTEMBER, 2017 BY ERIK B. LEMA, CERTIFIED WETLAND SCIENTIST OF NORMANDEAU ASSOCIATES, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED BY SEBAGO TECHNICS USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.

9. SITE DEVELOPMENT AND EARTHWORK CONSTRUCTION WILL CONFORM TO THE EROSION PREVENTION PROVISIONS OUTLINED IN THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" AND "MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES" BY MDEP BUREAU OF LAND AND WATER QUALITY DATED 2014 OR LATEST REVISION.

10. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. THE DEVELOPER, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.

11. THE PROJECT IS LOCATED IN OR WITHIN PROXIMITY TO PROTECTED NATURAL RESOURCES, INCLUDING WETLANDS, STREAMS AND HABITATS. THE CONTRACTOR SHALL WORK IN COMPLIANCE WITH THE NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND PERMIT FROM THE ARMY CORPS OF ENGINEERS. THESE ENVIRONMENTAL PERMIT APPLICATIONS AND CONDITIONS OF APPROVAL ARE INCLUDED IN APPENDIX OF THE SPECIFICATIONS. VARIATION FROM THE WORK DESCRIBED IN THESE PERMITS MUST BE APPROVED IN WRITING FROM THESE REGULATORY AGENCIES PRIOR TO CONSTRUCTION. WETLANDS SHALL NOT BE IMPACTED UNLESS SHOWN ON THIS PLAN. WETLANDS SHALL BE FLAGGED PRIOR TO CONSTRUCTION.

11. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, CONDUIT AND PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.

12. ALL LAWN AREAS, WALKWAYS, AND DRIVEWAYS OUTSIDE THE WORK AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE.

13. EXISTING PAVEMENT SHALL BE SAW CUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.

14. EXISTING DRAINAGE STRUCTURES SHALL NOT BE DISTURBED UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED BY THE ENGINEER.

15. THE CONTRACTOR IS REQUIRED TO PROVIDE A SECURE PROJECT WORK AREA. ALL PIPE TRENCH EXCAVATIONS SHALL BE BACKFILLED AND "CLOSED" DURING CONTRACTOR NON-WORKING HOURS INCLUDING NIGHTS, HOLIDAYS AND WEEKENDS. THE CONTRACTOR MAY REQUEST IN WRITING TO THE ENGINEER AND OWNER TO SECURE OPEN EXCAVATION IN LIEU OF BACKFILLED AND "CLOSED." NOT ALLOWING A SECURE OPEN EXCAVATION SHALL NOT BE A BASIS FOR CLAIMS AGAINST THE OWNER.

16. CONTRACTOR SHALL COMPLETE WORK SPECIFIED ON EACH PLAN AND SHALL COORDINATE WORK WITH ENTIRE PROJECT PLAN SET.

17. AT HANDICAPPED PARKING SPACES, APPLY PAINTED BLUE AND WHITE INTERNATIONAL SYMBOL OF ACCESSIBILITY. ALL ADA PARKING SPACES SHALL BE SIGNED AS VAN ACCESSIBLE. ALL ADA SIGNS (SIGN NO. S-2) SHALL BE INSTALLED ON BOLLARDS SET 6" FROM ADJACENT CURB OR FLUSH CONCRETE PAVING, BOTTOM OF SIGN SET 60" ABOVE GRADE. FINISH GRADES WITHIN ACCESSIBLE SPACES SHALL NOT EXCEED 1:50 IN ANY DIRECTION.

18. ALL PAINTED CROSSWALKS AND ADA ACCESS AISLES SHALL BE PAINTED WITH 24" WIDE SOLID WHITE BARS SET 24" APART.

19. ALL PARKING SPACES SHALL BE DEFINED WITH 4" WHITE PAINTED LINES. VERIFY THAT PROPOSED PAINT MATCHES EXISTING PAINTED LINES

20. PARKING SUMMARY: EXISTING PARKING SPACES= 323
PROPOSED PARKING SPACES= 621

21. CONTRACTOR SHALL NOT START CONSTRUCTION ON EXISTING PARKING LOT UNTIL PARKING IN PROPOSED PARKING LOT AVAILABLE.

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CONSTRUCTION MANAGEMENT NOTES - PHASE 1 AND 2
OF PORTLAND TRANSPORTATION CENTER

SCALE: NTS
DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
4 OF 4

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
   INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
   IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
   KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

   THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
   CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.

2. INSPECTION AND MAINTENANCE:
   ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
   CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF

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EROSION CONTROL NOTES
OF PORTLAND TRANSPORTATION CENTER

SCALE: NTS
DATE: 02/05/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET: 1 OF 6

4. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES, THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

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PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. STABILIZED CONSTRUCTION EXIT:
PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

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5. PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

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STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.

B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN 2018, DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

1.	ESTIMATED CONSTRUCTION TIME:	24 MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 3
4.	PRELOAD PROPOSED PARKING LOT SITE	WEEK 4 - WEEK 8
5.	PRELOAD SETTLEMENT PERIOD	WEEK 8 - WEEK 86
6.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 86 - WEEK 91
7.	UTILITY INSTALLATION AND PARKING LOT CONSTRUCTION	WEEK 91 - WEEK 95
8.	MULCH SPREAD FOR EROSION CONTROL	2020 OF CONSTRUCTION YEAR
9.	START FINAL SEEDING ON PREPARED AREAS (DURING GROWING SEASON)	WEEK 91
10.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH	WEEK 91
11.	RE-SEEDING OF AREAS, IF NEEDED	WEEK 102
12.	REMOVAL OF EROSION CONTROL DEVICES	UPON FINAL PROJECT COMPLETION

* DATES ARE SUBJECT TO CHANGE AT THE DISCRETION OF THE ENGINEER, DEPENDING ON CONSTRUCTION PROGRESS.

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HOUSEKEEPING:

THE FOLLOWING GENERAL PERFORMANCE STANDARDS APPLY TO THE PROPOSED PROJECT.

A. SPILL PREVENTION:
CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

B. GROUNDWATER PROTECTION:
DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

C. FUGITIVE SEDIMENT AND DUST:
ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

D. DEBRIS AND OTHER MATERIALS:
MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

E. EXCAVATION DE-WATERING:
EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

F. AUTHORIZED NON-STORMWATER DISCHARGES:
IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE: DISCHARGES FROM FIREFIGHTING ACTIVITY; FIRE HYDRANT FLUSHINGS; VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING ISLIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED); DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS; ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS; PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED; UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE; UNCONTAMINATED GROUNDWATER OR SPRING WATER; FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED; UNCONTAMINATED EXCAVATION DEWATERING; POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; LANDSCAPE IRRIGATION;

G. UNAUTHORIZED NON-STORMWATER DISCHARGES:
THE DEP DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON_STORMWATER, SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING: WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS; FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EROSION CONTROL NOTES
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: NTS
DATE: 02/05/18
SHEET: 6 OF 6

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Permit Number: NAE-2018-00520

Project Manager Clement

Name of Permittee: Langdon Street Real Estate, Inc.

Permit Issuance Date: _____

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Permits and Enforcement Branch C *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

_____ _____
Printed Name Date of Work Completion

(____) _____ (____) _____
Telephone Number Telephone Number

US Army Corps of Engineers®
New England District

GENERAL PERMIT
WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Permits and Enforcement Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Corps of Engineers Permit No. NAE-2018-00520 was issued to Langdon Street Real Estate, Inc. on . This work is located in freshwater wetlands off Thompson's Point Connector at Portland, Maine. The permit authorized the permittee to fill 88,427 s.f. (2.03 acres) of freshwater wetlands adjacent to the Fore River in order to construct an expanded parking area for the Portland Transportation Center.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

_____

Telephone Numbers: (___) _____ (___) _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: _____ **Date Permit Expires:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: Clement **Submittals Required:** Yes

Inspection Recommendation: Inspect as convenient

_____

_____

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

LANGDON STREET REAL ESTATE INC.	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) TIER 3 WETLAND ALTERATION
PORTLAND TRANSPORTATION CENTER	) WATER QUALITY CERTIFICATION
L-20318-TG-B-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, Section 401 of the Federal Water Pollution Control Act (33 U.S.C. § 1341), and Chapters 310 and 315 of Department rules, the Department of Environmental Protection has considered the application of LANGDON STREET REAL ESTATE INC. with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: The Department accepted Site Location of Development (Site Law) Application L-20318-26-A-D for municipal review by the City of Portland under delegated authority on July 14, 2000 for the Portland Transportation Center. The Portland Transportation Center (PTC) is a public transportation hub that serves as the terminal for the Downeaster Amtrak passenger rail service and the Concord Coach Lines bus transportation service. The PTC was constructed in 2001 as the result of a partnership between The Maine Department of Transportation (MDOT), Langdon Street Real Estate, which is a real estate holding company belonging to the same ownership group as Concord Coach Lines, and the Northern New England Passenger Rail Authority (NNEPRA) which operates the Downeaster Amtrak service. The railroad line that the Downeaster Amtrak passenger rail uses at this site was constructed circa 1900.

B. Summary: The applicant proposes to fill 88,247-square feet (2.03 acres) of freshwater wetland to construct approximately 289 new parking spaces and to modify the existing vehicle access to the terminal entrance for the PTC. The wetland area is located adjacent to and within an urban setting with a ditch, and stormwater inlet and outlet pipes. The project is shown on a set of plans, Sheet 8 of 16 is titled "Grading and Utility Plan – Part A of: Portland Transportation Center, Thompsons Point Connector, Portland, Maine, for: Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301," which was prepared by Sebago Technics and dated February 1, 2018, with a most recent revision date on any of the plans of July 10, 2018. The Site Law Application L-20318-26-C-D was accepted by the Department for municipal review of development by the City of Portland under delegated authority on May 11, 2018.

C. Current Use of the Site: The project site is located on an undeveloped portion of an 8.74-acre parcel on Thompson's Point Road in the City of Portland. The upland portion of the site is developed with the PTC which consists of the Amtrak Downeaster

passenger rail service, Concord Coach Lines passenger bus service, and Greater Portland Metro Bus local bus service called the Breez. North of the proposed project area is the Fore River Parkway and Thompson's Point Road. East of the site is an on-ramp connecting the Fore River Parkway to Interstate 295 with Interstate 295 lying further to the east. South of the project area is the Portland Terminal Company Railroad and a developed area called Thompson's Point and a tidal mudflat area associated with the Fore River. Portland International Jetport is approximately 0.6 miles further to the southwest across the Fore River. Just north of the Thompson's Point Road is the Maine Department of Transportation's Park and Ride parking lot with 375 parking spaces that are used for parking by the PTC. Northwest of the proposed project site is the existing PTC parking lot with 314 parking spaces and northwest of the project parcel is an electrical substation and medical office buildings with their associated parking lots. Together the Park & Ride and the PTC parking lot has 689 parking spaces. The parcel is identified as Lot A001 on Map 77 of the City of Portland's tax maps.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

The Natural Resources Protection Act (NRPA), in 38 M.R.S. §480-D(1), requires the applicant to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. ch. 315, effective June 29, 2003), the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site and surroundings including an aerial photograph of the project site. Department staff visited the project site on April 25, 2018.

The proposed project is located in an emergent wetland, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment, and appreciation of its natural and cultural visual qualities. It is likely that there are few, if any, citizens that visit the wetland proposed to be impacted due to its size, location, and lack of recreational opportunities such as trail walking, fishing, or boating. The proposed project will fill the majority of the wetland leaving a small area of wetland to remain adjacent to the railroad. The project will be visible from the remaining wetland area which will appear to be an extension of the existing parking lot.

The applicant has prepared a landscaping plan that includes trees and shrubs along the eastern side of the project site, trees in the traffic islands in the parking lot, and Northwest Wildflower Seed Mix on the slopes adjacent to the railroad to reduce the visibility of the parking lot from the scenic resource. The proposed project is in an urban setting and will be compatible with the surrounding roads, parking lots and railroad. The applicant must monitor the plantings and the plantings must be replaced or maintained as necessary to achieve 85% survival after one full growing season.

Based on the information submitted in the application and the site visit, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department determined that based on the nature of the proposed project and its location, there are no existing recreational or navigational uses of the resource that would be unreasonably impacted.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the freshwater wetland provided that the applicant monitors and maintains the plantings as described above.

3. SOIL EROSION:

The NRPA, in 38 M.R.S. §480-D(2), requires the applicant to demonstrate that the proposed project will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

The applicant has submitted an erosion control plan and details to be implemented for the project to prevent the transport of sediment to the resource.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The proposed project site is located adjacent to the PTC terminal building and is a wetland area within an urban setting with a ditch, and stormwater inlet and outlet pipes. The wetland is bordered by uplands consisting of fill material associated with an Interstate 295 ramp, the existing parking area for the transportation and the railroad. South of the project area is the Portland Terminal Company Railroad and a developed area called Thompson's Point leading to a tidal mudflat area associated with the Fore River.

The NRPA, in 38 M.R.S. §480-D(3), requires the applicant to demonstrate that the proposed project will not unreasonably harm significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life.

According to the Department's Geographic Information System (GIS) database there are no mapped Essential or Significant Wildlife Habitats located at the site. The Maine

Department of Inland Fisheries and Wildlife was also contacted and did not have any concerns for the proposed project.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life.

5. WATER QUALITY CONSIDERATIONS:

As discussed in Finding 3, the applicant proposes to use erosion and sediment control during construction to minimize impacts to water quality from siltation. The applicant will be using clean, inert fill materials for the project that will be stabilized with either pavement or vegetation. The stormwater runoff for the project will be required to meet the water quality standards in the Department's Chapter 500 Stormwater Management General Standards.

The Department does not anticipate that the proposed project will violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicant proposes to directly alter 88,427 square feet (2.03 acres) of freshwater wetland to construct the proposed PTC parking lot expansion. The type of wetland proposed to be altered is emergent with vegetation consisting largely of a broad-leaved cattail (*Typha latifolia*) and common reed (*Phragmites australis*) dominated marsh. The vegetation in the center of the wetland is potentially identified as hybrid cattail (*Typha x glauca*). There are tree species including ash-leaved maple (*Acer negundo var. nefundo*) and gray birch (*Betula populifolia*) along the perimeter of the wetland. This emergent wetland is considered a wetland of special significance because it is a freshwater wetland area located within 250 feet of a coastal wetland, and because it contains at least 20,000 square feet of emergent marsh vegetation. For an activity proposed in, on or over wetlands of special significance, a practicable alternative less damaging to the environment is considered to exist and the impact is unreasonable, unless the activity is described in the Wetlands and Waterbodies Protection Rules, 06-096 C.M.R. Chapter 310 section 5.A. The PTC is a public transportation hub that serves as the terminal for the Downeaster Amtrak passenger rail service and the Concord Coach Lines bus transportation service. The proposed parking lot expansion for the PTC is considered construction of a related facility to the railroad, which was constructed prior to September 1, 1996, and therefore cannot be practicably located elsewhere.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended January 26, 2009), interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project

would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values, and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a freshwater wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. The applicant submitted an alternatives analysis for the proposed project completed by Sebago Technics and dated March 2018. The purpose of the project is to address existing parking and traffic flow constraints at the site by expanding parking availability in a manner that is economically feasible for the ongoing operations of the transportation hub. The proposed project is designed to prevent traffic from backing up onto Thompson's Point Road and out onto the Fore River Parkway, and to provide additional parking. Providing convenient, accessible, and price conscious parking options has contributed to the success of the transportation hub and the additional parking will maintain the viability of the transit services offered at the PTC as alternatives to private automobiles for local and regional travel. The PTC accommodated 246,501 "car days" in 2016; a car day is a single instance of a car remaining in a parking space for a single day. This equates to a 97 percent utilization rate for the existing 689 parking spaces. To accommodate the overflow parking for PTC, the applicant leases 100 parking spaces daily from the developers on Thompson's Point. During peak travel season, February through April, that lease parking increases to 300 spaces. At peak demand, even with the additional 300 spaces, the lots at the PTC are over capacity. Additionally, the lease agreement is an annual contract with no guarantee for renewal each year.

The applicant investigated alternative parking sites elsewhere in Portland, but concluded that parking at the PTC is the preferred location. The applicant considered not expanding parking or addressing internal circulation improvements but concluded that the no-action alternative would not meet current and future transportation needs.

A second alternative considered expanding the leased parking space on Thompson's Point; however, the owners of Thompson's Point believe the property that abuts the rail line to be an integral part of a long-term development plan and therefore do not want to commit to a long-term lease or sale of the land currently being leased for PTC overflow parking.

A third alternative considered work with MDOT to construct a 1,000-space parking garage on their Park & Ride Lot for the bus and train terminal. There is an ongoing feasibility study for this parking garage. However, funds are not currently available to build the parking garage and the parking garage is years away from becoming a reality and would tie up nearly 400 parking spaces during construction. Revenue streams from the Park & Ride lot and the PTC parking lot are used to financially support operating costs of the PTC. If MDOT was to construct a parking garage on the Park & Ride lot, the revenues from the existing PTC parking lot would be diverted to pay for the parking

garage, this lost revenue would require an increase in parking cost or require public subsidies. In addition, the parking garage would not address the traffic and circulation issues at the PTC. While the parking garage is still being considered as a long-term strategy, it has been deemed impracticable short-term because it is not financially feasible or address traffic congestion at the PTC.

A fourth alternative considered construction of a parking garage on the existing terminal site over the current parking lot. However, during construction, this would eliminate existing parking spaces, which would exacerbate the current parking situation. The cost of the parking garage would require the daily parking fees to increase to a cost that is higher than the ground transportation market can bear so fewer patrons would opt to travel from this transportation hub. Therefore, while this alternative is available, it is not practicable for financial and constructability reasons, and was rejected.

A fifth alternative analyzed valet parking whereby patrons hand over vehicle keys and a terminal employee double parks the vehicle until the patron returns from their trip. While this has been used during peak periods, it requires additional operational expenses, customers are wary of it, and it would become a barrier for some patrons when considering their future use of the facility. The strategy of valet double stacked parking would still not meet the current and future parking needs at the PTC. While the applicant considers this a short-term solution during peak periods, it does not meet the project purpose of providing more parking and parking space deficit at the PTC.

Alternative six examined developing a satellite parking lot and shuttle service to the bus and train terminal. The application referenced data that concluded satellite parking lots must be significantly cheaper than parking at a consumer's destination otherwise they will not be used. The applicant considered real estate within a five-minute drive of the terminal that is owned by MDOT but found it was reserved for future use by the rail system for the Downeaster Amtrak service. Three properties within a twelve-minute drive of the terminal were also considered. The applicant provided a brief analysis of the costs per space per day for a satellite parking lot including costs of shuttle drivers and the shuttle busses. This analysis concluded that satellite parking is more expensive than additional on-site parking and an on-site parking garage and therefore not practicable.

Alternative seven examined relocating the Concord Coach Line terminal. A search was conducted and no viable options were found north of Saco. A different terminal location for the Downeaster rail service was also examined and no options are available in Portland. The PTC is viewed as a multi-modal transportation hub for inter- and intra-city ground transportation; if the bus or train service was relocated the multi-modal ground transportation model of the PTC would no longer be viable and as such, this alternative is not available and has been discarded.

Alternative eight examined the proposed construction of additional parking on the undeveloped area adjacent to the existing terminal building. This alternative provides approximately 289 additional parking spaces bringing the total number of parking spaces adjacent to the terminal to approximately 603 spaces. These additional spaces will

address the PTC's current parking space shortfall and will also allow the traffic circulation at the site to be redesigned to better manage traffic at peak travel times. The applicant has selected this proposed project because it the only practicable alternative that meets project purpose and need, is financially feasible, and will maintain the viability of the PTC.

B. Minimal Alteration. In support of an application and to address the analysis of the reasonableness of any impacts of a proposed project, an applicant must demonstrate that the amount of freshwater wetland to be altered will be kept to the minimum amount necessary for meeting the overall purpose of the project. In order to meet the current and future parking and circulation deficiencies most of the existing wetland will be altered. Fill slopes adjacent to the remaining area of wetland were steepened to two to one slopes to reduce the toe of the fill extension which reduced overall wetland impacts.

C. Compensation. In accordance with Chapter 310 §5(C)(6)(b), compensation may be required to achieve the goal of no net loss of coastal wetland functions and values. This project will result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. Compensation is required to achieve the goal of no net loss of wetland functions and values and this project will fill approximately 88,247square feet (2.03 acres) of emergent wetland. The applicant proposes to mitigate for the lost wetland functions and values by making a payment to the In-Lieu Fee (ILF) program of the Maine Natural Resource Conservation Fund (MNRCF).

The proposed project will impact a wetland classified as an emergent wetland (Cowardin class PEM1). The wetland is bordered by uplands consisting of fill material associated with an Interstate 295 ramp, the existing parking area for the transportation and the railroad. The principal function of this wetland is sediment and toxicant retention due to its confined basin, dense vegetation, proximity to developed areas and as recipient of stormwater flows to this wetland. Floodflow alteration and wildlife habitat are also functions of this wetland due to the overall size of the wetland, its vegetation structure and urban setting. The lack of vegetation diversity within the wetland limits its value as wildlife habitat, however its presence as a habitat island within an urban landscape allows for avian use and provides nesting habitat. Groundwater recharge is also likely to be a function of this wetland, albeit likely limited due to the proximity to the tidal waters.

The applicant proposes to provide an ILF to the MNRCP in the amount of $760,472.20. Prior to the start of construction, the applicant must submit a payment in the amount of $760,472.20, payable to "Treasurer, State of Maine", and directed to the attention of the ILF Program Administrator at 17 State House Station, Augusta, Maine 04333.

The Department finds that the applicant has avoided and minimized freshwater wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project provided that prior to project to the start of construction, the applicant submits the ILF Fee payment as described above.

7. OTHER CONSIDERATIONS:

The Department finds, based on the design, proposed construction methods, and location, the proposed project will not inhibit the natural transfer of soil from the terrestrial to the marine environment, will not interfere with the natural flow of any surface or subsurface waters, and will not cause or increase flooding. The proposed project is not located in a coastal sand dune system, is not a crossing of an outstanding river segment, and does not involve dredge spoils disposal or the transport of dredge spoils by water.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 480-A–480-JJ and Section 401 of the Federal Water Pollution Control Act:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses provided that the applicant monitors and maintains vegetation as described in Finding 2.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided that prior to construction the applicant makes a payment to the ILF program as described in Finding 6.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in 38 M.R.S. § 480-P.

THEREFORE, the Department APPROVES the above noted application of LANGDON STREET REAL ESTATE INC. to fill 88,247 square feet of freshwater wetlands to construct

additional parking as described herein, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicant shall take all necessary measures to ensure that its activities or those of its agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

4. The applicant must monitor the plantings and the plantings must be replaced or maintained as necessary to achieve 85% survival after one full growing season.

5. Prior to the start of construction, the applicant shall submit a payment in the amount of $760,472.20, payable to "Treasurer, State of Maine", to the attention of the ILF Program Administrator at 17 State House Station, Augusta, Maine 04333.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 20th DAY OF July, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie L. for
For: Paul Mercer, Commissioner

Filed
JUL 20 2018
State of Maine
Board of Environmental Protection

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

CGW/L20318BN/ATS#82879

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. § 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

RE: PTC- other items from 8.2.18 meeting esp. wetland info

2 messages

Steve Sawyer <ssawyer@sebagotechnics.com> Thu, Aug 9, 2018 at 10:43 AM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: "Woodruff, Christine" <Christine.Woodruff@maine.gov>, Marcia Bowen <mbowen@normandeau.com>, Sarah Allen <sallen@normandeau.com>, Benjamin Blunt <bblunt@concordcoachlines.com>, Brandon Blake <bblake@sebagotechnics.com>, "Blunt Harry (hblunt@concordcoachlines.com)" <hblunt@concordcoachlines.com>, Will Conway <wconway@sebagotechnics.com>

Good Morning Jean –

With this email I hope I can provide you with answers to all of your and the PB's concerns with the one exception being the access and circulation information that was raised last week at the TMP Scoping Meeting. We hope to have that information compiled for you in the next week or so.

1. The vernal pool study report is attached. No additional wetland information beyond that which was included as part of the ACOE and DEP permit applications was generated, and the City has all of this information.

2. The DEP's NRPA Permit Justification Memo is a great overview of their thinking with regard to the wetlands in relation to the Project Purpose. Further in this regard, I spoke with Chris Woodruff at the DEP yesterday and she directed me to Section 6 of the Permit, which describes her rationale in justifying the situation of the wetland filling. In addition, she directed me to Chapter 310 of the statute, Section 5.A.1.d, which describes provisions for filling wetlands of special significance in association with expanding existing facilities that cannot be relocated.

3. The "In Lieu Fee Compensation Program" that is mentioned in our NRPA permit is described in the attached Fact Sheet. It is my understanding from Chris at DEP that monies collected from this program are placed in the Maine Natural Resources Conservation Fund, which is a grant program to fund qualified natural resource conservation projects. The monies are allocated on a regional rather than community basis for practicality reasons. CCL's funds would be allocated to the Southern Maine Biophysical Region. Two more specific maps are included herein for your reference. If the City of Portland wanted to apply for these funds for an eligible conservation project within the City, they could.

4. Future parking demand was mentioned as a concern – as was future long range facility planning. I have attached a Study completed this year by MaineDOT with cooperation from CCL and NNEPRA that addresses future parking demand and the prospects for a garage (albeit on the MaineDOT Park-and-Ride Lot). This assessment suggests a new 1200 space garage at a cost of $40 million. Unfortunately, no funding is available at this time for this project. In addition, subsequent discussions between MaineDOT, NNEPRA, Chris Thompson, and CCL have redirected the focus of this garage onto the CCL property. It is our understanding that there is a meeting of the major stakeholders (the City included) scheduled for August 21 to confirm this fact. CCL has taken the lead in conceptualizing how this could be done on their parcel, but the fact remains that the first step in even this process is that we need to fill in the wetlands to create enough land area on the site to accommodate the garage and new terminal. We are open to sharing CCL's concept sketches for this prospect with the PB at our next meeting if you think it would be helpful. A primary stumbling block is still the $40 million, though.

5. With regard to the TMP, it appeared from our Scoping Meeting that the City has no issues with our application for a permit other than you would like to see some more data supporting our collective interest in mitigating the

traffic congestion and queueing at the Terminal itself. As I mentioned above, this additional data is being assembled and will be forwarded to you in the next week or two.

I hope that this information is helpful to you and the PB in their deliberations. Please let me know if you think you need anything further from us in this regard.

P.S. Let me know if we need to upload this information to your website and we will do so.

Stephen Sawyer, Jr., PE *Senior Vice President, Transportation*

Office: 207.200.2100 | Direct: 207.200.2082 | Mobile: 207.232.1281

75 John Roberts Rd., Suite 4A, South Portland, ME 04106

ssawyer@sebagotechnics.com | www.sebagotechnics.com

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From: Jean Fraser [mailto:jf@portlandmaine.gov]
Sent: Friday, August 03, 2018 5:51 PM
To: Steve Sawyer <ssawyer@sebagotechnics.com>

Cc: Bradley Lyon <blyon@sebagotechnics.com>; Will Conway <wconway@sebagotechnics.com>; Barhydt, Barbara <bab@portlandmaine.gov>; O'Brien, Stuart <sgo@portlandmaine.gov>
Subject: PTC- other items from 8.2.18 meeting esp. wetland info

Steve

After the TMP meeting yesterday I mentioned some of the other items that need to be followed up in terms of providing info to the Planning Board, such as data on how people get to the terminal, data on future trips and parking demand, value of the wetlands and where the wetlands mitigation contribution will be focused, the long term/strategic plan, etc. It might be useful for us to have an update conversation on how these are being addressed.

In the meantime I was wondering if you could follow up regarding any additional wetland information that is available in respect of the highlighted text below. The Planning Board member who was particularly concerned about the loss of Wetlands was referring to the following two sections (quoted below) of Normandeau Associates report (section 11 of the original SLODA application):

- (pages 1-2 if the Report): "Vernal pool surveys were not performed in 2017. According to Maine Department of Inland Fisheries and Wildlife (IF&W) guidelines, potential pools are visited a minimum of two times during the vernal pool survey window, which occurs from approximately mid-April to early May. The project begun after this survey window had passed, but will be performed during the appropriate time of 2018 and included as an addendum to this survey report."
- (pages 2-3 of the report): "Wetland W01: This 2.03 acre emergent wetland is the dominant feature on site, and consists largely of a broad-leaved cattail (Typha latifolia), and common reed (Phragmites australis) dominated marsh, with some wetland tree species such as ash-leaved maple (Acer negundo var. negundo) and gray birch (Betula populifolia) along the perimeter. Hybrid cattail (Typha x glauca) was also likely observed in the interior of the wetland, although its identification is

not certain due to the variable nature of this hybrid. The wetland is bordered by uplands consisting of fill material and associated with Interstate 295 on/off ramps, the existing parking area for the transportation center, and the railroad embankment. All three drainages on the site flow into this wetland. The outlet is a 36-inch culvert under the railroad tracks draining to the Fore River.

The principal function of this wetland is that of sediment and toxicant retention, due to its confined

basin, dense vegetation, proximity to developed areas and receiving of stormwater from the

culverts. Floodflow alteration and wildlife habitat are also suitable functions due to the overall size

of the wetland, its vegetation structure and urban setting. Groundwater recharge is also likely

although proximity to tidal waters limits the potential ability of this wetland to contribute

significantly to groundwater resources. The lack of vegetation diversity within the wetland limits its

value as wildlife habitat, however its presence as a habitat island within an urbanized landscape

allows for avian use and provides nesting habitat. This area is also within 250 feet of a tidal wetland

and composed of greater than 20,000 square feet of emergent vegetation, rendering it a Wetland of

Special Significance (WOSS) and subject to greater legal protection under the Maine Natural

Resources Protection Act (NRPA). This wetland discharges through a 36-inch culvert under the

railroad tracks into a tidal wetland area between I-295 and Thompson’s Point. It supports an

assemblage of disturbance tolerant species as well as freshwater species such as spotted touch-menot

(Impatiens capensis) near this outlet, and does not appear to be subject to frequent salt or

brackish water. The culvert invert appears high enough to prohibit regular tidal flows, but it is likely

that occasional storm surges flow into Wetland 01 via in the culvert."

Could you please send us the vernal pool survey as noted in the first paragraph, and also send copies of any further information that may have been provided to the MDEP Christine Woodruff re NRPA regarding the value of this wetland.

Thank you

Jean

Jean Fraser, Planner

Planning & Urban Development Department

City of Portland
389 Congress Street
Portland, ME 04101
phone: (207) 874-8728

email: jf@portlandmaine.gov

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.

5 attachments

PTC - VP memo.pdf
152K

Langdon_Street_Real_Estate_Inc_L20318BN.PDF

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

PTC- other items from 8.2.18 meeting esp. wetland info

1 message

Steve Sawyer <ssawyer@sebagotechnics.com> Fri, Aug 31, 2018 at 1:47 PM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Will Conway <wconway@sebagotechnics.com>, "Barhydt, Barbara" <bab@portlandmaine.gov>, "O'Brien, Stuart" <sgo@portlandmaine.gov>, Tom Errico <thomas.errico@tylin.com>, "Bartlett, Jeremiah" <jbartlett@portlandmaine.gov>, "Peverada, John" <jbp@portlandmaine.gov>, "Hyman, Bruce" <bhyman@portlandmaine.gov>, Benjamin Blunt <bblunt@concordcoachlines.com>, "Blunt Harry (hblunt@concordcoachlines.com)" <hblunt@concordcoachlines.com>, Brandon Blake <bblake@sebagotechnics.com>, Nicole Scott <nscott@sebagotechnics.com>, "Andrea Cianchette Maker (amaker@pierceatwood.com)" <amaker@pierceatwood.com>

Good Afternoon Jean –

I hope your time away was restful and relaxing. In your absence we have been busy collecting and assembling additional information for you and the PB with regard to our project. Some items are in response to your memo and others are to respond to the PB feedback we got at our workshop. Accordingly, please see the following:

1. A traffic memo in response to our TMP scoping meeting with a revised site plan for the terminal entrance area.

2. A copy of the Vernal Pool investigation we performed in the spring. None were found. No other wetland investigations were performed as part of the project.

3. A copy of the justification for the wetland filling prepared by the MaineDEP which is thoroughly described in their Findings of Fact, attached. This includes a discussion of the wetlands of special significance under Section 6. See paragraph 1 in Section 6, which talks about the filling of wetlands of special significance.

4. I spoke with the permit project manager at MaineDEP about the use of the in lieu fee funds that we will be paying and she indicated that these go into a conservation grant program that is managed by Maine Natural Resources Conservation Program (not the DEP) and they will be directed towards projects that are proposed in the biophysical area around Portland. Two maps that represent their boundaries are attached. They don't get community specific for this program because of the scarcity of viable projects around the state. As such they have created similar regions based on biophysical characteristics. If Portland has a project they would like to propose, this money could be used for it if it met their requirements.

5. A copy of a Study performed for MaineDOT this year regarding the feasibility of constructing a parking garage on the MaineDOT's Park and Ride Lot across the street from the PTC. This report has traffic forecasts as well as garage construction costs – two items of interest to the PB.

Let me know if you think a face-to-face meeting is warranted with your staff prior to the 25th or if you think we have missed something that the PB would need to render a decision on our project at that meeting. As we have discussed, if we don't get the go ahead on the 25th, we may not be able to complete the construction this fall which causes us a major problem come next spring when our Thompson's Point lease is up.

Thanks again for your help with these matters and we look forward bringing this project to fruition.

P.S. Will Conway will upload this information to the City's website as requested along with a new landscaping plan, which was a matter we discussed with your arborist.

Stephen Sawyer, Jr., PE *Senior Vice President, Transportation*

Office: 207.200.2100 | Direct: 207.200.2082 | Mobile: 207.232.1281

75 John Roberts Rd., Suite 4A, South Portland, ME 04106

ssawyer@sebagotechnics.com | www.sebagotechnics.com

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From: Jean Fraser [mailto:jf@portlandmaine.gov]
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Subject: PTC- other items from 8.2.18 meeting esp. wetland info

Steve

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO ATTENTION OF

MAINE GENERAL PERMIT (GP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

CORPS PERMIT # NAE-2018-00520
CORPS GP ID# 18-143
STATE ID# NRPA

DESCRIPTION OF WORK:
Fill 88,427 s.f. (2.03 acres) of freshwater wetlands adjacent to the Fore River at Portland, Maine in order to construct an expanded parking area for the Portland Transportation Center. This work is shown on the attached plans entitled "PORTLAND TRANSPORTATION CENTER" in 19 sheets dated "02/05/18" and "02/20/18".

LAT/LONG COORDINATES : 43.653079° N -70.290347° W USGS QUAD: PORTLAND WEST, ME

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine General Permit (GP).** Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GP carefully, including the GP conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 38 of the GP (page 16) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP on October 13, 2020. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 13, 2021.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [X], ISSUED [ ], DENIED [ ] DATE_____

APPLICATION TYPE: PBR:___, TIER 1:_____, TIER 2 :_____, TIER 3: X , LURC: _____ DMR LEASE: _____ NA: _____

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 3/15/18 LEVEL OF REVIEW: CATEGORY 1:_____ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10_____, 404 X 10/404_____, 103_____

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Augusta, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0

Jay L. Clement
JAY L. CLEMENT
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

for Michael C. Hirsh 5/3/18
FRANK J. DEL GIUDICE DATE
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

US Army Corps of Engineers
New England District

PLEASE NOTE THE FOLLOWING CONDITIONS FOR DEPARTMENT OF THE ARMY GENERAL PERMIT NO. NAE-2018-00520

1. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.

2. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form(s) to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals).

3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

4. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.

5. All tree cutting shall occur between October 16 and April 19 of any year to the maximum extent practicable and no tree cutting shall occur between June 1 and July 31 of any year in order to minimize potential impacts to federally listed northern long eared bats.

6. Mitigation shall consist of payment of $760,470.48 to the Natural Resource Mitigation Fund. The completed ILF Project Data Worksheet which must be mailed with a cashier's check or bank draft, made out to "Treasurer, State of Maine", with the permit number noted on the check. The check and worksheet should be mailed to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. No project construction may begin until the permittee provides the Corps with a copy of the check, with the permit number noted on the check. The ILF amount is only valid for a period of one year from the date on the authorization letter. After that time, the project would need to be reevaluated and a new amount determined.

MAINE IN-LIEU-FEE (ILF)
PROJECT IMPACT WORKSHEET

DEP Invoice # *Filled in by ILF Administrator in Augusta*

Project name: Langdon Street Real Estate, Inc.; Parking area expansion; Portland Transportation Center

Permittee(s): Langdon Street Real Estate, Inc.

DEP/Corps permit #: /NAE-2018-00520 *Attach a copy of the permit*

DEP/Corps Project Manager: J. McGill/J. Clement

ILF Fee Amount: $760,470.48

Check Date: *Filled in by ILF Administrator in Augusta*

Project address: Thompsons Point Connector; Portland, Maine *Attach a locus map*

Biophysical region - Section: Mid Coast Maine

Biophysical region - Subsection: Casco Bay Coast

Total impact area subject to compensation: 88,427 SF (2.03 acres)

Resource(s) impacted:

Resource Types (list all that apply)	**Functions & Values** (for wetland impacts) (list all that apply, by resource type)	**Types of Impacts** (list all that apply, by resource type)	**SF Impacted** (by resource type)	**Linear FT of Streams Impacted (for Corps use)**
PEM	WH, FF, STR, NR, PE	Filling	88,427	NA
		Total impacts:	88,427	

Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, etc), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)

Wetland Functions & Values: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); recreation (R); education/scientific value (ESV); uniqueness/heritage (UH); and visual quality/aesthetics (VQ); wildlife habitat (WH)

Types of Impacts: May include: filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.

Portland Transportation Center
Proposed Parking Expansion

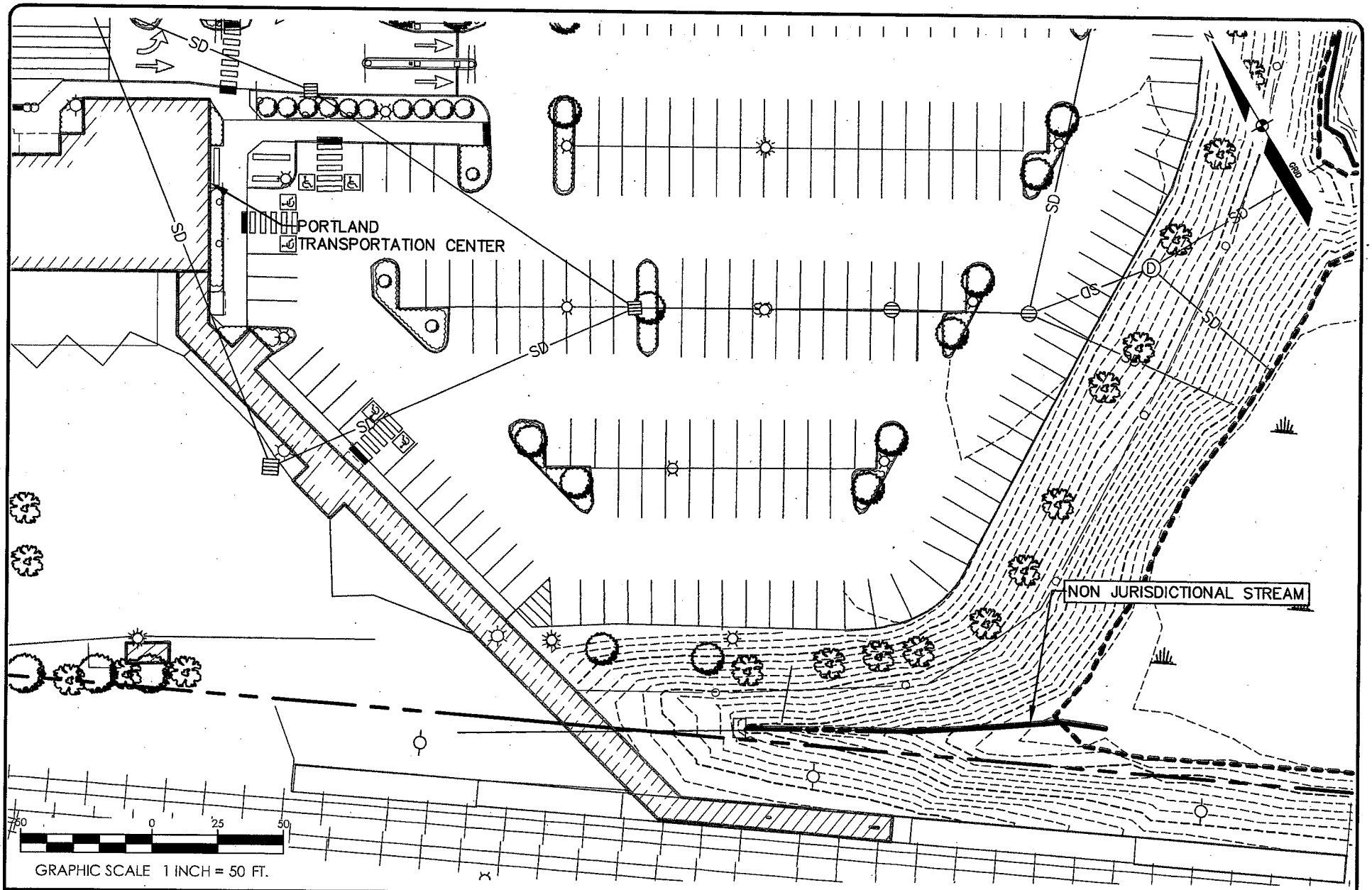
Portland, Maine

0 250 500 1,000 1,500 2,000 Feet

N

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Portland West 43.653079, -70.290347



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South Portland, ME 04106
Tel. 207-200-2100

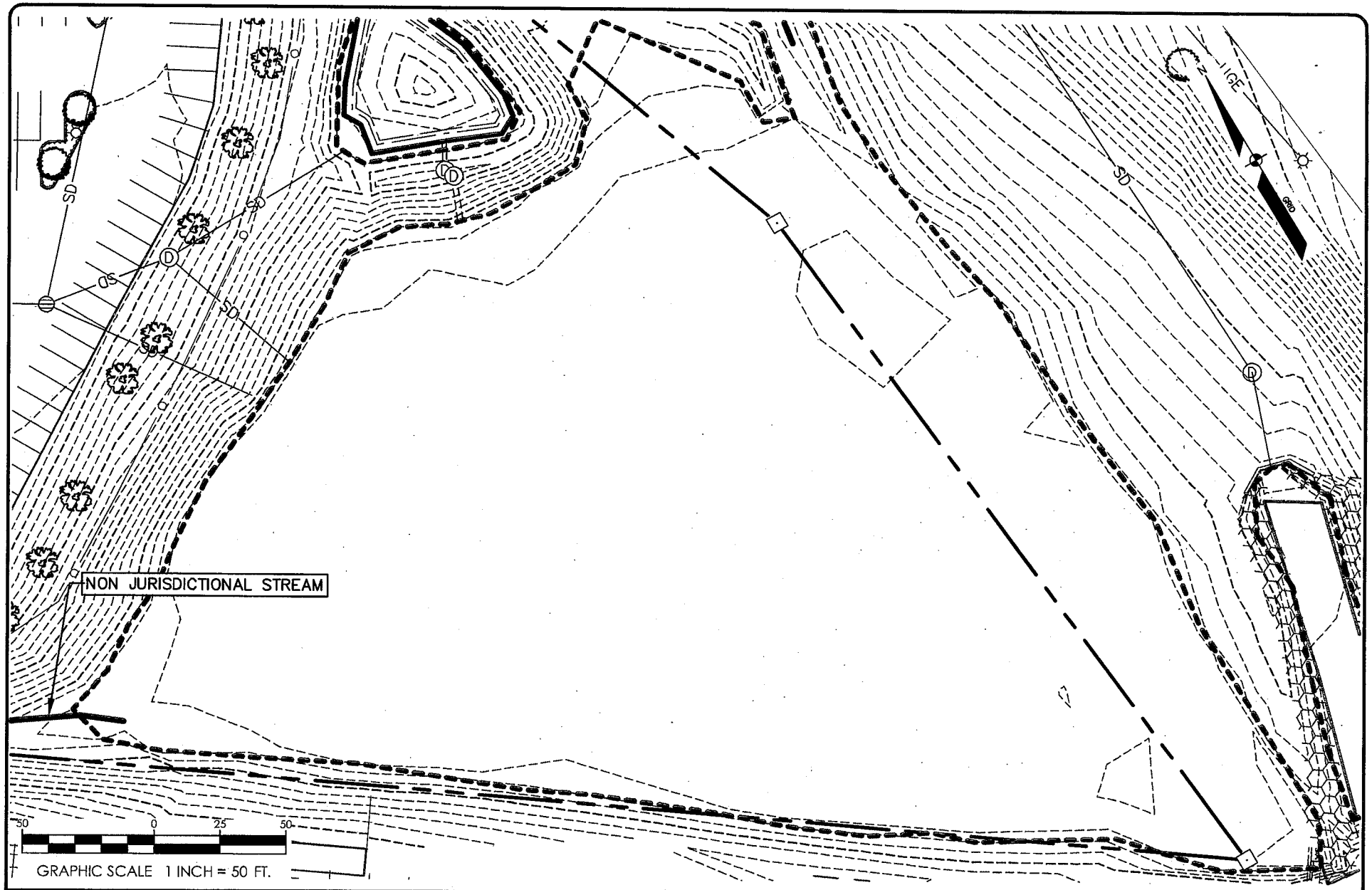
EXISTING SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: 1"=50'
DATE: 02/05/18
SHEET: 1 OF 3

99607 NRPA EC Figures.dwg, TAB: NRPA-1



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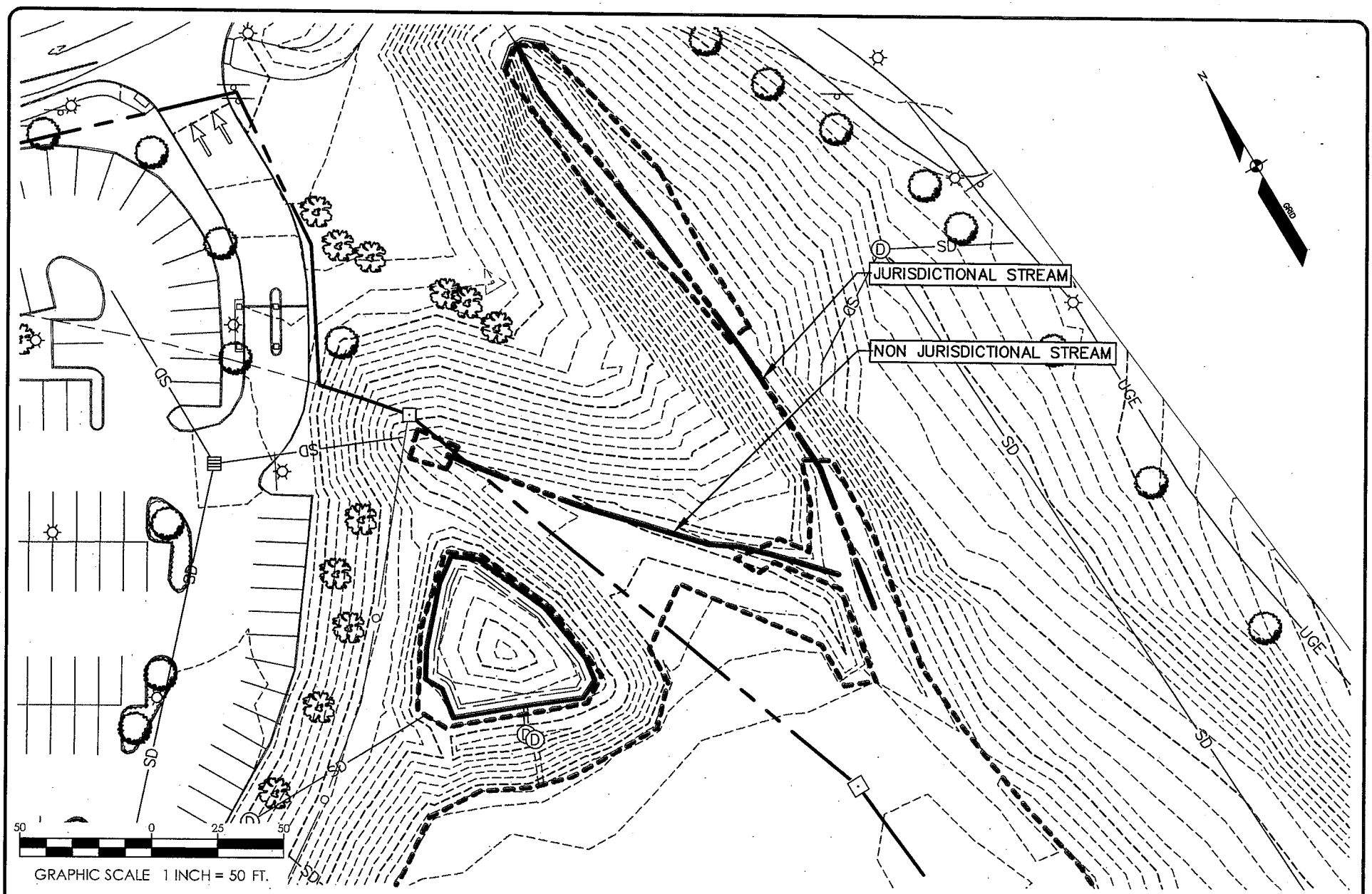
SCALE: 1"=50'
DATE: 02/05/18
SHEET: 2 OF 3



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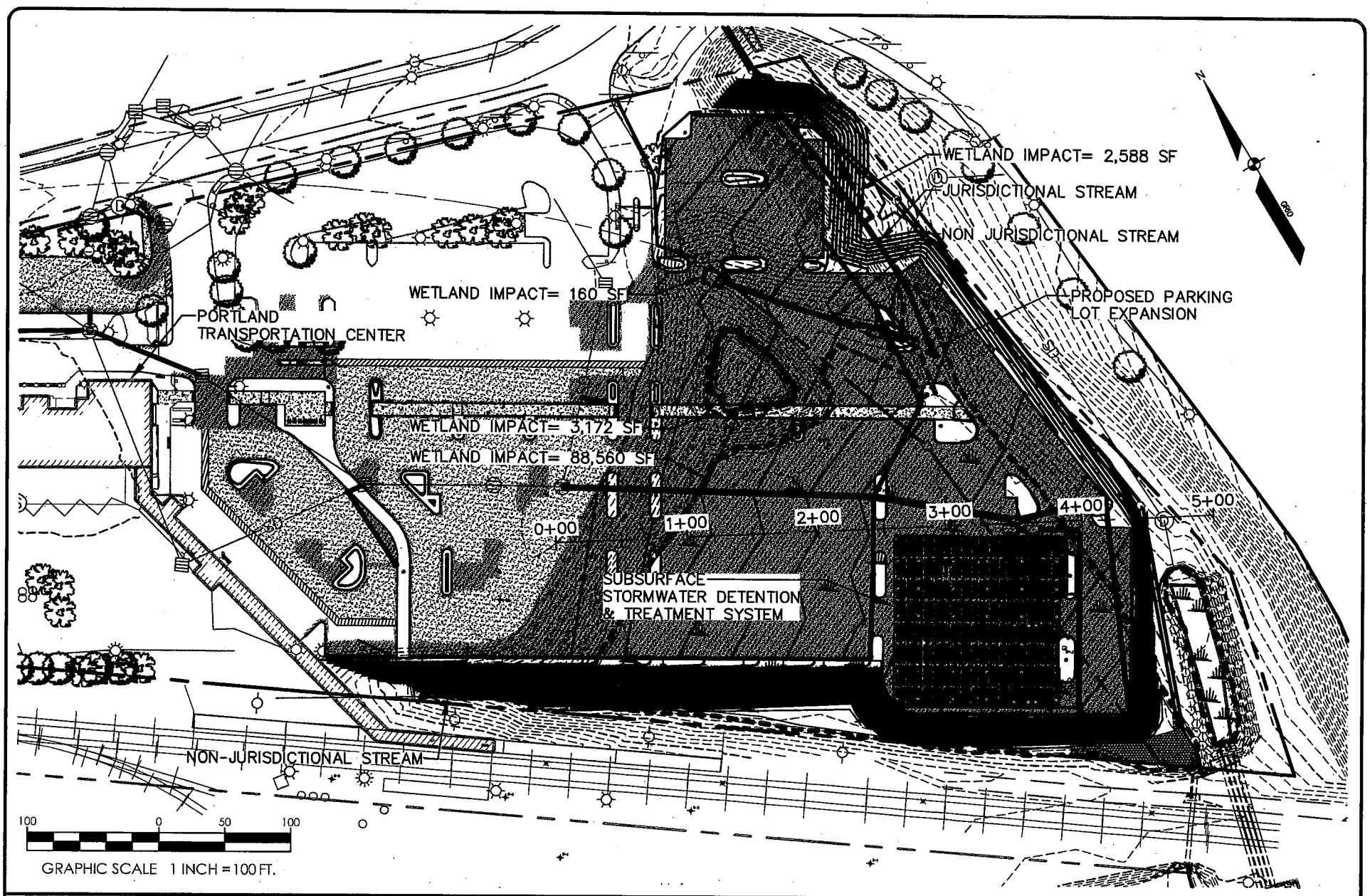
EXISTING SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: 1"=30'
DATE: 02/05/18
SHEET: 3 OF 3

99607 NRPA EC Figures.dwg, TAB: NRPA-3



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SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

SCALE: SCALE

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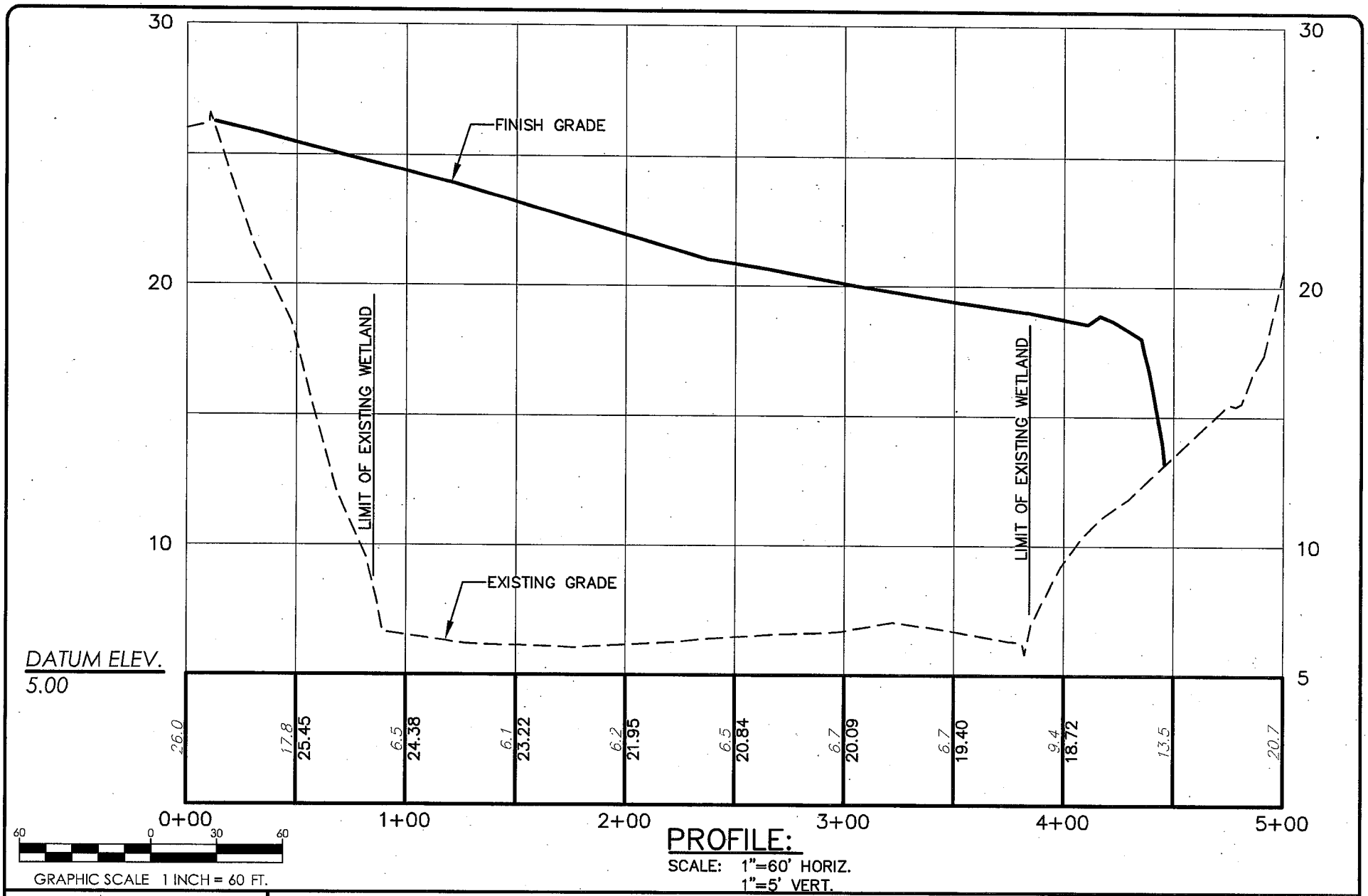
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
1 OF 2

99607 NRPA Figures.dwg, TAB: NRPA–1 (8.5x11)



PROFILE:

SCALE: 1"=60' HORIZ.
1"=5' VERT.

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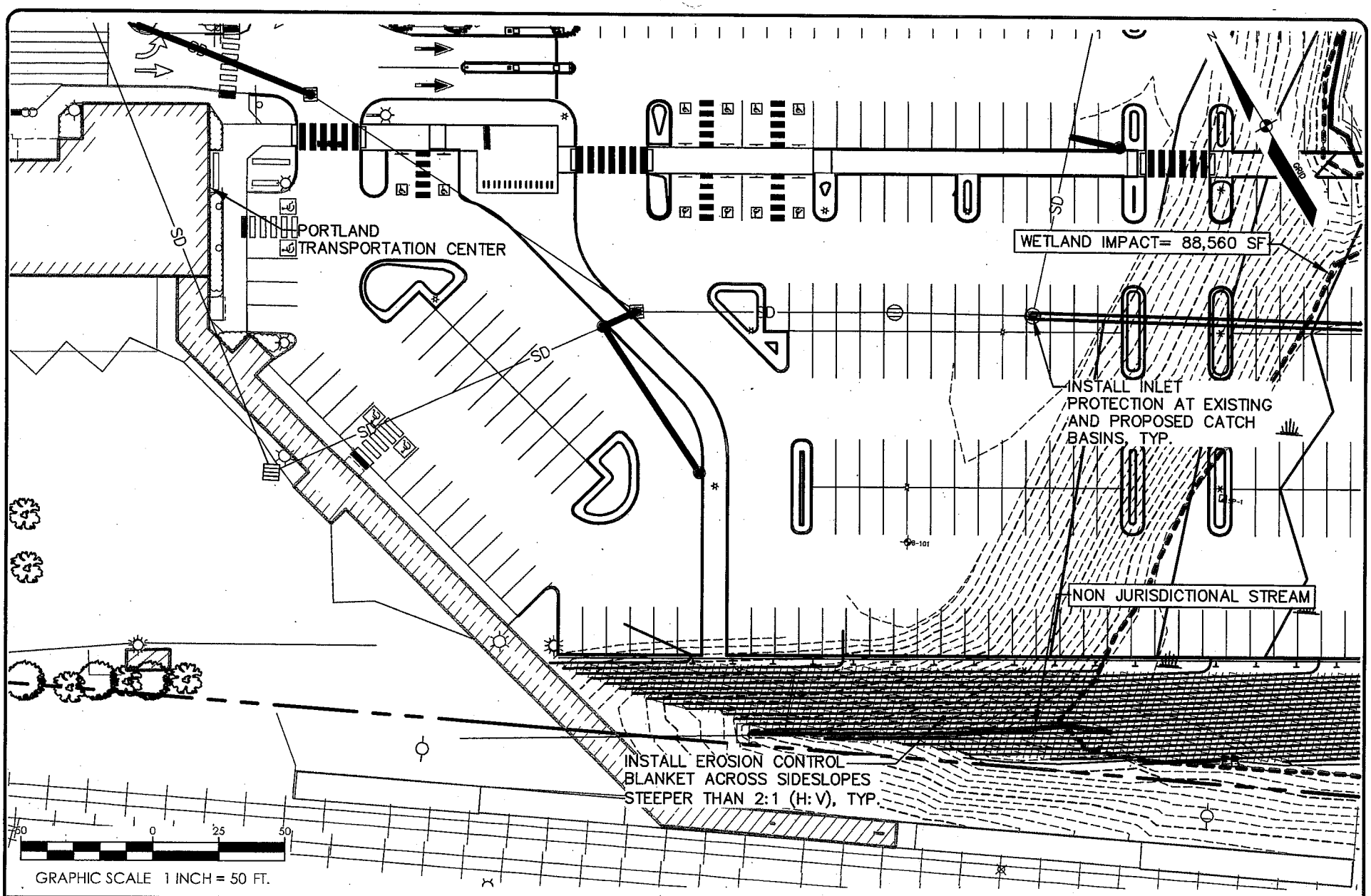
PROFILE
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: AS SHOWN
DATE: 02/05/18
SHEET: 2 OF 2

99607 NRPA Figures.dwg, TAB: NRPA-2 (8.5x11)



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SITE PLAN
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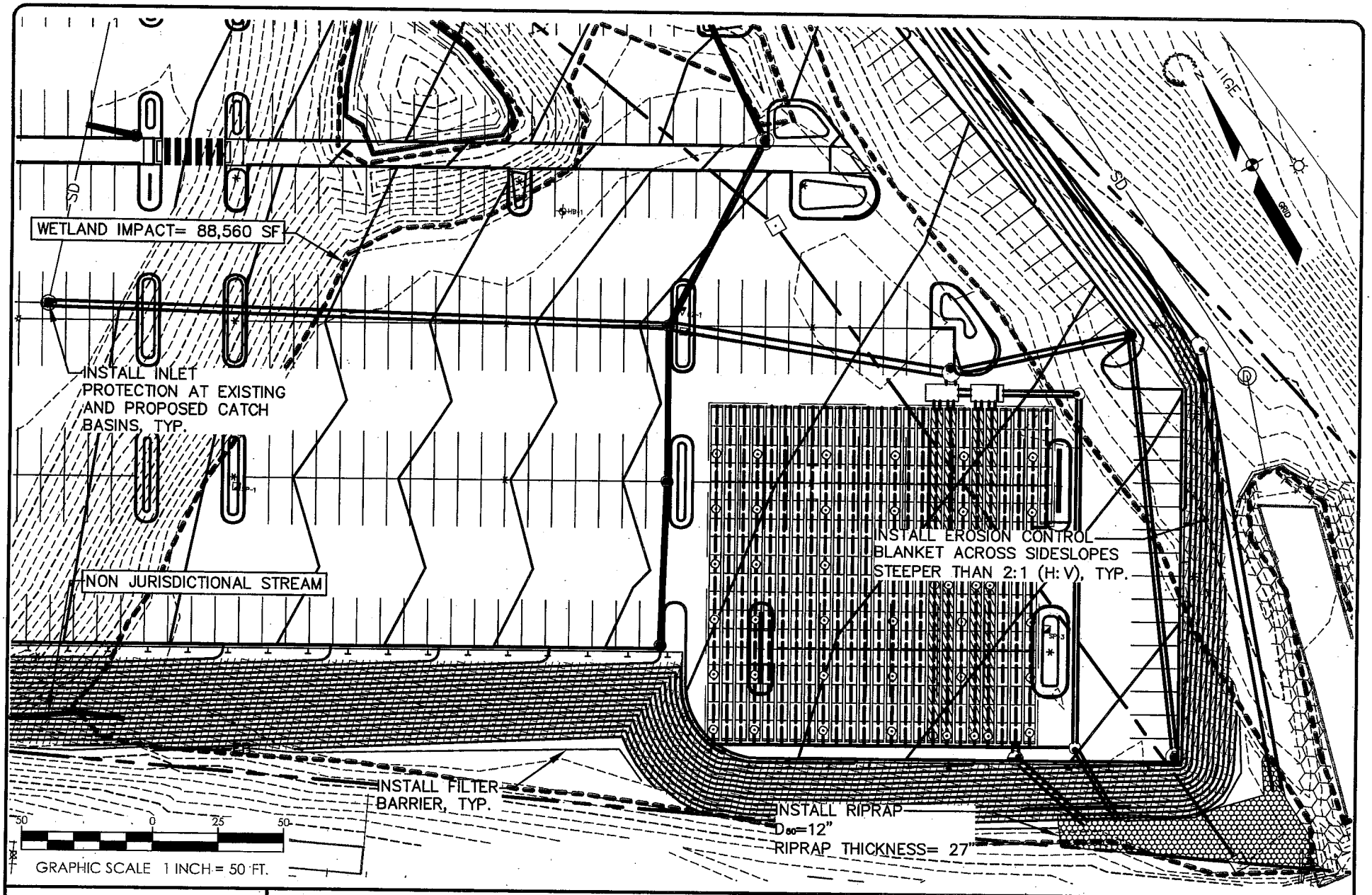
SCALE: 1"=50'
DATE: 02/05/18
SHEET: 1 OF 3



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SITE PLAN
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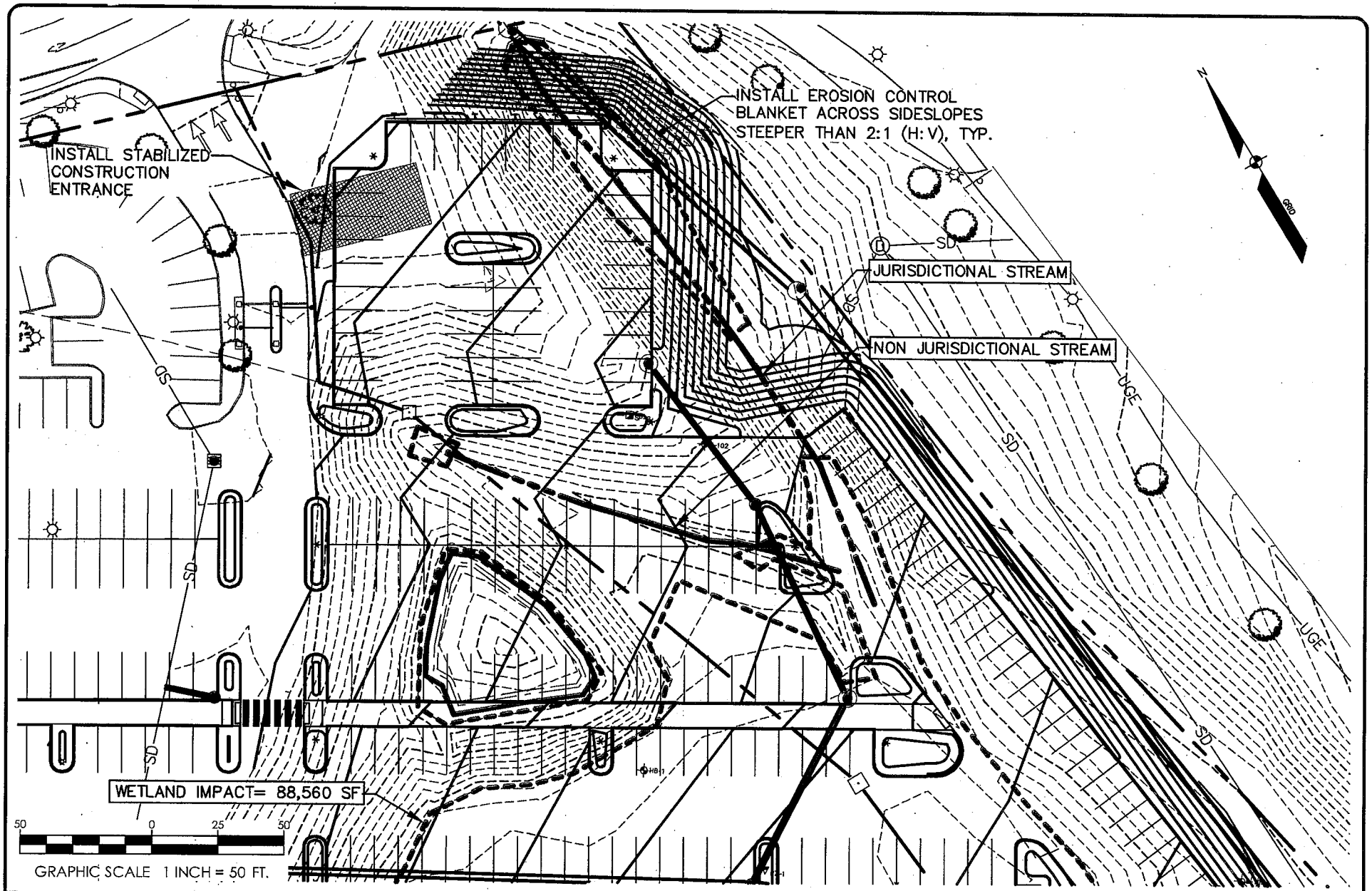

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SITE PLAN
OF PORTLAND TRANSPORTATION CENTER

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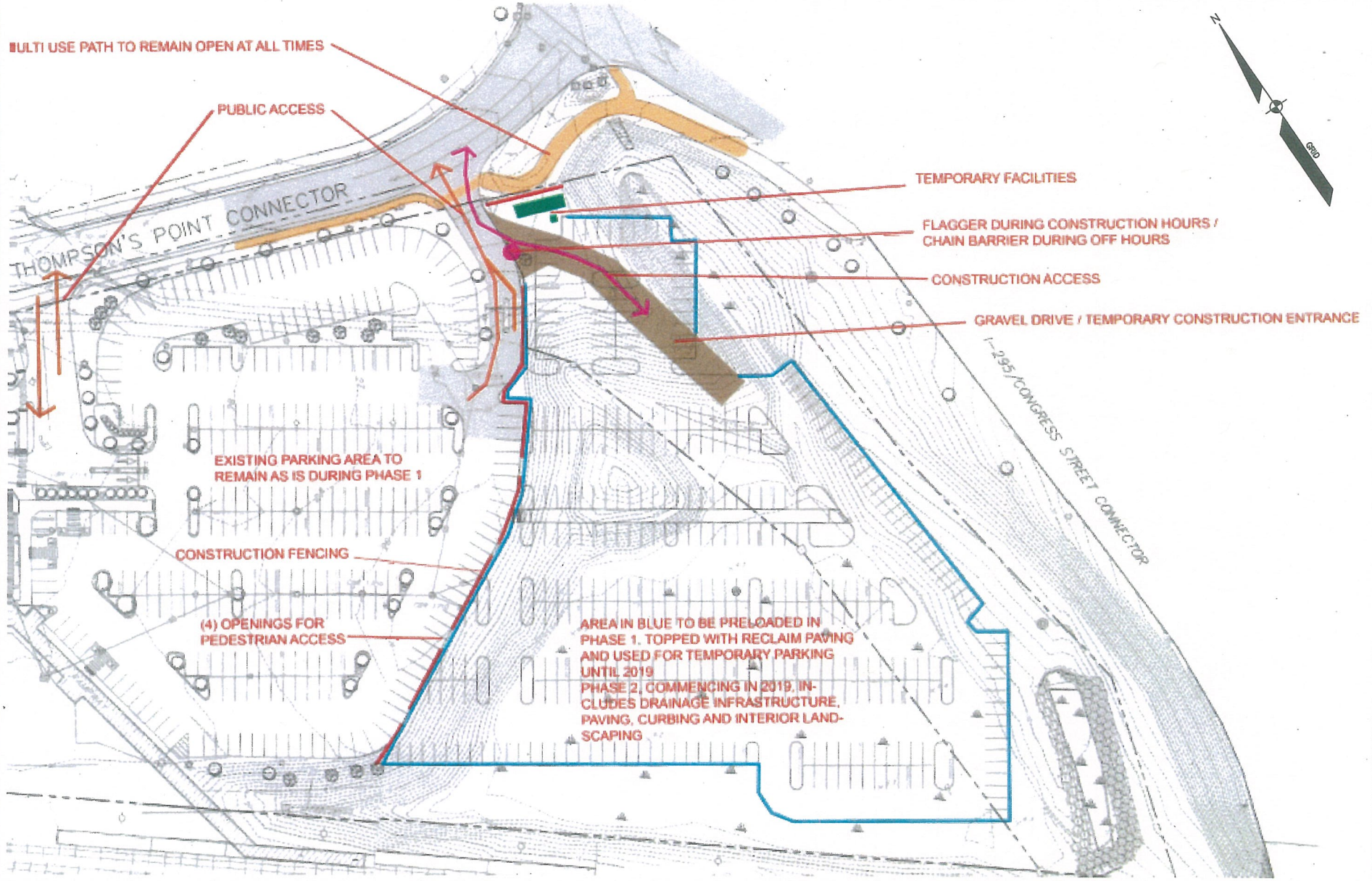
99607 NRPA GU Figures.dwg, TAB: NRPA-3



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CONSTRUCTION MANAGEMENT PLAN - PHASE 1
OF PORTLAND TRANSPORTATION CENTER

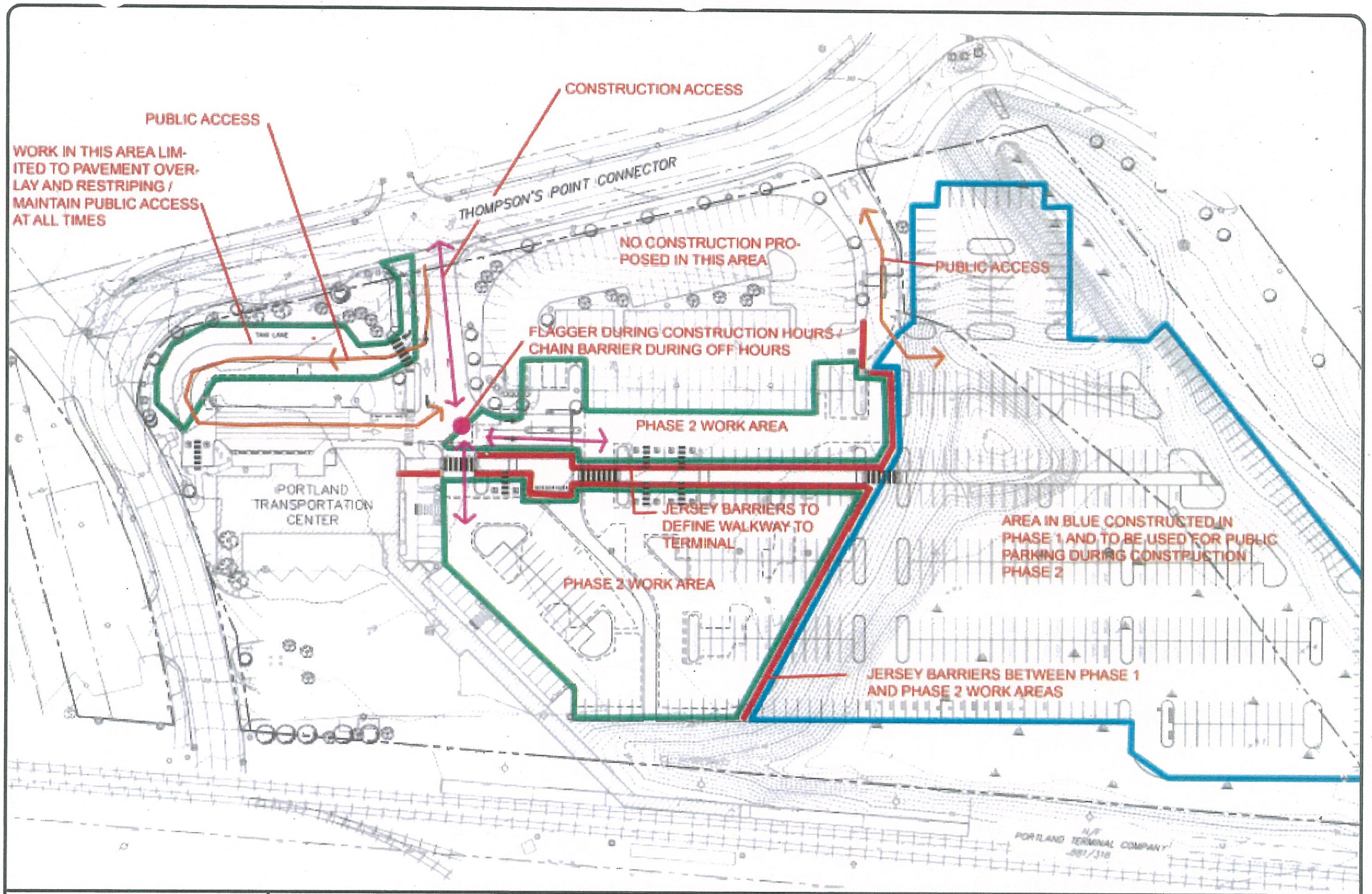
SCALE: 1"=100'

DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
1 OF 4



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CONSTRUCTION MANAGEMENT PLAN - PHASE 2
OF PORTLAND TRANSPORTATION CENTER

SCALE: 1"=100'

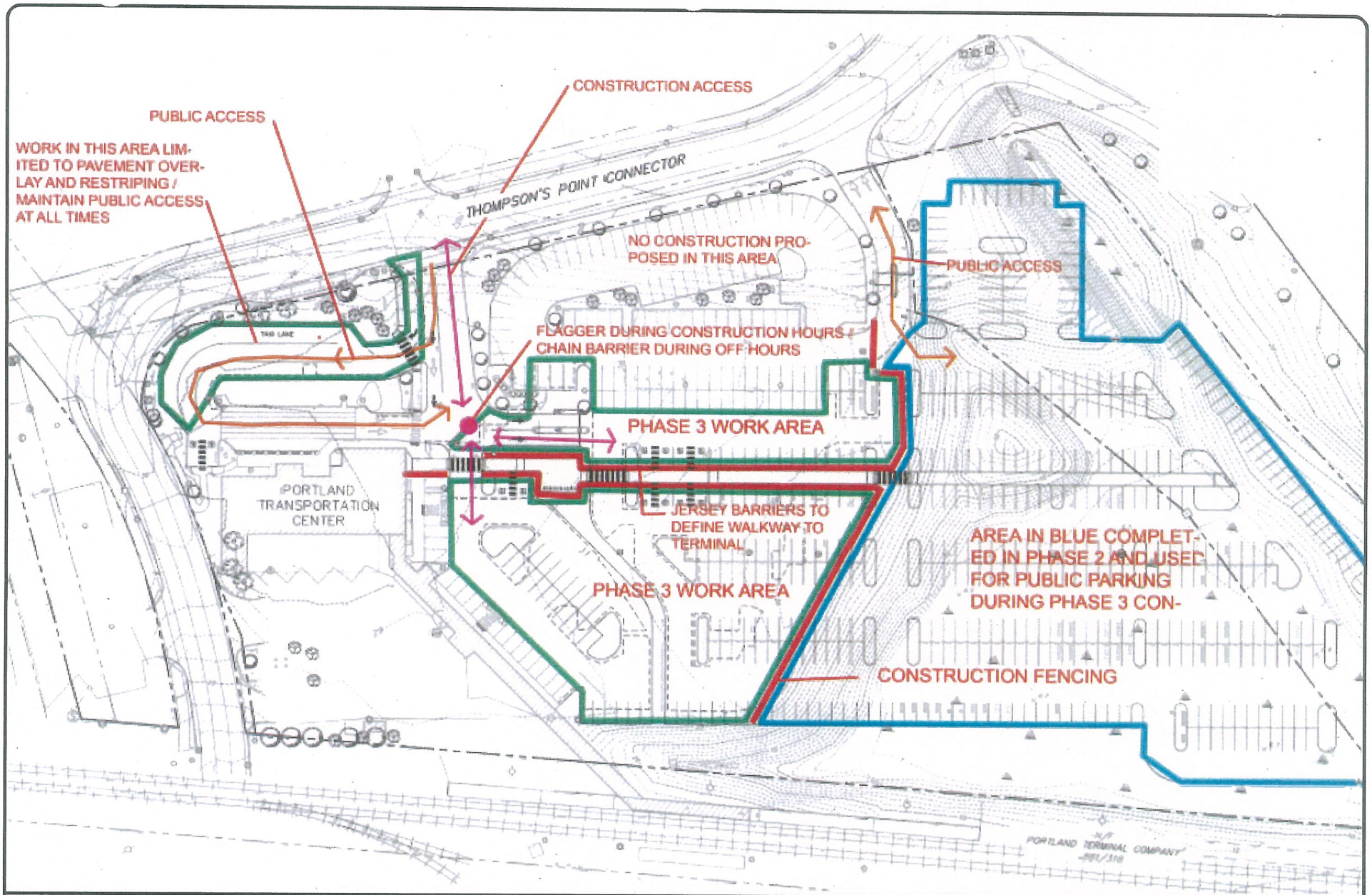
DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
2 OF 4

99607 NRPA Construction Management Figures.dwg, TAB: NRPA-2 (8.5x11)



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CONSTRUCTION MANAGEMENT PLAN - PHASE 3
OF PORTLAND TRANSPORTATION CENTER

SCALE: 1"=100'

DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET: 3 OF 4

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.

2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.

3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)

5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.

6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.

7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.

8. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN SEPTEMBER, 2017 BY ERIK B. LEMA, CERTIFIED WETLAND SCIENTIST OF NORMANDEAU ASSOCIATES, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED BY SEBAGO TECHNICS USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.

9. SITE DEVELOPMENT AND EARTHWORK CONSTRUCTION WILL CONFORM TO THE EROSION PREVENTION PROVISIONS OUTLINED IN THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" AND "MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES" BY MDEP BUREAU OF LAND AND WATER QUALITY DATED 2014 OR LATEST REVISION.

10. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. THE DEVELOPER, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.

11. THE PROJECT IS LOCATED IN OR WITHIN PROXIMITY TO PROTECTED NATURAL RESOURCES, INCLUDING WETLANDS, STREAMS AND HABITATS. THE CONTRACTOR SHALL WORK IN COMPLIANCE WITH THE NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND PERMIT FROM THE ARMY CORPS OF ENGINEERS. THESE ENVIRONMENTAL PERMIT APPLICATIONS AND CONDITIONS OF APPROVAL ARE INCLUDED IN APPENDIX OF THE SPECIFICATIONS. VARIATION FROM THE WORK DESCRIBED IN THESE PERMITS MUST BE APPROVED IN WRITING FROM THESE REGULATORY AGENCIES PRIOR TO CONSTRUCTION. WETLANDS SHALL NOT BE IMPACTED UNLESS SHOWN ON THIS PLAN. WETLANDS SHALL BE FLAGGED PRIOR TO CONSTRUCTION.

11. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, CONDUIT AND PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.

12. ALL LAWN AREAS, WALKWAYS, AND DRIVEWAYS OUTSIDE THE WORK AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE.

13. EXISTING PAVEMENT SHALL BE SAW CUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.

14. EXISTING DRAINAGE STRUCTURES SHALL NOT BE DISTURBED UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED BY THE ENGINEER.

15. THE CONTRACTOR IS REQUIRED TO PROVIDE A SECURE PROJECT WORK AREA. ALL PIPE TRENCH EXCAVATIONS SHALL BE BACKFILLED AND "CLOSED" DURING CONTRACTOR NON-WORKING HOURS INCLUDING NIGHTS, HOLIDAYS AND WEEKENDS. THE CONTRACTOR MAY REQUEST IN WRITING TO THE ENGINEER AND OWNER TO SECURE OPEN EXCAVATION IN LIEU OF BACKFILLED AND "CLOSED." NOT ALLOWING A SECURE OPEN EXCAVATION SHALL NOT BE A BASIS FOR CLAIMS AGAINST THE OWNER.

16. CONTRACTOR SHALL COMPLETE WORK SPECIFIED ON EACH PLAN AND SHALL COORDINATE WORK WITH ENTIRE PROJECT PLAN SET.

17. AT HANDICAPPED PARKING SPACES, APPLY PAINTED BLUE AND WHITE INTERNATIONAL SYMBOL OF ACCESSIBILITY. ALL ADA PARKING SPACES SHALL BE SIGNED AS VAN ACCESSIBLE. ALL ADA SIGNS (SIGN NO. S-2) SHALL BE INSTALLED ON BOLLARDS SET 6" FROM ADJACENT CURB OR FLUSH CONCRETE PAVING, BOTTOM OF SIGN SET 60" ABOVE GRADE. FINISH GRADES WITHIN ACCESSIBLE SPACES SHALL NOT EXCEED 1:50 IN ANY DIRECTION.

18. ALL PAINTED CROSSWALKS AND ADA ACCESS AISLES SHALL BE PAINTED WITH 24" WIDE SOLID WHITE BARS SET 24" APART.

19. ALL PARKING SPACES SHALL BE DEFINED WITH 4" WHITE PAINTED LINES. VERIFY THAT PROPOSED PAINT MATCHES EXISTING PAINTED LINES

20. PARKING SUMMARY: EXISTING PARKING SPACES= 323
PROPOSED PARKING SPACES= 621

21. CONTRACTOR SHALL NOT START CONSTRUCTION ON EXISTING PARKING LOT UNTIL PARKING IN PROPOSED PARKING LOT AVAILABLE.

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CONSTRUCTION MANAGEMENT NOTES - PHASE 1 AND 2
OF PORTLAND TRANSPORTATION CENTER

SCALE: NTS
DATE: 02/20/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET:
4 OF 4

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
   INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
   IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
   KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

   THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
   CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.

2. INSPECTION AND MAINTENANCE:
   ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
   CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF

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EROSION CONTROL NOTES
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SCALE: NTS
DATE: 02/05/18

LOCATION:
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PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SHEET: 1 OF 6

4. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES, THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

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EROSION CONTROL NOTES
OF PORTLAND TRANSPORTATION CENTER

SCALE: NTS
DATE: 02/05/18

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. STABILIZED CONSTRUCTION EXIT:
PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

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5. PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

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STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.

B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN 2018, DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

1.	ESTIMATED CONSTRUCTION TIME:	24 MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 3
4.	PRELOAD PROPOSED PARKING LOT SITE	WEEK 4 - WEEK 8
5.	PRELOAD SETTLEMENT PERIOD	WEEK 8 - WEEK 86
6.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 86 - WEEK 91
7.	UTILITY INSTALLATION AND PARKING LOT CONSTRUCTION	WEEK 91 - WEEK 95
8.	MULCH SPREAD FOR EROSION CONTROL	2020 OF CONSTRUCTION YEAR
9.	START FINAL SEEDING ON PREPARED AREAS (DURING GROWING SEASON)	WEEK 91
10.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH	WEEK 91
11.	RE-SEEDING OF AREAS, IF NEEDED	WEEK 102
12.	REMOVAL OF EROSION CONTROL DEVICES	UPON FINAL PROJECT COMPLETION

* DATES ARE SUBJECT TO CHANGE AT THE DISCRETION OF THE ENGINEER, DEPENDING ON CONSTRUCTION PROGRESS.

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HOUSEKEEPING:

THE FOLLOWING GENERAL PERFORMANCE STANDARDS APPLY TO THE PROPOSED PROJECT.

A. SPILL PREVENTION:
CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

B. GROUNDWATER PROTECTION:
DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

C. FUGITIVE SEDIMENT AND DUST:
ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

D. DEBRIS AND OTHER MATERIALS:
MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

E. EXCAVATION DE-WATERING:
EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

F. AUTHORIZED NON-STORMWATER DISCHARGES:
IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE: DISCHARGES FROM FIREFIGHTING ACTIVITY; FIRE HYDRANT FLUSHINGS; VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING ISLIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED); DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS; ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS; PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED; UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE; UNCONTAMINATED GROUNDWATER OR SPRING WATER; FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED; UNCONTAMINATED EXCAVATION DEWATERING; POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; LANDSCAPE IRRIGATION;

G. UNAUTHORIZED NON-STORMWATER DISCHARGES:
THE DEP DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON_STORMWATER, SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING: WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS; FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

EROSION CONTROL NOTES
OF PORTLAND TRANSPORTATION CENTER

LOCATION:
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET, CONCORD, NH 03301

SCALE: NTS
DATE: 02/05/18
SHEET: 6 OF 6

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Permit Number: NAE-2018-00520

Project Manager Clement

Name of Permittee: Langdon Street Real Estate, Inc.

Permit Issuance Date: _____

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Permits and Enforcement Branch C *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

_____ _____
Printed Name Date of Work Completion

(____) _____ (____) _____
Telephone Number Telephone Number

US Army Corps of Engineers®
New England District

GENERAL PERMIT
WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Permits and Enforcement Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Corps of Engineers Permit No. NAE-2018-00520 was issued to Langdon Street Real Estate, Inc. on . This work is located in freshwater wetlands off Thompson's Point Connector at Portland, Maine. The permit authorized the permittee to fill 88,427 s.f. (2.03 acres) of freshwater wetlands adjacent to the Fore River in order to construct an expanded parking area for the Portland Transportation Center.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

_____

Telephone Numbers: (___) _____ (___) _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: _____ **Date Permit Expires:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: Clement **Submittals Required:** Yes

Inspection Recommendation: Inspect as convenient

_____

_____

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

LANGDON STREET REAL ESTATE INC.	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) TIER 3 WETLAND ALTERATION
PORTLAND TRANSPORTATION CENTER	) WATER QUALITY CERTIFICATION
L-20318-TG-B-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S. §§ 480-A–480-JJ, Section 401 of the Federal Water Pollution Control Act (33 U.S.C. § 1341), and Chapters 310 and 315 of Department rules, the Department of Environmental Protection has considered the application of LANGDON STREET REAL ESTATE INC. with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: The Department accepted Site Location of Development (Site Law) Application L-20318-26-A-D for municipal review by the City of Portland under delegated authority on July 14, 2000 for the Portland Transportation Center. The Portland Transportation Center (PTC) is a public transportation hub that serves as the terminal for the Downeaster Amtrak passenger rail service and the Concord Coach Lines bus transportation service. The PTC was constructed in 2001 as the result of a partnership between The Maine Department of Transportation (MDOT), Langdon Street Real Estate, which is a real estate holding company belonging to the same ownership group as Concord Coach Lines, and the Northern New England Passenger Rail Authority (NNEPRA) which operates the Downeaster Amtrak service. The railroad line that the Downeaster Amtrak passenger rail uses at this site was constructed circa 1900.

B. Summary: The applicant proposes to fill 88,247-square feet (2.03 acres) of freshwater wetland to construct approximately 289 new parking spaces and to modify the existing vehicle access to the terminal entrance for the PTC. The wetland area is located adjacent to and within an urban setting with a ditch, and stormwater inlet and outlet pipes. The project is shown on a set of plans, Sheet 8 of 16 is titled "Grading and Utility Plan – Part A of: Portland Transportation Center, Thompsons Point Connector, Portland, Maine, for: Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301," which was prepared by Sebago Technics and dated February 1, 2018, with a most recent revision date on any of the plans of July 10, 2018. The Site Law Application L-20318-26-C-D was accepted by the Department for municipal review of development by the City of Portland under delegated authority on May 11, 2018.

C. Current Use of the Site: The project site is located on an undeveloped portion of an 8.74-acre parcel on Thompson's Point Road in the City of Portland. The upland portion of the site is developed with the PTC which consists of the Amtrak Downeaster

passenger rail service, Concord Coach Lines passenger bus service, and Greater Portland Metro Bus local bus service called the Breez. North of the proposed project area is the Fore River Parkway and Thompson's Point Road. East of the site is an on-ramp connecting the Fore River Parkway to Interstate 295 with Interstate 295 lying further to the east. South of the project area is the Portland Terminal Company Railroad and a developed area called Thompson's Point and a tidal mudflat area associated with the Fore River. Portland International Jetport is approximately 0.6 miles further to the southwest across the Fore River. Just north of the Thompson's Point Road is the Maine Department of Transportation's Park and Ride parking lot with 375 parking spaces that are used for parking by the PTC. Northwest of the proposed project site is the existing PTC parking lot with 314 parking spaces and northwest of the project parcel is an electrical substation and medical office buildings with their associated parking lots. Together the Park & Ride and the PTC parking lot has 689 parking spaces. The parcel is identified as Lot A001 on Map 77 of the City of Portland's tax maps.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

The Natural Resources Protection Act (NRPA), in 38 M.R.S. §480-D(1), requires the applicant to demonstrate that the proposed project will not unreasonably interfere with existing scenic, aesthetic, recreational and navigational uses.

In accordance with Chapter 315, *Assessing and Mitigating Impacts to Scenic and Aesthetic Uses* (06-096 C.M.R. ch. 315, effective June 29, 2003), the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site and surroundings including an aerial photograph of the project site. Department staff visited the project site on April 25, 2018.

The proposed project is located in an emergent wetland, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment, and appreciation of its natural and cultural visual qualities. It is likely that there are few, if any, citizens that visit the wetland proposed to be impacted due to its size, location, and lack of recreational opportunities such as trail walking, fishing, or boating. The proposed project will fill the majority of the wetland leaving a small area of wetland to remain adjacent to the railroad. The project will be visible from the remaining wetland area which will appear to be an extension of the existing parking lot.

The applicant has prepared a landscaping plan that includes trees and shrubs along the eastern side of the project site, trees in the traffic islands in the parking lot, and Northwest Wildflower Seed Mix on the slopes adjacent to the railroad to reduce the visibility of the parking lot from the scenic resource. The proposed project is in an urban setting and will be compatible with the surrounding roads, parking lots and railroad. The applicant must monitor the plantings and the plantings must be replaced or maintained as necessary to achieve 85% survival after one full growing season.

Based on the information submitted in the application and the site visit, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department determined that based on the nature of the proposed project and its location, there are no existing recreational or navigational uses of the resource that would be unreasonably impacted.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the freshwater wetland provided that the applicant monitors and maintains the plantings as described above.

3. SOIL EROSION:

The NRPA, in 38 M.R.S. §480-D(2), requires the applicant to demonstrate that the proposed project will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

The applicant has submitted an erosion control plan and details to be implemented for the project to prevent the transport of sediment to the resource.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The proposed project site is located adjacent to the PTC terminal building and is a wetland area within an urban setting with a ditch, and stormwater inlet and outlet pipes. The wetland is bordered by uplands consisting of fill material associated with an Interstate 295 ramp, the existing parking area for the transportation and the railroad. South of the project area is the Portland Terminal Company Railroad and a developed area called Thompson's Point leading to a tidal mudflat area associated with the Fore River.

The NRPA, in 38 M.R.S. §480-D(3), requires the applicant to demonstrate that the proposed project will not unreasonably harm significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life.

According to the Department's Geographic Information System (GIS) database there are no mapped Essential or Significant Wildlife Habitats located at the site. The Maine

Department of Inland Fisheries and Wildlife was also contacted and did not have any concerns for the proposed project.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life.

5. WATER QUALITY CONSIDERATIONS:

As discussed in Finding 3, the applicant proposes to use erosion and sediment control during construction to minimize impacts to water quality from siltation. The applicant will be using clean, inert fill materials for the project that will be stabilized with either pavement or vegetation. The stormwater runoff for the project will be required to meet the water quality standards in the Department's Chapter 500 Stormwater Management General Standards.

The Department does not anticipate that the proposed project will violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicant proposes to directly alter 88,427 square feet (2.03 acres) of freshwater wetland to construct the proposed PTC parking lot expansion. The type of wetland proposed to be altered is emergent with vegetation consisting largely of a broad-leaved cattail (*Typha latifolia*) and common reed (*Phragmites australis*) dominated marsh. The vegetation in the center of the wetland is potentially identified as hybrid cattail (*Typha x glauca*). There are tree species including ash-leaved maple (*Acer negundo var. nefundo*) and gray birch (*Betula populifolia*) along the perimeter of the wetland. This emergent wetland is considered a wetland of special significance because it is a freshwater wetland area located within 250 feet of a coastal wetland, and because it contains at least 20,000 square feet of emergent marsh vegetation. For an activity proposed in, on or over wetlands of special significance, a practicable alternative less damaging to the environment is considered to exist and the impact is unreasonable, unless the activity is described in the Wetlands and Waterbodies Protection Rules, 06-096 C.M.R. Chapter 310 section 5.A. The PTC is a public transportation hub that serves as the terminal for the Downeaster Amtrak passenger rail service and the Concord Coach Lines bus transportation service. The proposed parking lot expansion for the PTC is considered construction of a related facility to the railroad, which was constructed prior to September 1, 1996, and therefore cannot be practicably located elsewhere.

The *Wetlands and Waterbodies Protection Rules*, 06-096 C.M.R. ch. 310 (last amended January 26, 2009), interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project

would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values, and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a freshwater wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. An applicant must submit an analysis of whether there is a practicable alternative to the project that would be less damaging to the environment and this analysis is considered by the Department in its assessment of the reasonableness of any impacts. The applicant submitted an alternatives analysis for the proposed project completed by Sebago Technics and dated March 2018. The purpose of the project is to address existing parking and traffic flow constraints at the site by expanding parking availability in a manner that is economically feasible for the ongoing operations of the transportation hub. The proposed project is designed to prevent traffic from backing up onto Thompson's Point Road and out onto the Fore River Parkway, and to provide additional parking. Providing convenient, accessible, and price conscious parking options has contributed to the success of the transportation hub and the additional parking will maintain the viability of the transit services offered at the PTC as alternatives to private automobiles for local and regional travel. The PTC accommodated 246,501 "car days" in 2016; a car day is a single instance of a car remaining in a parking space for a single day. This equates to a 97 percent utilization rate for the existing 689 parking spaces. To accommodate the overflow parking for PTC, the applicant leases 100 parking spaces daily from the developers on Thompson's Point. During peak travel season, February through April, that lease parking increases to 300 spaces. At peak demand, even with the additional 300 spaces, the lots at the PTC are over capacity. Additionally, the lease agreement is an annual contract with no guarantee for renewal each year.

The applicant investigated alternative parking sites elsewhere in Portland, but concluded that parking at the PTC is the preferred location. The applicant considered not expanding parking or addressing internal circulation improvements but concluded that the no-action alternative would not meet current and future transportation needs.

A second alternative considered expanding the leased parking space on Thompson's Point; however, the owners of Thompson's Point believe the property that abuts the rail line to be an integral part of a long-term development plan and therefore do not want to commit to a long-term lease or sale of the land currently being leased for PTC overflow parking.

A third alternative considered work with MDOT to construct a 1,000-space parking garage on their Park & Ride Lot for the bus and train terminal. There is an ongoing feasibility study for this parking garage. However, funds are not currently available to build the parking garage and the parking garage is years away from becoming a reality and would tie up nearly 400 parking spaces during construction. Revenue streams from the Park & Ride lot and the PTC parking lot are used to financially support operating costs of the PTC. If MDOT was to construct a parking garage on the Park & Ride lot, the revenues from the existing PTC parking lot would be diverted to pay for the parking

garage, this lost revenue would require an increase in parking cost or require public subsidies. In addition, the parking garage would not address the traffic and circulation issues at the PTC. While the parking garage is still being considered as a long-term strategy, it has been deemed impracticable short-term because it is not financially feasible or address traffic congestion at the PTC.

A fourth alternative considered construction of a parking garage on the existing terminal site over the current parking lot. However, during construction, this would eliminate existing parking spaces, which would exacerbate the current parking situation. The cost of the parking garage would require the daily parking fees to increase to a cost that is higher than the ground transportation market can bear so fewer patrons would opt to travel from this transportation hub. Therefore, while this alternative is available, it is not practicable for financial and constructability reasons, and was rejected.

A fifth alternative analyzed valet parking whereby patrons hand over vehicle keys and a terminal employee double parks the vehicle until the patron returns from their trip. While this has been used during peak periods, it requires additional operational expenses, customers are wary of it, and it would become a barrier for some patrons when considering their future use of the facility. The strategy of valet double stacked parking would still not meet the current and future parking needs at the PTC. While the applicant considers this a short-term solution during peak periods, it does not meet the project purpose of providing more parking and parking space deficit at the PTC.

Alternative six examined developing a satellite parking lot and shuttle service to the bus and train terminal. The application referenced data that concluded satellite parking lots must be significantly cheaper than parking at a consumer's destination otherwise they will not be used. The applicant considered real estate within a five-minute drive of the terminal that is owned by MDOT but found it was reserved for future use by the rail system for the Downeaster Amtrak service. Three properties within a twelve-minute drive of the terminal were also considered. The applicant provided a brief analysis of the costs per space per day for a satellite parking lot including costs of shuttle drivers and the shuttle busses. This analysis concluded that satellite parking is more expensive than additional on-site parking and an on-site parking garage and therefore not practicable.

Alternative seven examined relocating the Concord Coach Line terminal. A search was conducted and no viable options were found north of Saco. A different terminal location for the Downeaster rail service was also examined and no options are available in Portland. The PTC is viewed as a multi-modal transportation hub for inter- and intra-city ground transportation; if the bus or train service was relocated the multi-modal ground transportation model of the PTC would no longer be viable and as such, this alternative is not available and has been discarded.

Alternative eight examined the proposed construction of additional parking on the undeveloped area adjacent to the existing terminal building. This alternative provides approximately 289 additional parking spaces bringing the total number of parking spaces adjacent to the terminal to approximately 603 spaces. These additional spaces will

address the PTC's current parking space shortfall and will also allow the traffic circulation at the site to be redesigned to better manage traffic at peak travel times. The applicant has selected this proposed project because it the only practicable alternative that meets project purpose and need, is financially feasible, and will maintain the viability of the PTC.

B. Minimal Alteration. In support of an application and to address the analysis of the reasonableness of any impacts of a proposed project, an applicant must demonstrate that the amount of freshwater wetland to be altered will be kept to the minimum amount necessary for meeting the overall purpose of the project. In order to meet the current and future parking and circulation deficiencies most of the existing wetland will be altered. Fill slopes adjacent to the remaining area of wetland were steepened to two to one slopes to reduce the toe of the fill extension which reduced overall wetland impacts.

C. Compensation. In accordance with Chapter 310 §5(C)(6)(b), compensation may be required to achieve the goal of no net loss of coastal wetland functions and values. This project will result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. Compensation is required to achieve the goal of no net loss of wetland functions and values and this project will fill approximately 88,247square feet (2.03 acres) of emergent wetland. The applicant proposes to mitigate for the lost wetland functions and values by making a payment to the In-Lieu Fee (ILF) program of the Maine Natural Resource Conservation Fund (MNRCF).

The proposed project will impact a wetland classified as an emergent wetland (Cowardin class PEM1). The wetland is bordered by uplands consisting of fill material associated with an Interstate 295 ramp, the existing parking area for the transportation and the railroad. The principal function of this wetland is sediment and toxicant retention due to its confined basin, dense vegetation, proximity to developed areas and as recipient of stormwater flows to this wetland. Floodflow alteration and wildlife habitat are also functions of this wetland due to the overall size of the wetland, its vegetation structure and urban setting. The lack of vegetation diversity within the wetland limits its value as wildlife habitat, however its presence as a habitat island within an urban landscape allows for avian use and provides nesting habitat. Groundwater recharge is also likely to be a function of this wetland, albeit likely limited due to the proximity to the tidal waters.

The applicant proposes to provide an ILF to the MNRCP in the amount of $760,472.20. Prior to the start of construction, the applicant must submit a payment in the amount of $760,472.20, payable to "Treasurer, State of Maine", and directed to the attention of the ILF Program Administrator at 17 State House Station, Augusta, Maine 04333.

The Department finds that the applicant has avoided and minimized freshwater wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project provided that prior to project to the start of construction, the applicant submits the ILF Fee payment as described above.

7. OTHER CONSIDERATIONS:

The Department finds, based on the design, proposed construction methods, and location, the proposed project will not inhibit the natural transfer of soil from the terrestrial to the marine environment, will not interfere with the natural flow of any surface or subsurface waters, and will not cause or increase flooding. The proposed project is not located in a coastal sand dune system, is not a crossing of an outstanding river segment, and does not involve dredge spoils disposal or the transport of dredge spoils by water.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S. §§ 480-A–480-JJ and Section 401 of the Federal Water Pollution Control Act:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses provided that the applicant monitors and maintains vegetation as described in Finding 2.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life provided that prior to construction the applicant makes a payment to the ILF program as described in Finding 6.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in 38 M.R.S. § 480-P.

THEREFORE, the Department APPROVES the above noted application of LANGDON STREET REAL ESTATE INC. to fill 88,247 square feet of freshwater wetlands to construct

additional parking as described herein, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicant shall take all necessary measures to ensure that its activities or those of its agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

4. The applicant must monitor the plantings and the plantings must be replaced or maintained as necessary to achieve 85% survival after one full growing season.

5. Prior to the start of construction, the applicant shall submit a payment in the amount of $760,472.20, payable to "Treasurer, State of Maine", to the attention of the ILF Program Administrator at 17 State House Station, Augusta, Maine 04333.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 20th DAY OF July, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie L. for
For: Paul Mercer, Commissioner

Filed
JUL 20 2018
State of Maine
Board of Environmental Protection

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

CGW/L20318BN/ATS#82879

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. § 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

NORMANDEAU ASSOCIATES
Environmental Consultants

Memorandum

Friday, June 22, 2018

TO: Stephen Sawyer, P.E.
FROM: Erik Lema, Senior Wetland Scientist, Normandeau Associates, Inc.
SUBJECT: Portland Transportation Center, Vernal Pool Survey
PROJECT #: 24051

Normandeau Associates conducted a vernal pool survey of the Portland Transportation Facility on April 23 and May3, 2018 in the location of the proposed parking area expansion. This area is currently occupied by several wetlands, including a large cattail (*Typha* spp.) and common reed (*Phragmites australis*) marsh. The vernal pool surveys were conducted in accordance with the guidelines contained in the Natural Resource Protection Act, Chapter 335 and the field survey protocol developed by the Maine Association of Wetland Scientists in conjunction with the Maine Department of Inland Fisheries and Wildlife. The survey protocol is designed to coincide with optimal times of year for detecting breeding activity by obligate vernal pool species, including wood frogs (*Lithobates sylvaticus*), spotted salamanders (*Ambystoma maculatum*), and blue-spotted salamanders (*Ambystoma laterale*), as evidenced by the presence of egg masses.

Normandeau did not locate any egg masses or any suitable vernal pool habitat during the surveys. A constructed detention pond on site contains standing water for a sufficient duration to support breeding activity, but no egg masses were located in this pond. It is likely that the presence of substantial developed land in the immediate vicinity of the survey area has reduced the suitability of terrestrial habitat for these obligate species. Throughout the surveys, spring peepers (*Pseudacris crucifer*) were chorusing, suggesting that amphibian breeding in the wetland does occur.

Please contact me at (207) 518-6769 or elema@normandeau.com if you have any questions.

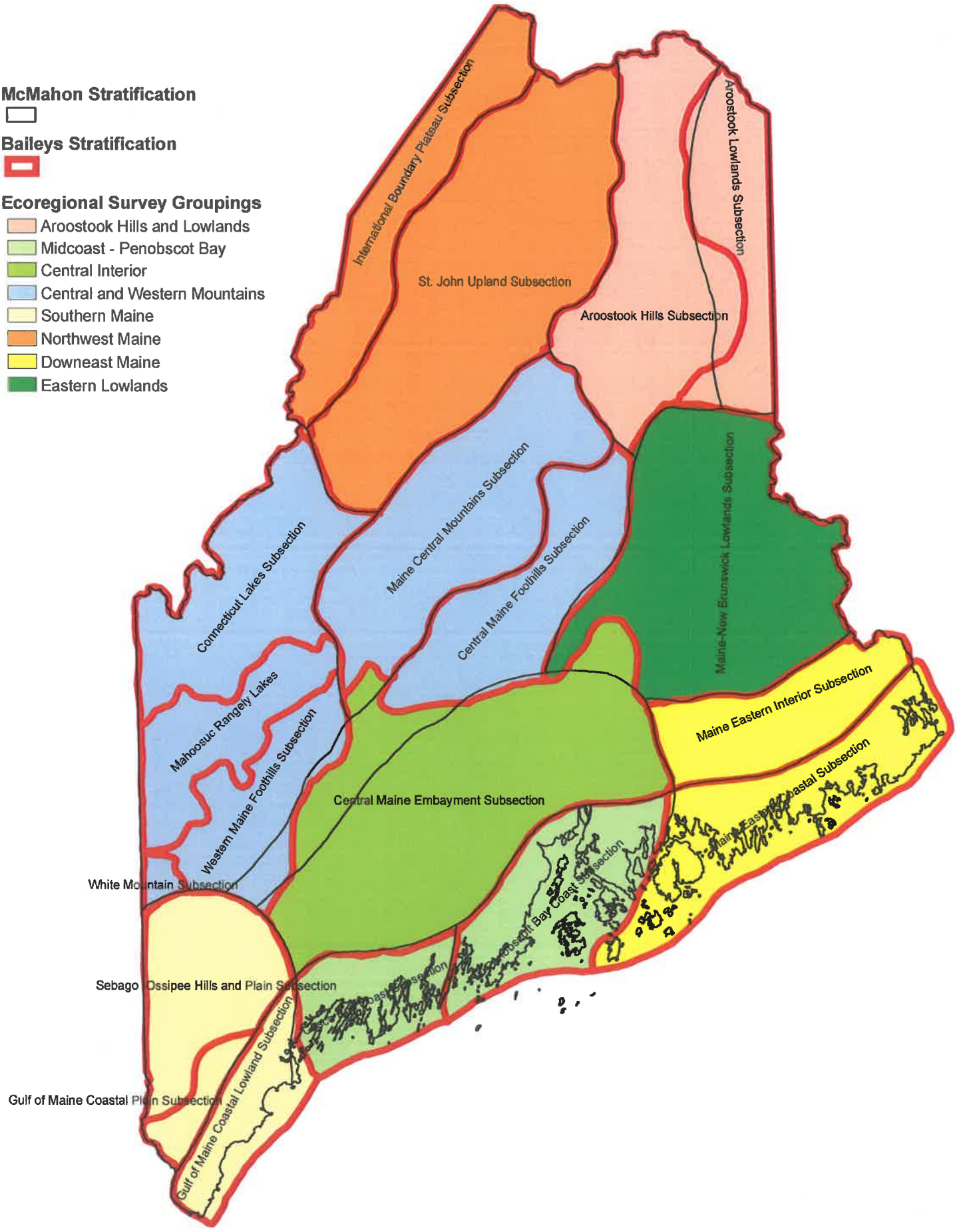
Regards,

Erik Lema, Senior Wetland Scientist

Normandeau Associates, Inc.

MNRCP Biophysical Region Section Map

Biophysical Regions of Maine



Baileys Stratification Names Shown

NORMANDEAU ASSOCIATES
Environmental Consultants

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Please contact me at (207) 518-6769 or elema@normandeau.com if you have any questions.

Regards,

Erik Lema, Senior Wetland Scientist

Normandeau Associates, Inc.

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Maine Department of Transportation
Traffic Movement Permit Application
Sections 1 – 6

Portland Transportation Center
Portland, Maine 04102

Applicant:
Langdon Street Real Estate, Inc.
7 Langdon Street
Concord, NH 03301

Prepared By:
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine 04106

July 16, 2018

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Abutter's List and Map

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Section 6 Construction Schedule

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Crash Data
Site Plan

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-287-3775

FOR MDOT USE
ID #

Total Fees:
Date Received:

1/2000

****

PERMIT APPLICATION - TRAFFIC
TRAFFIC MOVEMENT PERMIT, 23 M.R.S.A. § 704 - A

Please type or print:

This application is for:

Traffic 100-200 PCE's ____X___
Traffic 200+ PCE's _____

Name of Applicant: Langdon Street Real Estate, Inc

Address: 7 Langdon Street, Concord, NH 03301 Telephone: 603.228.3535

Name of local contact or agent: Stephen S. Sawyer, Jr., PE

Address: 75 John Roberts Road – Suite 4A, South Portland, ME 04106 Telephone: 207-200-2082

Name and type of development: Portland Transportation Center – New Parking Lot Development

Location of development including road, street, or nearest route number: Existing Portland Transportation Center, 100 Thompsons Point Connector Road, Portland, ME 04102

City/Town/Plantation: Portland, County: Cumberland, Tax Map # 77, Lot A-001

Do you want a consolidated review with DEP pursuant to 23 M.R.S.A. § 704-A (7)? Yes ____ No __X___

Was this development started prior to obtaining a traffic permit? The transportation center is existing, however the new parking lot development has not started

Is the project located in an area designated as a growth area (as defined in M.R.S.A. title 30 - A, chapter 187)? Yes ____ No ___

Is this project located within a compact area of an urban compact municipality? Yes ___X____ No _____

Is this development or any portion of the site currently subject to state or municipal enforcement action? ____No___

Existing DEP or MDOT permit number (if applicable): N/A

Name(s) of DOT staff person(s) contacted concerning this application: Thomas Errico, TYLin

Name(s) of DOT staff person(s) present at the scoping meeting for 200+ applications: _____

1/2000

CERTIFICATION

The traffic engineer responsible for preparing this application and/or attaching pertinent site and traffic information hereto, by signing below, certifies that the application for traffic approval is complete and accurate to the best of his/her knowledge.

Signature: _____ Re/Cert/Lic No.: ME 3736

Name (print): Stephen S. Sawyer, Jr.,P.E.

Date: July 16, 2018

If the signature below is not the applicant's signature, attach letter of agent authorization signed by applicant.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

_____ 7/12/18

Signature of applicant Date

FORM C 7/97

NOTICE OF INTENT TO FILE

Please take notice that

Langdon Real Estate, Inc.
7 Langdon Street
Concord, NH 03301

is intending to file a Traffic Movement Permit application with the City of Portland pursuant to the provisions of 23 M.R.S.A. § 704 - A on or about

July 16, 2018

The application is for:

The existing Portland Transportation Center in conjunction with the parking lot expansion project. The parking lot to the south of Thompsons Point Connector Road is proposed to expand from the existing 323 spaces to 621 spaces. The existing facility is currently generating 333 trip ends during the peak hour of the generator

at the following location:

Portland Transportation Center
100 Thompsons Point Connector Road
Portland, ME 04102

A request for a public hearing must be received by the City, in writing, no later than 20 days after the application is found by the City to be complete and is accepted for processing. Public comment on the application will be accepted throughout the processing of the application.

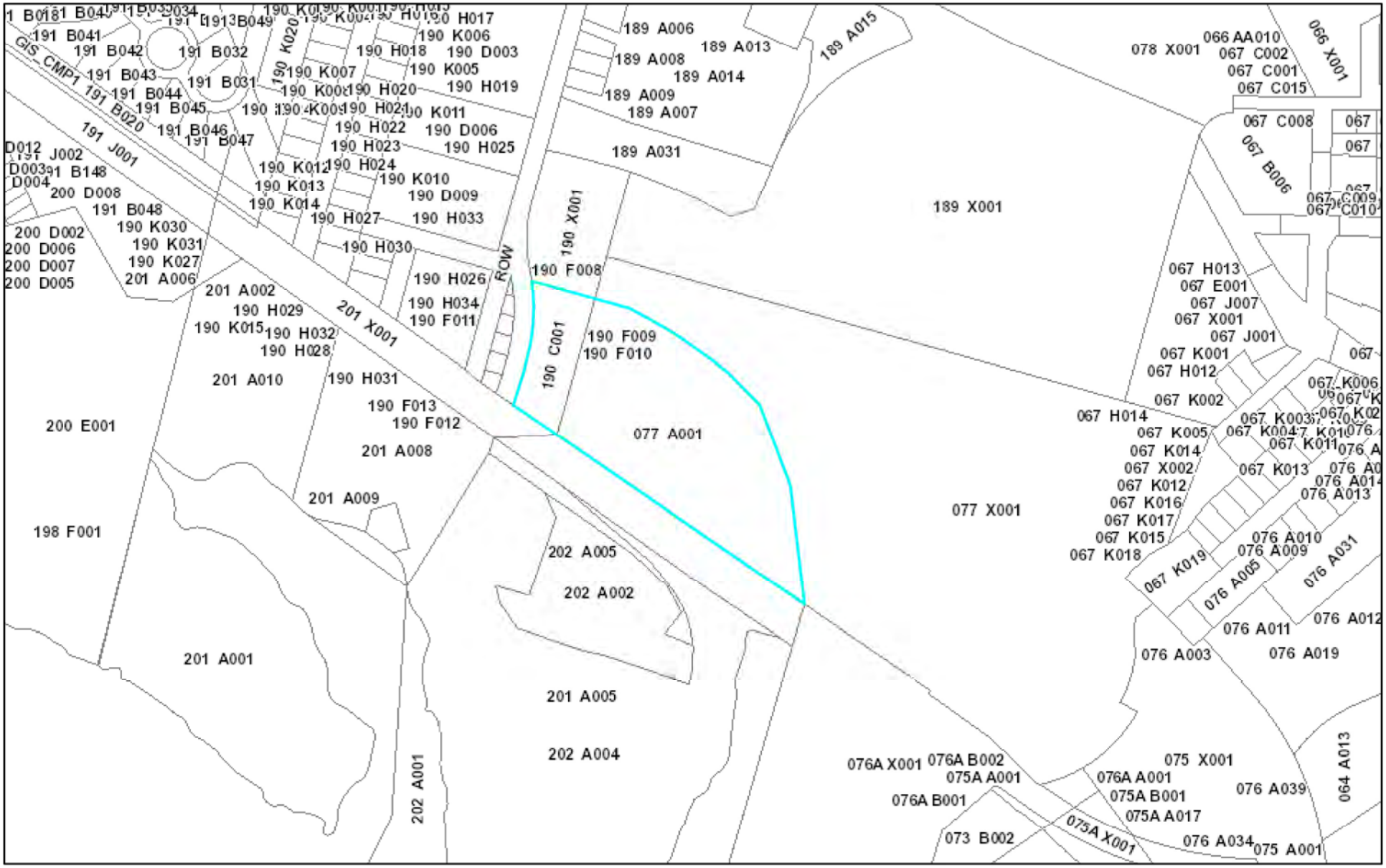
The application will be filed for public inspection at the Portland City Hall during normal working hours.

Written public comments may be sent to the Jean Fraser at the City of Portland, Planning and Urban Development Department, 389 Congress Street, 4th Floor, Portland, ME 04101.

Abutter List

Map/Lot	Owner Address
076A/X001	State of Maine 16 State House Station Augusta, ME 04333
077/X001 189/X001 190/X001	Maine Department of Transportation 16 State House Station Augusta, ME 04333-0016
189/A031	Olympia Equity Investors II LLC P.O. Box 508 Portland, ME 04112
201/A005 201/A008 201/A010 202/A001 202/A004	Forefront Partners I LP 501 Danforth St Portland, ME 04102
202/A005	Northern New England Passenger Rail Authority 75 West Commercial St Portland, ME 04101
202/A002	Suburban Propane, LP P.O. Box 206 Tax Department Whippany, NJ 07981
190/D009	Eye Venture Associates 53 Sewall Street Portland, ME 04102
190 H034	Central Maine Power Co One City Center – 5th Floor Portland, ME 04101

ABUTTER MAP



7/13/2018 8:40:01 AM

Parcels

1:4,229

0 0.04 0.07 0.14 mi

0 0.05 0.1 0.2 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

Section 1 – Site and Traffic Information

A.) Site Plan

Langdon Street Real Estate, doing business as Concord Coach Lines (CCL), the owner and facility manager of Portland Transportation Center (PTC) is proposing a redevelopment of the existing site to address current parking and traffic flow restraints. The PTC is located on an 8.72 acre parcel southwest of the intersection of Fore River Parkway and Thompson's Point Connector Road in Portland, Maine. The current site plan is provided with this application.

B.) Existing and Proposed Uses

The existing parcel is made up of the transportation center which services both arriving and departing buses and trains. Access to the parcel is currently provided via a full movement drive on Thompson's Point Connector Road. This drive provides on-site access to the pick-up/drop-off loop and parking lot "B" which has 323 existing spaces. Secondary access to the site is also provided via an exit only drive east of the full movement drive.

The existing PTC also utilizes the MaineDOT Park-and-Ride lot "A" across the street, with access opposing the PTC full movement driveway. With this parking, the facility parking capacity is approximately 689 spaces. In addition, a temporary lot "C" is being leased from Thompson's point just south of the railroad. During the low parking period (summer time) when the PTC experiences a much higher percentage of pick-up and drop-off traffic and less long-term parkers, the overflow lot provides for 100 spaces. During the high parking period (winter time) when more traffic is associated to long-term parkers and less pick-up and drop-offs, the overflow lot provides up to 300 extra spaces.

The PTC is proposing to add a new parking lot on an undeveloped portion of their parcel in order to replace the 300 parking spots they currently lease from Thompson's Point that will now become unavailable.

In addition, the existing pick-up and drop-off area at the front entrance of the PTC is proposed to be redeveloped. The existing site allows for 22 short-term parking spaces with one through lane allotted for pick-ups and drop-offs providing a queue storage from 10 to 15 vehicles. Once the queue is at capacity, vehicles spillback onto Thompson's Point Connector Road and subsequently Fore River Parkway. To alleviate this existing deficiency, the proposed design eliminates the parking in this area and adds two additional pick-up/drop-off lanes, one specifically dedicated to taxis or other ridesharing transit options.

C.) Site and Vicinity Boundaries

The site is bordered by Fore River Parkway to the east, Thompson's Point Connector Road to the north and west, and the railroad to the south. Given that there are no proposed improvements that quantify trip generation and thus a trip distribution to the adjacent roadway system, the study area is expected to be limited to the Thompson's Point Connector Road site drive intersections and the signalized intersection of Fore River Parkway. The site and vicinity are shown in Figure 1.

D.) Proposed Uses in the Vicinity of the Proposed Development

Projects within the vicinity of the PTC that are approved but not yet constructed but will generate additional traffic in the study area will be discussed at the Scoping Meeting.

E.) Trip Generation

In order to quantify the existing trip generation, turning movement counts were conducted for the PTC during the Friday mid-day peak hour, as this was recommended by PTC as the time period representative of peak activity. Generally, the summer provides a higher volume of peak hour traffic, as discussed previously, as more passengers are not locals and therefore are being picked up, dropped off, and using ridesharing applications more exclusively. The higher percentage of pick-ups and drop-offs results in a higher peak hour trip generation due to one trip in and one trip out of the facility during the peak hour. During the winter, more of the passengers reside in Maine and are utilizing PTC to travel to other locations via Boston Logan International Airport for longer-term trips. Because the percentage of people parking long-term is likely higher, this reduces the peak hour impact as anyone parking would only generate one trip, versus two, during said peak hour. However, these winter months with more long-term parkers results in the need for more parking spaces, which is the main impetus for this project.

Based on a review of the current bus and train schedule starting at 3:15 AM and concluding at 1:25 AM the following day, the peak number of buses and trains arriving and departing within any one-hour period occurs from 11:30 AM to 12:30 PM, thus coinciding with PTC's recommendation to count the mid-day period. During this hour, four buses and one train drop passengers off and four buses and one train pick passengers up, for a total of 10 possible services.

Given this current schedule, turning movement counts were conducted on Friday, June 8, 2018 during the mid-day period from 10:30 AM to 3:30 PM at the following PTC access points along Thompson's Point Connector Road:

- The exit-only driveway from LOT "B"
- The intersection of the Main Access Drive and LOT "A"
- The LOT "C" access point

In addition, a count was completed at the intersection of Fore River Parkway, the 295 Ramp and the Thompson's Point Connector Road as it provides signalized access to Thompson's Point and ultimately the PTC. The peak hour counts are provided in the Appendix. The volumes at that intersection during the peak of the PTC were factored to 30th highest hour volumes, or peak summer conditions, utilizing MaineDOT's group I urban factor of 1.023 (0.86/0.84 = 1.023). Only the non-Thompson's Point related trips on Fore River Parkway and the I-295 Ramp were factored. The existing 2018 June traffic volumes are shown in Figure 2.

The peak hour for the PTC occurred from 11:15 AM to 12:15 PM, which was expected given the higher volume of incoming and outgoing trains and buses. During that peak hour, 333 trips were generated to and from the three access points, 160 entering and 173 exiting. Given this level of counted traffic, the PTC requires a Traffic Movement Permit (TMP) from the City of Portland.

In order to compare the counted trip generation to ridership, the following information about services and ridership was provided from PTC:

CCL	11:30 AM	30 passengers got off the two arriving buses 29 passengers got on to the two buses for departure
	11:45 AM	32 passengers got off the arriving bus 8 moved to the departing 11:55 bus as a continuation
	11:55 AM	34 passengers got off the arriving bus 16 got on the bus for a continuation (8 from 11:45 bus)
	12:00 PM	29 passengers got on departing bus
Downeaster	11:35 AM	49 passengers got off the train
	11:55 AM	42 passengers got on the train

Shown in the data above, 245 passengers were serviced during this peak hour. This does not include the eight passengers that did not exit the PTC and stayed for a continuation.

Based on information from the PTC, generally June provides lower ridership than August. This ridership was compared to the previously submitted ridership data for Friday, August 12, 2016:

CCL	11:30 AM	22 passengers got off the two arriving buses 65 passengers got on to the two buses for departure
	11:45 AM	56 passengers got off the arriving bus 12 moved to the departing 11:55 bus as a continuation
	11:55 AM	40 passengers got off the arriving bus 28 got on the bus for a continuation (12 from 11:45 bus)
Downeaster	11:35 AM	60 passengers got off the arriving train
	11:55 AM	30 passengers got on the departing train

In August, ridership during the same peak hour period equated to 277 passengers serviced, again not including the 12 passengers that moved to a through bus continuing on. It should be noted, that the 2016 bus schedule did not include the newly added 12:00 PM bus to New York that was counted in 2018. If this 12:00 PM bus is removed, this would reduce the June 2018 ridership to 216 passengers, thus a 28% approximate difference between June and August ridership.

To be overly conservative, the counted June trips were projected to August conditions by 28% resulting in an estimated peak hour trip generation of 426 trips, 205 entering and 221 exiting, as shown in Figure 3. It is unlikely the facility is truly increasing trip generation by this much in this period of time, especially given the assumption that the passenger to trip ratio is entirely linear. Predicting an exact trip generation for this facility is difficult as on any given day passenger occupancy of vehicles can differ as well as pick-up and drop-off ratios, and even timing of service arrivals and departures. In addition, human nature is hard to predict and changes through time which makes it incredibly difficult with any certainty to project backwards to the number of trips the PTC may have been generating 10 years ago.

Additionally, it is important to note that generally traffic analysis is completed for the design hourly volume (DHV). Therefore, the counted trip generation during the first week of June is very close to the actual DHV for the adjacent roadway system (0.86 versus 0.84 for group I).

F.) Trip Distribution

The counts produced a trip distribution as expected by PTC. Given the time of year, a high percentage of drop-offs were expected. By examining the traffic counts, an estimated pick-up/drop-off rate of 85% during the peak hour was determined. This is on the basis that parking lot "B" does not have availability to exit at the main access, meaning the 145 counted right-turns would all be pick-up/drop-off in nature. Taking a reduction from that number for the buses leaving the facility and then doubling that number to account for the entering vehicles equates to 282 trips or 85%. In addition, the mid-day peak also provided an entering and exiting distribution of 48% entering and 52% exiting.

G.) Trip Assignment

Because there is no proposed new traffic at this time, no trip assignments were completed.

Section 2 – Traffic Accidents

The most recent three-year crash data (2015 to 2017) was obtained from MaineDOT for the vicinity of PTC on Thompson's Point Connector Road to determine if there are any high crash locations (HCLs) in the vicinity. An intersection or section of roadway is deemed an HCL if two criteria are met: A Critical Rate Factor (CRF) greater than 1.0 and a minimum of 8 accidents in a three-year period. The obtained data is provided in the appendix and summarized in the following tables:

Intersections

Thompson's Point Road Intersections	Node	# Accidents	CRF	HCL
I-295 Exit 5A Off-Ramp Right-Turn Slip	59418	2	0.69	No
Fore River Parkway, I-295 Exit 5A Off-Ramp	59413	9	0.39	No

Roadway Sections

Thompson's Point Connector Road Links	Node to Node	# Accidents	CRF	HCL
From Fore River Pkway to Previous Sewell St	59423 – 59417	1	0.16	No

As shown in the tables above, there are no high crash locations in the direct vicinity of the PTC on Thompson's Point Connector Road.

Section 3 – Development Entrances and Exits

The existing site is currently serviced via a full movement drive and a secondary exit-only drive to Thompson's Point Connector Road. Traffic associated with the PTC also utilizes the MaineDOT Park & Ride lot, which is accessed via a full movement drive opposing the main site drive. The current overflow traffic, utilizes the leased spaces via a drive south of the railroad. With the addition of the proposed new parking lot this traffic will relocate to the main full movement drive and secondary exit only drive and access to the leased lot will be removed. No new access drives are currently proposed.

Section 4 – Title, Right, or Interest

The deed for the existing parcel is provided in this section. In addition, the PTC is purchasing approximately 1.92 acres of adjacent property to the east from the Maine Department of Transportation. The option agreement for the secondary parcel is also provided.

BK12719PG277

54320

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

MAINE REAL ESTATE TAX PAID

PETERSEN CORP., a Massachusetts corporation, of Andover, Massachusetts, grants to LANGDON STREET REAL ESTATE, INC., a New Hampshire corporation with a place of business and mailing address at 7 Langdon Street, Concord, New Hampshire 03301, with quitclaim covenants, the land situated in Portland, County of Cumberland and State of Maine, with all buildings and improvements thereon, if any, being more fully described on the attached Exhibit A.

Meaning and intending to convey and hereby conveying the same premises conveyed to Petersen Corp. by deed of Glen G. Grant dated September 25, 1995 and recorded in the Cumberland County Registry of Deeds in Book 12302, Page 130.

In Witness Whereof, Petersen Corp. has caused this instrument to be executed by Glen G. Grant, its President, thereunto duly authorized, this 12th day of September, 1996.

WITNESS

PETERSEN CORP.

By: _____
Glen G. Grant
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. September 12, 1996

Personally appeared the above-named Glen G. Grant, President of Petersen Corp., and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of Petersen Corp.

Before me

_____
Notary Public/Attorney at Law

Print Name RICHARD A. SHINAY

78487.1

EXHIBIT A

Two certain lots or parcels of land, with all buildings and improvements thereon, situated in the City of Portland, Cumberland County, State of Maine, bounded and described as follows:

Parcel 1

Beginning on the east side of Sewall Street at a point on the northerly sideline and right-of-way now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.12± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04104, of Portland Terminal Company;

Thence southeasterly in said northerly sideline and right of way of Portland Terminal Company a distance of nine hundred five (905) feet, more or less, to a point;

Thence northerly in a line, along a fence, a distance of three hundred (300) feet, more or less, to a concrete monument, set in the ground;

Thence north-northwesterly in a line, along a fence, a distance of two hundred twenty (220) feet, more or less, to a concrete monument, set in the ground;

Thence northwesterly in a line, along a fence, a distance of one hundred twenty (120) feet, more or less, to a concrete monument, set in the ground;

Thence continuing northwesterly on an arc as shown on Valuation Section 1-A, Sheet 1A to the point of intersection with the southerly sideline of Hooper Street, so-called, at a point on a line perpendicular to and projected from Valuation Station 42.03±, as shown on said Valuation Plan;

Thence westerly in the southerly sideline of said Hooper Street, two hundred fifty-five (255) feet, more or less, to the point on intersection with the easterly sideline of Sewall Street;

Thence southerly in the easterly sideline of said Sewall Street to the point of beginning, said parcel containing 281,000 square feet, more or less.

Parcel 2

Beginning on the west side of Sewall Street at a point on the northerly sideline and right-of-way, now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.62± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04101, of Portland Terminal Company;

Thence northwesterly in the northerly sideline and right-of-way of Portland Terminal Company a distance of forty (40) feet, more or less, to a point;

Thence northerly in a line a distance of two hundred ninety (290) feet, more or less, to the point of intersection with the westerly sideline of said Sewall Street;

Thence southerly in the westerly sideline of said Sewall Street to the point of beginning, said parcel containing 8,900 square feet, more or less.

Further reference is made to a plan entitled "Subdivision Plan - Preliminary of Thompson's Point Subdivision, Sewall Street, Portland, Maine" made by Sebago Technics, 12 Westbrook Common, Westbrook, Maine, dated September 29, 1992, revised October 1, 1992, Project No. 92091.

Also hereby conveying all of the Grantor's right, title and interest, if any, in and to Sewall Street as it is located between Parcel 1 and Parcel 2, Sewall Street as it is located northwest of Parcel 2, and Hooper Street as it is adjacent to Parcel 1, the current location of Sewall Street and Parcel 2, but without any covenants of title with respect thereto.

78487.1

RECEIVED
RECORDED REGISTRY OF DEEDS
95 SEP 12 PM 2:43
CUMBERLAND COUNTY
John B O'Brien

OPTION AGREEMENT

This **OPTION AGREEMENT** (the "Agreement") is entered into this 29 day of January, 20 18, by and between the STATE OF MAINE, acting by and through its DEPARTMENT OF TRANSPORTATION,, an agency of the State of Maine, with headquarters at 16 State House Station, Augusta, Maine ("MaineDOT" or "Seller"), and LANGDON STREET REAL ESTATE, INC. with an address of 7 Langdon Street, Concord, New Hampshire (the "Buyer"),

RECITALS

A. Seller is the owner of a certain parcel of land located adjacent to Interstate 295 ("I-295") in Portland, County of Cumberland, State of Maine, acquired in connection with MaineDOT's construction of the Exit 6A southbound on-ramp accessing I-295.

B. Buyer is the owner of adjacent land improved with a facility commonly known as the Portland Transportation Center, having an address of 100 Thompson's Point, Portland, Maine (the "PTC"). Buyer is seeking to expand its property to allow for the development of additional parking areas to serve the PTC (the "Extended Parking Area").

C. Under the terms and conditions set out below, Seller is willing to grant to Buyer an exclusive option to purchase a portion of the Seller's property consisting of approximately 1.92± acres, as more particularly described in **Exhibit A** attached hereto and generally depicted as the orange shaded area on the plan attached hereto as **Exhibit B** (the "Premises).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants, agreements, and undertakings set out herein, the parties agree as follows:

1. **Option.** Subject to the terms and conditions set forth herein, the Seller hereby grants to the Buyer the exclusive option to purchase the Premises (the "Option") for anticipated uses associated with the development of the Extended Parking Area serving the PTC.

2. **Term.** This Option will remain in effect until five o'clock (5:00) p.m. on December 31, 2018, unless extended in writing by mutual agreement of the parties (the "Option Term") or unless previously terminated as set forth in this Agreement.

3. **Conditions.** During the Option Term, the parties shall proceed with satisfying each of the following conditions (the "Option Conditions"), which must all be completed to the satisfaction of MaineDOT prior to the parties entering into a formal Purchase and Sale Agreement and proceeding to a sale of the Premises:

    a. Buyer shall have completed, at its sole expense and to the satisfaction of the Seller, a full boundary survey and legal property description of the Premises, upon which a conveyance will be based.

b. Buyer shall have sought and secured, at its sole expense, all necessary permits and permissions from the United States Army Corps of Engineers, the Maine Department of Environmental Protection, and any applicable local entities approving the Buyer's development proposal to construct the Extended Parking Area.

c. Buyer shall have submitted to the Seller, at its sole expense, all necessary information required to support the Seller's request that the Federal Highway Administration ("FHWA") review and approve the Seller's proposal to convey the Premises to the Buyer. Required submissions shall include, but may not be limited to, the following:

i. Identification of the party who will be responsible for developing and operating the development of the Premises;

ii. A general statement of the proposed use;

iii. The proposed design for the development of the Premises, including any facilities to be constructed thereon;

iv. Maps, plans and/or sketches adequately demonstrating the relationship of the proposed use of the Premises to the adjacent I-295 highway improvements;

v. An acceptable metes and bounds description of the Premises, as well as appropriate plans and/or cross sections clearly defining the vertical use limits of the proposed development.

d. MaineDOT shall have obtained all necessary approvals from FHWA to proceed with conveying the Premises to the Buyer;

e. Buyer shall have developed, at its sole expense and to the satisfaction of MaineDOT, a drainage design that adequately protects the adjacent I-295 highway corridor, and preserves the ability for MaineDOT to maintain, repair and replace its drainage installations serving the adjacent I-295 highway corridor. To this effect, the sale of the Premises shall be subject to the Seller's retention of any drainage easements necessary to support MaineDOT's highway maintenance needs.

f. MaineDOT shall have completed an appraisal determining the fair market value (the "FMV") of the Premises and, therefore, establishing the purchase price in accordance with FHWA's requirement that MaineDOT receive FMV for the sale of the Premises.

4. **Option Price.** Seller will waive establishing and collecting any cash Option Price for the Option Term, instead receiving consideration in the form of the engineering work

referenced herein; provided, however, that if the Option Term is extended beyond December 31, 2018, as set forth above, Seller retains the right to establish and collect an appropriate Option Price in consideration for extending Buyer's exclusive Option on the Premises.

5. **Exercise of Option and Purchase Price.** Upon satisfaction of all Option Conditions, Buyer's exercise of the Option shall be satisfied through delivery to Seller of Buyer's written intent to proceed with purchasing the Premises at the FMV determined by the Seller. Delivery of Buyer's written intent shall be made no later than the expiration of the Option Term via first class mail or hand delivery.

6. **Termination.** If Buyer does not exercise the Option by the end of the Option Term, the Option and this Agreement shall automatically terminate. Seller retains the right to terminate this Option at any time in the unlikely event that the Premises is required for transportation purposes.

7. **Purchase Agreement and Due Diligence.** Upon exercise of the Option, the parties shall promptly enter into a formal Purchase and Sale Agreement that provides for a closing to occur at a time and place mutually agreeable to the parties (the "Closing"). The Purchase and Sale Agreement shall set out the terms of Closing, including but not limited to the following: form of deed; proration of fees, if any; form of payment; appropriate due diligence periods; and conditions of Closing.

8. **Condition of and Access to Premises during Option Term.** Buyer acknowledges that Seller has made no representations or warranties of any kind whatsoever with respect to the condition of the Premises or the compliance of the Premises with any laws, rules, regulations, or ordinances, including (without limitation) any relating to zoning, the environment, or hazardous materials. During the Option Term, Seller will allow Buyer or its representatives access to the Premises upon reasonable advanced notice to MaineDOT, and Buyer or its representatives shall have the right to perform water, soil, septic system and engineering tests (including, without limitation, tests for hazardous wastes, toxic substances and for the existence of any underground tanks) on the Premises and to conduct boundary, resource and topographical surveys; provided, however, that (i) such access does not interfere with Seller's uses of the Premises; (ii) such persons enter on to the Premises at their own risk of loss or harm; and (iii) Buyer or its representatives will restore the Premises to the condition it was in prior to their inspection(s) to the extent reasonably practicable. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible. In the event Buyer is not satisfied with the results of its tests, including water quality, hazardous wastes, underground tanks, or toxic substances, Buyer may terminate and release this Option. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible.

9. **Conditions to Closing.** Buyer acknowledges that conveyance of the Premises will be conditioned on MaineDOT's retention of any drainage easements determined necessary to support MaineDOT's highway maintenance needs.

10. **No Assignment by Buyer.** Buyer may not assign the Option or this Agreement, and Buyer may not convey to any third party any rights under the Option or under this Agreement. Any such purported assignment or conveyance shall be void and of no effect.

11. **Capacity.** Each party represents to the other (a) that such party has full power and authority to perform its obligations hereunder; (b) that any person or entity executing this Agreement by or on behalf of the represented party has the authority to act on the behalf of and bind the represented party; (c) that any person or entity executing any closing documents by or on behalf of the represented party has been and will be duly authorized to act on behalf of the represented party; and, (d) that the performance of this Agreement will not be in violation of any law, ordinance, rule, regulation, order, or agreements to which the represented party is a party or by the terms of which it is bound.

12. **Governing Law.** This Agreement is made pursuant to and shall be governed in accordance with the laws of the State of Maine.

13. **Entire Agreement.** This Agreement contains the entire and only agreement between the parties, and no oral statements or representations or prior written matter not contained in this Agreement shall have any force or effect.

14. **Modification.** No provision of this Agreement may be waived, changed, or modified orally, but only by an agreement in writing signed by the parties.

15. **Notices.** Any communications, requests or notices required or appropriate to be given under this Agreement shall be in writing and mailed via U.S. Mail, Certified or Registered, Return Receipt Requested or sent via a recognized commercial carrier, such as but not limited to Federal Express, that requires a return receipt delivered to the sending party. Alternatively, communication may be sent via email and shall satisfy the delivery requirements of this section through express acknowledgement of receipt by the receiving party. Said communications, requests or notices shall be sent to the other party as follows:

Seller:	Buyer:
Maine Department of Transportation	Langdon Street Real Estate, Inc.
Toni L. Kemmerle, Chief Counsel	Attn: Ben Blunt
16 State House Station	7 Langdon St
Augusta Maine 04333-0016	Concord, NH 03301
E-mail: toni.kemmerle@maine.gov	Email: bblunt@concordcoachlines.com

IN WITNESS WHEREOF, the parties have set their hands and seals on the day and year first written above.

STATE OF MAINE
Department of Transportation

By: _____
David Bernhardt, Commissioner
Duly authorized

LANGDON STREET REAL ESTATE, INC

By: _____
Print Name: Benjamin Blunt
Its: Vice President
Duly authorized

Exhibit A
Proposed Acquisition from the State of Maine

A certain lot or parcel of land situated on the westerly side of Fore River Parkway and the southerly side of Thompson Point Connector, in the City of Portland, County of Cumberland, State of Maine, as depicted on a plan entitled "Exhibit B – Land Acquisition Sketch of Portland Transportation Center, Thompson's Point Connector, Portland, Maine For Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301" dated January 12, 2018, and revised January 23, 2018, by Sebago Technics, Inc. (project number 99607), D.O.T. File No. 3-185D, on file at the Property Office of the Maine Department of Transportation, and being more particularly bounded and described as follows:

Beginning at an existing 6-inch square concrete highway monument, being the southerly corner of land now or formerly of Langdon Street Real Estate, Inc., as described in a deed recorded at the Cumberland County Registry of Deeds (CCRD) in Book 12719, Page 277;

Thence N 05°25'20" W, along land of Langdon Street Real Estate, Inc., a distance of 303.20 feet to an existing 6-inch square concrete highway monument;

Thence N 19°32'38" W, along land of Langdon Street Real Estate, Inc., a distance of 222.25 feet to a 6-inch square concrete highway monument at a point of curvature;

Thence along a non-tangent curve concave to the southwest and land of Langdon Street Real Estate, Inc. as defined by the following curve elements: having a radius of 854.53 feet, an arc length of 35.90 feet and a chord which bears N 41°08'09" W, a distance of 35.89 feet to a point;

Thence N 27°24'28" E, along land of Langdon Street Real Estate, Inc., a distance of 53.92 feet to a point;

Thence N 04°37'26" E, along land of Langdon Street Real Estate, Inc., a distance of 64.77 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set on the southerly sideline of the Thompson's Point Connector;

Thence S 72°56'09" E, along Thompson's Point Connector and through land of the State of Maine, as described in deeds recorded at the CCRD in Book 3079, Page 336; Book 3153, Page 761 and Book 3367, Page 171, a distance of 143.69 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at the Fore River Parkway;

Thence S 06°38'37" E, along Fore River Parkway and through land of the State of Maine, a distance of 288.62 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 11°42'34" E, along Fore River Parkway and through land of the State of Maine, a distance of 226.50 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 13°20'40" W, along Fore River Parkway and through land of the State of Maine, a distance of 163.34 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at

land now or formerly of the Portland Terminal Company, as described in a deed recorded at the CCRD in Book 881, Page 318;

Thence N 54°30'09" W, along the land of the Portland Terminal Company, a distance of 101.27 feet to the Point of Beginning.

The herein described parcel contains approximately 83,608 square feet, more or less

Bearings herein are based on Grid North, Maine State Plane Coordinate System, West Zone 1802, NAD83.

Meaning and intending to convey a portion of the right of way of State Highway "295" as was acquired from the Portland Terminal Company by condemnation by the State of Maine, as described in a Notice of Layout and Taking recorded in Book 3217, Page 141.

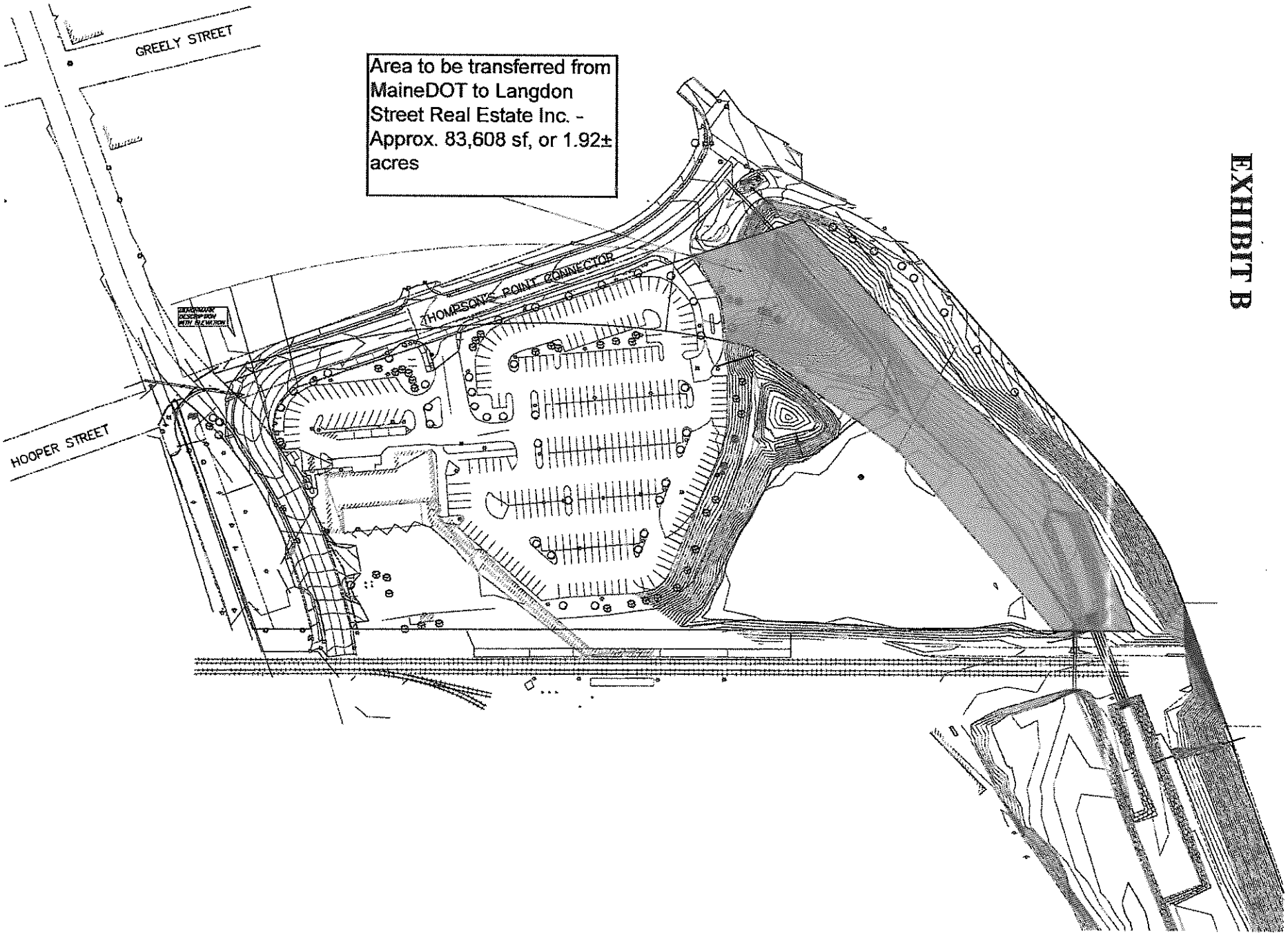

GREELY STREET
Area to be transferred from MaineDOT to Langdon Street Real Estate Inc. - Approx. 83,608 sf, or 1.92± acres
THOMPSONS POINT CONNECTOR
HOOPER STREET

EXHIBIT B

Section 5 – Public or Private Rights-of-Way

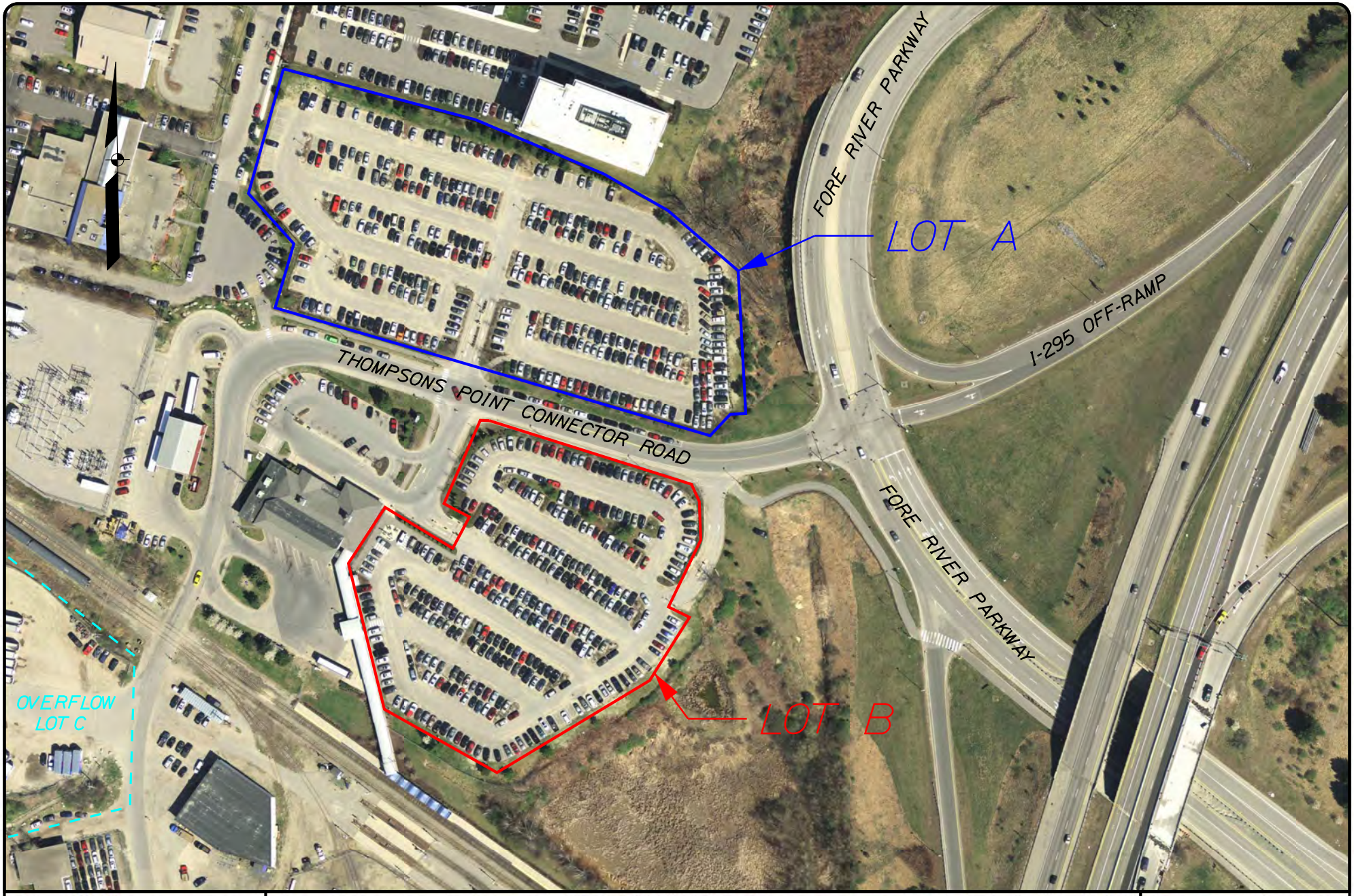
There are no new public or private rights-of-way proposed in conjunction with this project.

Section 6 – Construction Schedule

Construction of the expanded parking lot will occur in two stages, given the weak underlying soils beneath the area to be filled. Phase 1 will be a preload condition that will remain in place for a period of 18-20 months. It is expected that as much as three (3) feet of settlement may occur during this period so construction of the permanent parking lot surfacing, lighting, landscaping, and drainage will not occur until Phase 2. The fill placement of some 60,000 cubic yards of material will be placed in September to November 2018 (prior to winter) and settlement will be allowed to occur until mid-June of 2020. During this timeframe temporary parking will be provided on a "capped" reclaimed asphalt surface with temporary lighting and pedestrian walkway controls. Phase 2 (the permanent construction) will commence over the summer of 2020 and be completed by November 1, before parking demand begins to increase again.

Appendix

Figures 1-3



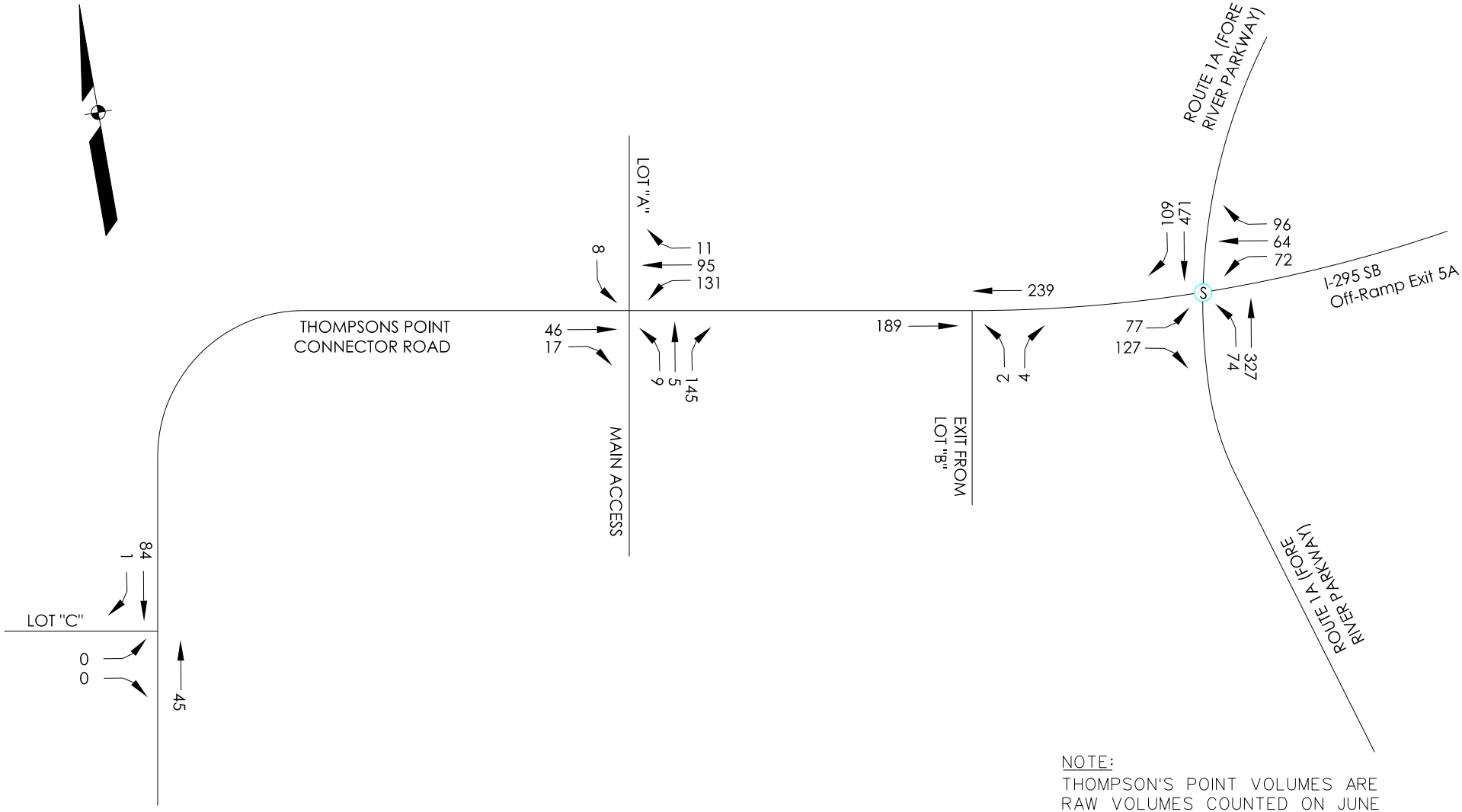
SEBAGO
TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LOCATION MAP
PORTLAND TRANSPORTATION CENTER

100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S
DATE: 06/21/18
SHEET: 1-OF-3



NOTE:
THOMPSON'S POINT VOLUMES ARE RAW VOLUMES COUNTED ON JUNE 8, 2018. NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

2018 COUNTED PEAK HOUR VOLUMES

PORTLAND TRANSPORTATION CENTER

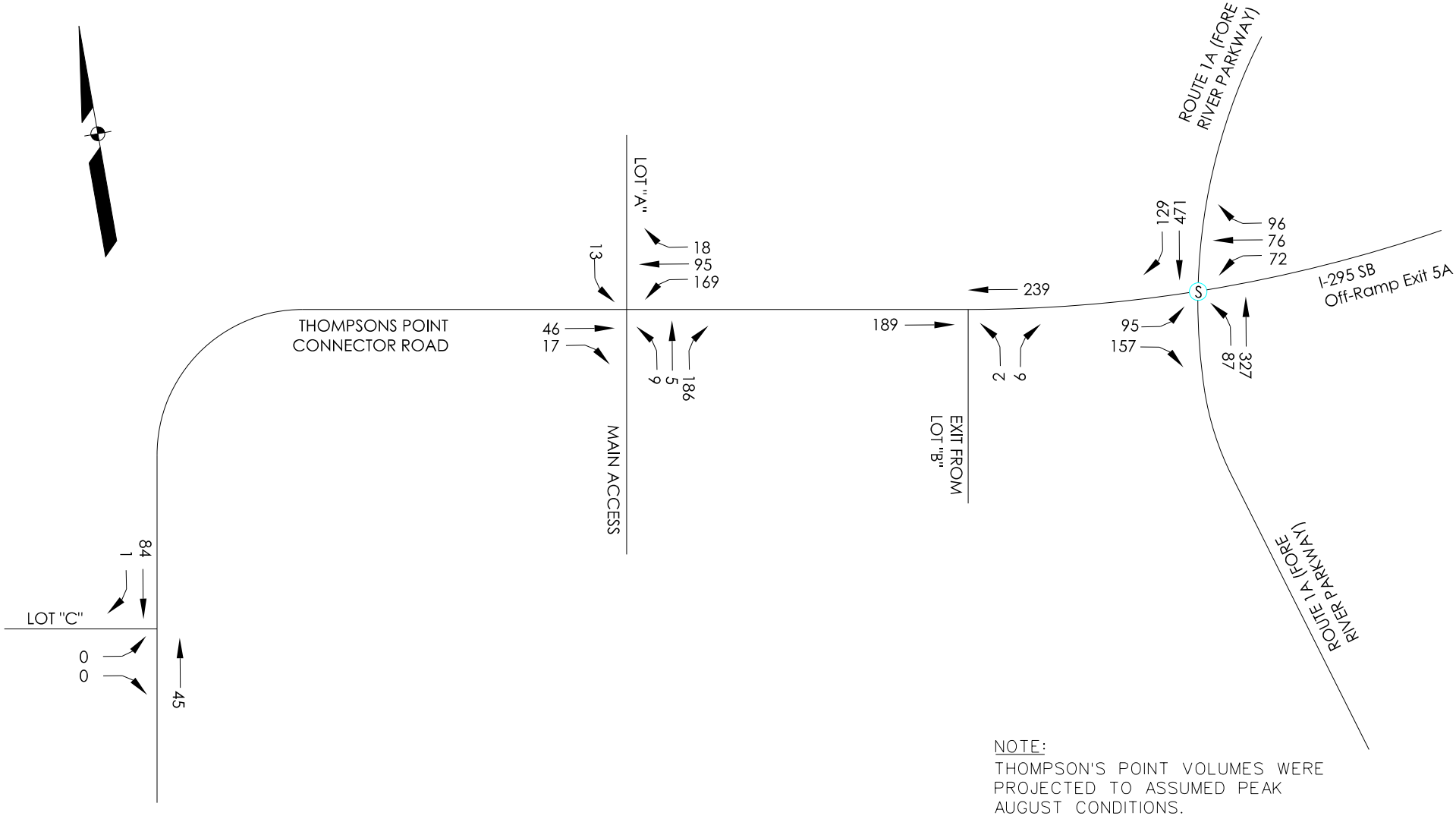
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 2-OF-3



NOTE:
THOMPSON'S POINT VOLUMES WERE PROJECTED TO ASSUMED PEAK AUGUST CONDITIONS.
NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

2018 ESTIMATED AUGUST TRIP VOLUMES

PORTLAND TRANSPORTATION CENTER

100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 3-OF-3

Traffic Count Data

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
10:30 AM	0	99	2	0	11	5	35	12	85	0	0	6	0	14	269
10:45 AM	0	104	8	0	18	10	39	8	79	0	0	6	0	11	283
Total	0	203	10	0	29	15	74	20	164	0	0	12	0	25	552
11:00 AM	0	83	15	0	16	13	33	18	79	0	2	14	0	14	287
11:15 AM	0	108	19	0	19	16	27	19	67	0	1	15	0	17	308
11:30 AM	0	115	25	0	15	21	21	18	65	0	0	19	0	28	327
11:45 AM	0	123	36	1	13	12	14	16	84	0	2	21	0	40	362
Total	0	429	95	1	63	62	95	71	295	0	5	69	0	99	1284
12:00 PM	0	114	29	0	23	15	32	21	103	0	0	22	0	41	400
12:15 PM	0	139	15	0	26	8	20	17	84	0	0	11	0	28	348
12:30 PM	0	139	18	0	22	10	21	15	97	0	2	17	0	34	375
12:45 PM	0	118	11	1	19	13	26	22	93	0	0	17	0	27	347
Total	0	510	73	1	90	46	99	75	377	0	2	67	0	130	1470
01:00 PM	0	118	14	0	14	15	20	17	93	0	1	16	0	30	338
01:15 PM	0	88	16	0	19	13	30	15	88	0	0	9	0	25	303
01:30 PM	0	111	19	0	25	20	21	16	95	0	0	13	0	31	351
01:45 PM	0	121	21	0	19	21	34	28	83	0	2	19	0	33	381
Total	0	438	70	0	77	69	105	76	359	0	3	57	0	119	1373
02:00 PM	0	86	16	0	16	21	26	26	102	0	0	17	0	43	353
02:15 PM	0	95	17	0	12	5	25	7	86	0	0	10	0	21	278
02:30 PM	0	100	12	0	19	11	21	27	91	0	0	15	0	33	329
02:45 PM	0	120	20	0	23	17	30	14	111	0	0	16	0	29	380
Total	0	401	65	0	70	54	102	74	390	0	0	58	0	126	1340

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
03:00 PM	0	114	17	0	17	19	20	27	120	0	1	18	0	50	403
03:15 PM	0	98	28	0	20	21	20	23	129	0	0	15	0	36	390
Grand Total	0	2193	358	2	366	286	515	366	1834	0	11	296	0	585	6812
Apprch %	0	85.9	14	0.1	31.4	24.5	44.1	16.6	82.9	0	0.5	33.6	0	66.4	
Total %	0	32.2	5.3	0	5.4	4.2	7.6	5.4	26.9	0	0.2	4.3	0	8.6	
Cars	0	2182	355	2	360	277	507	343	1820	0	11	283	0	564	6704
% Cars	0	99.5	99.2	100	98.4	96.9	98.4	93.7	99.2	0	100	95.6	0	96.4	98.4
Trucks	0	11	3	0	6	9	8	23	14	0	0	13	0	21	108
% Trucks	0	0.5	0.8	0	1.6	3.1	1.6	6.3	0.8	0	0	4.4	0	3.6	1.6

Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 1

Groups Printed- Cars - Trucks

	Thompsons Point From East		Exit Only From South		Thompsons Point From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
10:30 AM	0	14	0	1	17	0	32
10:45 AM	0	31	1	0	19	0	51
Total	0	45	1	1	36	0	83
11:00 AM	0	43	0	0	29	0	72
11:15 AM	0	54	0	0	32	0	86
11:30 AM	0	66	1	1	49	1	118
11:45 AM	0	62	0	2	58	0	122
Total	0	225	1	3	168	1	398
12:00 PM	0	65	1	1	58	0	125
12:15 PM	0	37	0	0	43	0	80
12:30 PM	0	42	0	2	49	0	93
12:45 PM	0	48	1	0	41	0	90
Total	0	192	2	3	191	0	388
01:00 PM	0	48	0	1	45	0	94
01:15 PM	0	40	0	0	39	0	79
01:30 PM	0	61	0	0	42	0	103
01:45 PM	0	67	0	3	53	0	123
Total	0	216	0	4	179	0	399
02:00 PM	0	60	0	1	52	0	113
02:15 PM	0	32	1	1	32	0	66
02:30 PM	0	46	0	0	49	0	95
02:45 PM	0	50	0	4	41	0	95
Total	0	188	1	6	174	0	369
03:00 PM	0	65	0	1	64	1	131
03:15 PM	0	76	0	0	53	0	129
Grand Total	0	1007	5	18	865	2	1897
Apprch %	0	100	21.7	78.3	99.8	0.2	

Accurate Counts

978-664-2565

Total %	0	53.1	0.3	0.9	45.6	0.1	
Cars	0	974	5	18	825	2	1824
% Cars	0	96.7	100	100	95.4	100	96.2
Trucks	0	33	0	0	40	0	73
% Trucks	0	3.3	0	0	4.6	0	3.8

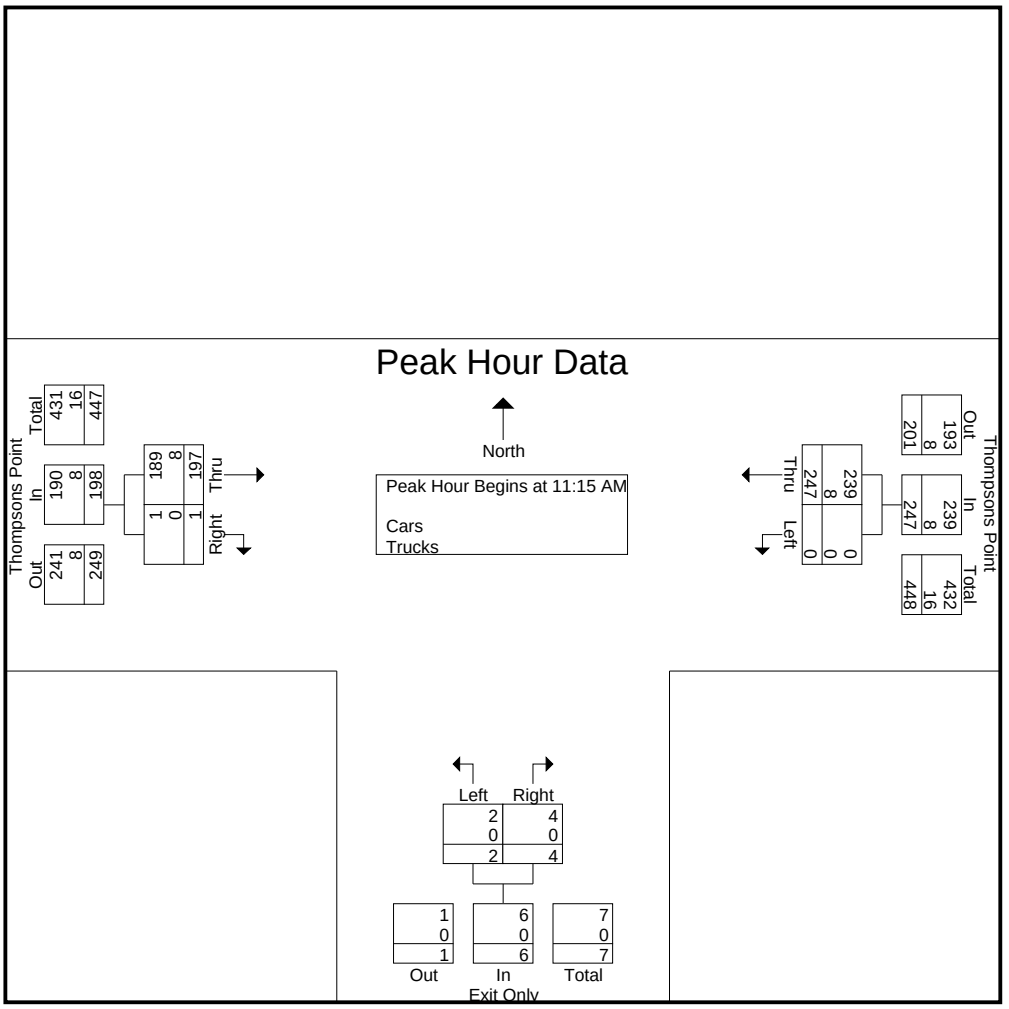
Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 3

	Thompsons Point From East			Exit Only From South			Thompsons Point From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	0	54	54	0	0	0	32	0	32	86
11:30 AM	0	**66**	**66**	**1**	1	**2**	49	**1**	50	118
11:45 AM	0	62	62	0	**2**	2	**58**	0	**58**	122
12:00 PM	0	65	65	1	1	2	58	0	58	**125**
Total Volume	0	247	247	2	4	6	197	1	198	451
% App. Total	0	100		33.3	66.7		99.5	0.5		
PHF	.000	.936	.936	.500	.500	.750	.849	.250	.853	.902
Cars	0	239	239	2	4	6	189	1	190	435
% Cars	0	96.8	96.8	100	100	100	95.9	100	96.0	96.5
Trucks	0	8	8	0	0	0	8	0	8	16
% Trucks	0	3.2	3.2	0	0	0	4.1	0	4.0	3.5



Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	0	0	11	5	0	0	0	9	0	9	0	34
10:45 AM	0	1	0	9	15	3	0	0	6	0	10	2	46
Total	0	1	0	20	20	3	0	0	15	0	19	2	80
11:00 AM	0	0	0	25	14	4	1	0	13	0	13	1	71
11:15 AM	0	0	0	25	26	2	1	1	25	0	10	4	94
11:30 AM	2	0	0	40	19	4	3	1	39	0	5	4	117
11:45 AM	3	0	0	40	27	2	3	1	46	0	13	5	140
Total	5	0	0	130	86	12	8	3	123	0	41	14	422
12:00 PM	3	0	0	26	33	3	2	2	35	0	25	4	133
12:15 PM	2	0	0	13	22	2	3	4	11	0	26	2	85
12:30 PM	2	0	1	14	28	1	2	2	14	0	33	4	101
12:45 PM	1	0	1	20	25	2	2	0	15	1	25	3	95
Total	8	0	2	73	108	8	9	8	75	1	109	13	414
01:00 PM	3	1	0	17	31	2	1	1	22	0	22	1	101
01:15 PM	1	0	0	11	31	0	0	0	10	1	23	3	80
01:30 PM	0	0	0	20	30	7	2	3	13	0	31	1	107
01:45 PM	1	1	0	28	32	5	0	7	19	2	26	5	126
Total	5	2	0	76	124	14	3	11	64	3	102	10	414
02:00 PM	0	0	0	35	26	5	1	7	33	0	22	1	130
02:15 PM	0	1	0	13	17	0	0	0	10	0	20	0	61
02:30 PM	0	0	0	18	29	0	1	1	13	0	35	2	99
02:45 PM	2	0	0	29	26	1	0	0	22	0	19	2	101
Total	2	1	0	95	98	6	2	8	78	0	96	5	391

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	3	0	0	26	26	4	0	0	36	0	24	3	122
03:15 PM	0	0	0	26	50	1	0	0	18	0	36	5	136
Grand Total	23	4	2	446	512	48	22	30	409	4	427	52	1979
Apprch %	79.3	13.8	6.9	44.3	50.9	4.8	4.8	6.5	88.7	0.8	88.4	10.8	
Total %	1.2	0.2	0.1	22.5	25.9	2.4	1.1	1.5	20.7	0.2	21.6	2.6	
Cars	23	4	2	446	476	48	22	30	409	4	392	52	1908
% Cars	100	100	100	100	93	100	100	100	100	100	91.8	100	96.4
Trucks	0	0	0	0	36	0	0	0	0	0	35	0	71
% Trucks	0	0	0	0	7	0	0	0	0	0	8.2	0	3.6

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

	Lot A From North				Thompsons Point From East				Main Access From South				Thompsons Point From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	25	26	2	53	1	1	25	27	0	10	4	14	94
11:30 AM	2	0	0	2	**40**	19	**4**	63	**3**	1	39	43	0	5	4	9	117
11:45 AM	**3**	0	0	**3**	40	27	2	**69**	3	1	**46**	**50**	0	13	**5**	18	**140**
12:00 PM	3	0	0	3	26	**33**	3	62	2	**2**	35	39	0	**25**	4	**29**	133
Total Volume	8	0	0	8	131	105	11	247	9	5	145	159	0	53	17	70	484
% App. Total	100	0	0		53	42.5	4.5		5.7	3.1	91.2		0	75.7	24.3		
PHF	.667	.000	.000	.667	.819	.795	.688	.895	.750	.625	.788	.795	.000	.530	.850	.603	.864
Cars	8	0	0	8	131	95	11	237	9	5	145	159	0	46	17	63	467
% Cars	100	0	0	100	100	90.5	100	96.0	100	100	100	100	0	86.8	100	90.0	96.5
Trucks	0	0	0	0	0	10	0	10	0	0	0	0	0	7	0	7	17
% Trucks	0	0	0	0	0	9.5	0	4.0	0	0	0	0	0	13.2	0	10.0	3.5

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	4	0	0	0	0	0	6	0	0	0	0	10
10:45 AM	0	15	0	0	0	1	0	8	0	0	0	0	24
Total	0	19	0	0	0	1	0	14	0	0	0	0	34
11:00 AM	0	12	1	0	0	1	0	13	0	1	0	0	28
11:15 AM	2	18	1	0	0	0	0	8	0	0	0	0	29
11:30 AM	0	15	0	0	0	2	0	5	0	0	0	0	22
11:45 AM	0	18	0	0	0	0	0	13	0	0	0	0	31
Total	2	63	2	0	0	3	0	39	0	1	0	0	110
12:00 PM	0	33	0	0	0	0	0	19	0	0	0	0	52
12:15 PM	1	17	2	0	0	0	0	25	0	0	0	0	45
12:30 PM	1	27	0	0	0	1	0	28	0	2	0	0	59
12:45 PM	0	20	1	0	0	1	0	23	0	0	0	0	45
Total	2	97	3	0	0	2	0	95	0	2	0	0	201
01:00 PM	0	29	0	0	0	0	0	17	0	0	0	0	46
01:15 PM	0	24	0	0	0	0	0	22	1	0	0	0	47
01:30 PM	0	25	0	0	0	1	0	27	0	0	0	0	53
01:45 PM	0	22	1	0	0	0	0	20	0	0	0	0	43
Total	0	100	1	0	0	1	0	86	1	0	0	0	189
02:00 PM	0	23	0	0	0	0	0	18	0	0	0	0	41
02:15 PM	0	13	0	0	0	1	0	17	0	0	0	0	31
02:30 PM	0	32	0	0	0	0	0	34	0	0	0	0	66
02:45 PM	0	12	0	0	0	0	0	4	0	0	0	0	16
Total	0	80	0	0	0	1	0	73	0	0	0	0	154

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	1	17	0	0	0	0	0	22	0	1	0	0	41
03:15 PM	1	38	0	0	0	2	0	27	0	0	0	0	68
Grand Total	6	414	6	0	0	10	0	356	1	4	0	0	797
Apprch %	1.4	97.2	1.4	0	0	100	0	99.7	0.3	100	0	0	
Total %	0.8	51.9	0.8	0	0	1.3	0	44.7	0.1	0.5	0	0	
Cars	6	413	6	0	0	9	0	355	1	4	0	0	794
% Cars	100	99.8	100	0	0	90	0	99.7	100	100	0	0	99.6
Trucks	0	1	0	0	0	1	0	1	0	0	0	0	3
% Trucks	0	0.2	0	0	0	10	0	0.3	0	0	0	0	0.4

Crash Data

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Thompsons Point Connector Rd in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 3200149	Start Node: 59413	Start Offset: 0	☐ Exclude First Node
	End Node: 59420	End Offset: 0	☐ Exclude Last Node
Route: 3200556	Start Node: 59413	Start Offset: 0	☑ Exclude First Node
	End Node: 59418	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
59420	3200149 - 0.21	End of THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	0.340	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
59426	3200149 - 0.14	Int of SEWELL ST THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	1.112	0.00	0.52	0.00
												Statewide Crash Rate:	0.14	
59413	3200149 - 0	Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS F	9	9	0	0	1	2	6	33.3	6.211	0.48	1.23	0.39
												Statewide Crash Rate:	0.74	
59418	3200556 - 0.09	Int of FORE RIVER PKY RINV 3200156	2	2	0	0	0	0	2	0.0	2.770	0.24	0.37	0.65
												Statewide Crash Rate:	0.12	
Study Years: 3.00		NODE TOTALS:		11	0	0	1	2	8	27.3	10.433	0.35	0.80	0.44

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
59413	59426	2029332	0 - 0.14	3200149 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00207	161.15	987.49	0.16
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59426	59420	2029333	0 - 0.07	3200149 - 0.14	0.07	2	0	0	0	0	0	0	0.0	0.00048	0.00	1433.94	0.00
Int of SEWELL ST THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59413	59418	3115322	0 - 0.04	3200556 - 0.05	0.04	2	0	0	0	0	0	0	0.0	0.00086	0.00	774.75	0.00
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200556											Statewide Crash Rate: 218.73		
Study Years: 3.00				Section Totals:	0.25		1	0	0	0	0	1	0.0	0.00341	97.87	794.52	0.12
				Grand Totals:	0.25		12	0	0	1	2	9	25.0	0.00341	1174.44	964.07	1.22

Site Plan

WILLIAM T. CONWAY RLA 108

SHEET - OF -

PROJECT NO. 99607

SCALE 1"=40'

LANDSCAPE PLAN
OF:
PORTLAND TRANSPORTION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

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REV	BY	DATE	STATUS
REV1	BY:	DATE:	STATUS:

DESIGNED WTC
CHECKED WTC

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REGISTERED LANDSCAPE ARCHITECT WILLIAM T. CONWAY No. 108 STATE OF MAINE

STATE OF MAINE STEPHEN S. SAWYER, JR. No. 3736 REGISTERED PROFESSIONAL ENGINEER

7/16/18

99607i.dgn TAB-1 -OVERALL

MaineDOT

Portland Transportation Center
Parking Facility Study:
Preliminary Financial Analysis
February 26, 2018

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1. INTRODUCTION AND PURPOSE

The Maine Department of Transportation (MaineDOT) engaged AECOM Technical Services to prepare a feasibility study and preliminary financial analysis for a proposed new structured parking facility (State facility or the Project) to be constructed at the Maine DOT parking lot site located at 100 Thompson's Point, Portland, Maine. The need for the facility arose from consistent parking shortages being experienced at the Portland Transportation Center (PTC) as a result of strong ridership growth in inter-state, regional bus, and train services operated out of the PTC. The purpose of the study was to evaluate the physical and financial aspects of parking facility alternatives that would alleviate short-term overcrowding and accommodate long-term transit growth needs at the site.

The proposed new modern multi-level structured parking facility would be located at the site of, and replace, an existing MaineDOT 371-space surface parking lot. The new facility would substantially increase parking supply at PTC for the purposes of relieving existing overcrowding and supporting future intermodal transportation patronage coincident with a proposed new terminal building in vicinity of the existing PTC.

The five study objectives that formed AECOM's approach to the assignment were:

- Verify the demand for existing and future parking spaces and the effective supply;
- Optimize the useable space at the subject site property (existing surface parking lot);
- Calculate the capital and annual operating costs of the new parking facility;
- Estimate net revenues and assess financial performance of the new parking facility; and,
- Consider traditional and alternate project delivery mechanisms and potential funding sources applicable to a new parking facility.

This report describes the process undertaken and the results of a 15-year (2022-2036 timeframe) forecast of potential transit ridership levels and associated capital and operating costs for facility alternatives to increase parking supply at PTC on the MaineDOT property. Also provided are potential financing sources and funds that could be utilized to construct the facility.

1.1 PTC Existing Long Term Parking Capacity

The PTC is an intermodal facility located in Portland, ME that provides transportation connections between Maine and points to the south. The facility is owned and operated by Concord Coach Lines, Inc., (CCL), a, private intercity bus operator serving markets in Maine and New Hampshire and New York, with route connections to Boston, Boston Logan Airport, and New York City. In addition to bus service, intercity train service is provided via the Amtrak Downeaster service (the Downeaster), a 145-mile regional passenger train service operating between the PTC and Boston's North Station. The Northern New England Passenger Rail Authority (NNEPRA), which is headquartered in Portland, manages this service.

Parking at PTC is currently provided via two permanent (on-site) and one overflow (adjacent) surface lots:

- **North Lot:** a surface lot with gated access, owned by the MaineDOT, that contains 371 long-term parking spaces. This approximately 2.8 acre site is the subject property for the Project.
- **South Lot:** a surface lot owned by CCL that contains 289 long-term parking spaces.
- **Overflow lot:** a surface lot, leased by CCL, to meet peak demand and overflow needs that is located on the other side of the railroad right-of-way.[1] CCL formalized a lease on January 1, 2017 under which it leases an additional:
    - 100 spaces in June, July, August, September, October, November, December and January
    - 300 spaces from February to May (CCL peak demand period).

Additionally, CCL uses 67 curb parking spaces around the North and South lots to accommodate cars during peak hours:[2]

- **North Lot:** 35 spaces
- **South Lot:** 32 spaces

In summary, the combined total capacity of the existing two permanent surface parking lots is 1,027 during peak periods (including peak overflow and curb spaces).

1.2 Project Stakeholders and Consultations

The primary Project stakeholders include:

- **MaineDOT** is the Maine Department of Transportation and the lead agency for the Project. It owns the 371-space North lot at PTC. MaineDOT provides state and federal funding for capital and operating costs associated with the train services as well as the PTC facility as a whole.
- **Concord Coach Lines (CCL)** is an intercity bus company based in Concord, New Hampshire. The company started service to Maine in early 1990s. Concord Coach Lines operates along the Interstate 95 corridor between Bangor, Maine, and Boston, Massachusetts, as well as the Interstate 93 corridor in New Hampshire/Massachusetts with service from Berlin and Littleton through Concord to Boston and Logan International Airport. CCL owns the existing Portland Transportation Center facility and plans to modernize the PTC in the future.
- **NNEPRA** is the Northern New England Passenger Rail Authority created by the State of Maine. NNEPRA manages the Amtrak Downeaster rail service, serving 12 stops in Maine, New Hampshire and Massachusetts. The PTC also serves as the Downeaster Portland station, the main hub for the Amtrak Portland to Boston intercity service.

The Project stakeholders met and coordinated several times throughout the process to:

- Discuss the goals of the Project;
- Share information about the site and existing/future services provided;

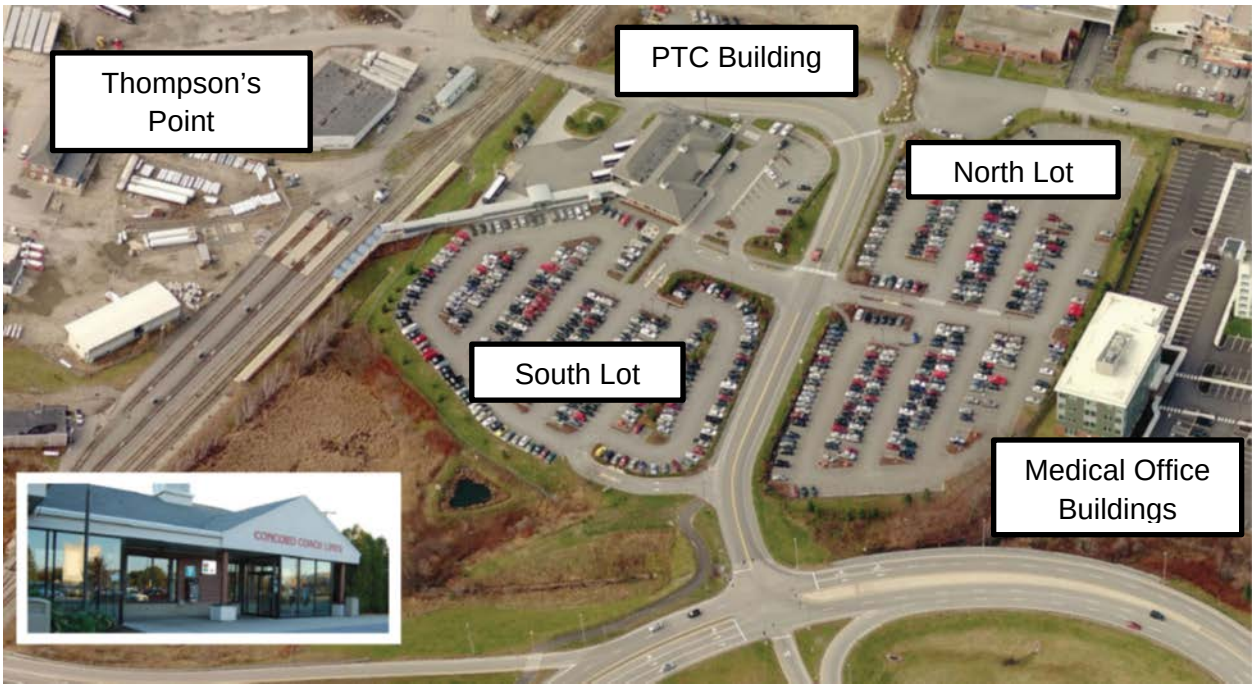
[1] The current lease on the 100-300 additional spaces stands to expire in two years according to CCL.
[2] When both surface lots are full, CCL allows vehicle parking on the curbs.

- Collaborate in developing ridership projections and future customer needs;
- Evaluate the merits of the alternatives developed; and,
- Brainstorm on ways to improve operations, revenue and ridership.

1.3 Project Location and Description

The proposed Project is the PTC located in Portland, Maine (see Exhibit 1-1) and consists of construction and operation of a new parking facility to serve the existing and future transit ridership originating from Portland. MaineDOT is exploring the feasibility of replacing a 371-space surface lot with a multi-level parking facility to meet the existing and future passenger demand. While the focus of this analysis is to address transit customer demand, this study also evaluates the potential for latent demand from adjacent users in off-peak periods that could provide an additional revenue stream to offset the parking facility's capital and operating costs (and possibly provide excess revenues that could be utilized to benefit the entire site or other MaineDOT needs).

Exhibit 1-1: Portland Transportation Center (PTC) and Vicinity



Source: Base photos - Scott Simons Architects, 2016

1.4 Existing Parking Demand

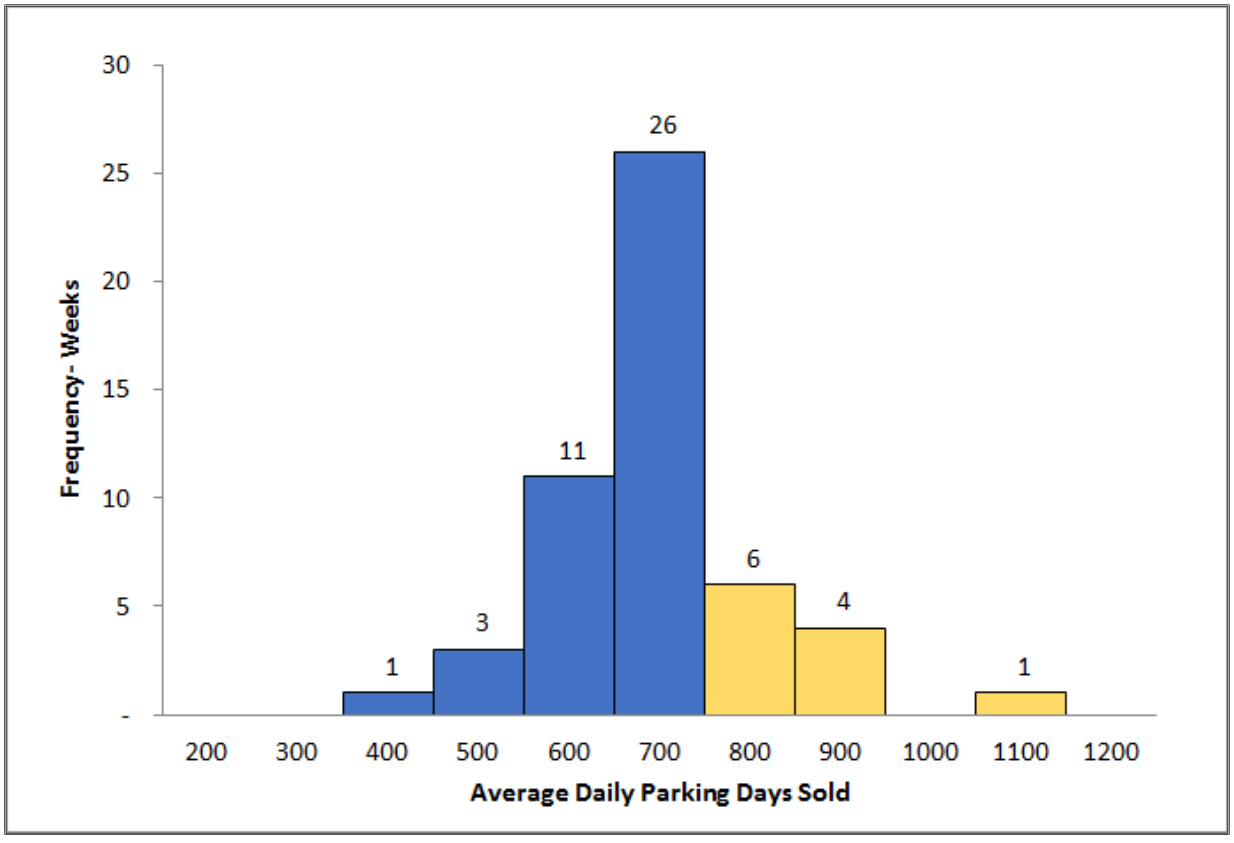
AECOM worked with the transit providers (NNEPRA and CCL) to evaluate the combined existing PTC parking demand to determine how the site is currently performing from a capacity standpoint. While it is known and observed that the subject site is under capacity, it is important to understand the pattern of peaks and troughs of demand, as well as past growth trends. This information would later serve as the baseline for developing the future demand projections.

CCL, which operates the PTC facility including the parking lots, provided to AECOM a full-year of sales transaction data that included parking days transacted (further referred to as parking days sold). The data represented total parking days sold and recorded daily from 11/1/2016 to 10/31/2017. For example, a car parked on Sunday 11/5 and leaving on Thursday 11/9 would show up as 5 "parking days" transacted on 11/9. A total 238,642 parking days were sold from 11/1/216 to 10/31/2017. The parking days sold included both short stay (one day or less) and long stay (3-5 days) with the average duration of stay of about 3 days in 2017.[3]

Exhibit 1-2 provides a summary of the most recent annual PTC parking days sales data. Each stack of data shows the frequency (counted as weeks) of average daily parking days sold (i.e., total weekly parking days sold divided over 7 days). The yellow-colored stacks represent the number of weeks when the average daily parking days sold exceeded 700. There are 11 weeks in the most recent year when PTC uses curb parking and overflow parking to meet the peak demand.

The demand for long-term parking at PTC is seasonal (high during vacation season, holidays, and weekends) and fluctuates from as low as 311 average parking days sold per day to as high as 1,024 average parking days sold per day. CCL has charged $5/day for all vehicles since April 2017, whether the car stays a few hours or 8 hours (a day). Prior to that timeframe, the parking fee was $4/day.

Exhibit 1-2: PTC Parking Days Sold per Day (Weekly Average)



[3] The estimate was based on CCL monthly Duration of Stay Reports for Feb-May (high demand season) and October 2017.

Existing demand[4] for the parking at PTC includes the following customer groups:

- **Transit:** CCL, NNEPRA passengers
- **Non-Transit:** employees from the adjacent medical office buildings (primarily medical field oriented) situated to the north of PTC also park on-site (has traditionally been 60 spaces).
- **Transient/Other:** visitors to the Thompson's Point area, which is a major 30-acre site under mixed-use development located to the south of PTC, on the opposite side of the railroad right-of-way.

[4] Existing demand is comprised of approximately 72% CCL passengers, 22% NNEPRA passengers and 6% medical office staff.

2. FUTURE PARKING DEMAND

This section describes several factors that influence future demand for travel to/from the PTC, and thereby inform the future parking needs at the site, including:

- Growth in passenger travel at Boston Logan International Airport;
- Growth in passenger cruise ship industry and facilities in Portland; and,
- Local demographic trends (population growth in Portland and Cumberland County).

The Project stakeholders concluded that the new parking facility must, first, serve the future needs of the transit customers (CCL and NNEPRA passengers) and, second, accommodate parking needs of employees of the adjacent medical offices and other users such as visitors to Thompson's Point.

2.1 Travel to Boston and Boston Logan International Airport

According to CCL, increases in domestic and international travel in recent years have been a driver of passenger growth for CCL and the Downeaster for travel that originates from the PTC to Boston's Logan International Airport (Logan). Intercity bus and train services provide an economical way to travel to Boston and Logan in comparison to driving, paying tolls (Maine Turnpike – I 95) and paying for parking in Boston or at Logan.

Logan Airport provides parking facilities with rates starting from $26 a day at the Economy lot and $35 at three other locations including Central Parking and Terminals B and E. The airport's two-deck Economy parking facility, located at the intersection of Service Road and Prescott Street, provides a free shuttle bus service to and from the terminals every 15-20 minutes.

There are other private parking options in the vicinity of the airport providing long term parking at rates between $11 to $24 a day (depending on how close the facility is located to the airport) with free shuttle services to the airport.[5]

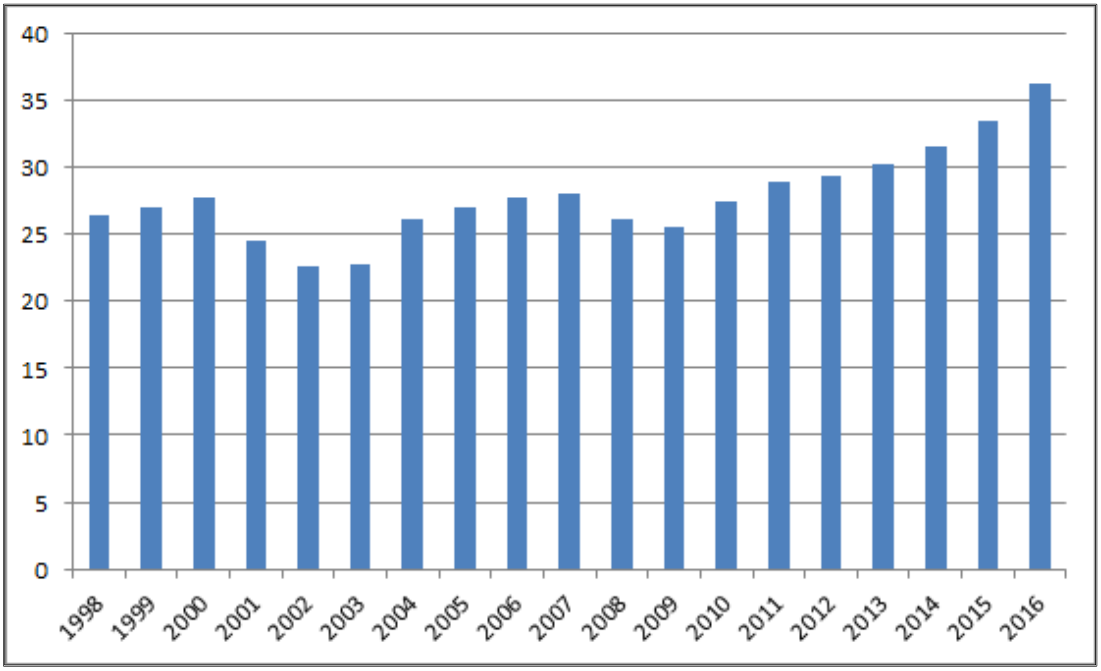
The PTC parking (currently $5/day) is a very competitive rate in comparison with Logan airport parking fees. This encourages travel by bus or train to Boston and Boston Logan from PTC. Transit customers can park their cars at PTC and travel directly to Logan airport in approximately 2 hours depending on the time of the day and traffic. Logan provides more flying options and cheaper prices than Portland International Jetport (PWM), which is a smaller airport. The CCL bus fare to Boston South Station is $39 and to Logan airport it is $49 for a round trip. Frequent service (hourly to Boston) provides additional benefits to travelers. The Downeaster round trip fare to Boston North Station is $48 and to Boston Back Bay the fare is $58.[6]

Exhibit 2-1 summarizes historical passenger counts for Logan airport over the last 18 years. It shows the passenger traffic through the airport follows the economic/business cycle. The dips in passenger travel coincided with the economic downturns in the early 2000s and most recent financial recession during 2007-2008. Logan experienced annual growth of 6.3% in the last three years and an annual growth of 4.7% in the last five years. The 15-year average growth

[5] https://preflight.custhelp.com/
[6] All prices are as of 2017

rate was 2.7%. The 18-year annual average growth rate was 1.8%. Section 3 of this report discusses projections for the future trend in travel from PTC, which were informed by the historical passenger counts occurring at Logan.

Exhibit 2-1: Boston Logan Airport Passenger Counts



Source: Massport @ http://www.massport.com/logan-airport/about-logan/airport-statistics/

2.2 Passenger Cruise Ship Industry Growth

The cruise ship industry in Portland has experienced explosive growth that influences the demand for intermodal travel and associated parking in the area.

The cruise ship industry traffic in Portland has grown from 64 ships and 89,300 passengers in 2011 to 130 ships and 117,525 passengers in 2016 (State of Portland's Economy, March 2017). The recent investment in facilities has generated visitor growth and economic development. For example, the $20 million Ocean Gateway expansion project includes international ferry and cruise ship passenger facilities at the Casco Bay waterfront in downtown.

2.3 Population Growth in Greater Portland Area

Portland is the most populous municipality in the state of Maine, with a population of 66,937 in 2016. Its population has grown from 66,194 in 2010 to 66,937 in 2016 (according to the US Census) which translates into an annual growth of 0.19%. The Portland Metropolitan Statistical Area population is approximately 515,000 (2016).

Portland is located in Cumberland County, which is (according to U.S. Census Bureau) the most populous county in Maine, accounting for 21.9% of the total population (of 1.33 million, 2016

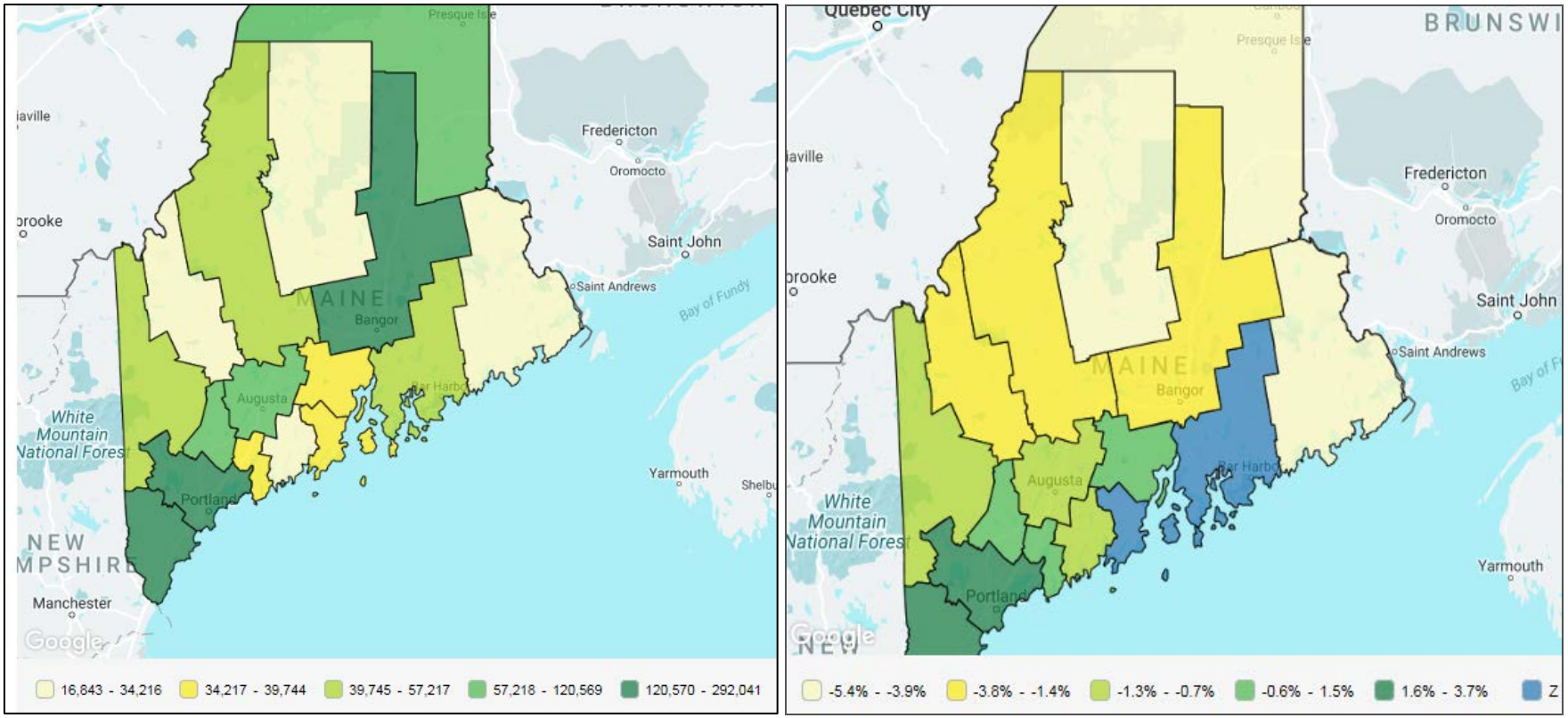
Census). The County population increased from 281,674 to 292,041 from 2010 to 2016. This translates into a 3.7% population gain or 0.6% annual growth rate.

York County is located south of Cumberland County and in the second most populous county in Maine with a population of 202,343 in 2016. The County population increased from 197,137 in 2010 to 202,343 in 2016, which translates into 2.6% population gain or 0.4% annual growth rate.

While Cumberland and York Counties both accounted for the most of the population growth in Maine (according to the 2016 U.S. Census as shown in Exhibit 2-2), the annual growth rates have been only about a half of a percent (0.4% to 0.6%).

As shown in Exhibit 2-2, the PTC is serving populations of two of the most populous counties of Maine and its largest city.

Exhibit 2-2: U.S. Census Maine 2016 Population and Growth (2010 to 2016 change)



Source: https://www.census.gov/quickfacts/fact/map/ME/PST045216#viewtop

Note: As per the U.S. Census Bureau, the results for the blue shading indicated as a "Z" in the legend for the figure on the right is indicative of "value greater than zero but less than half unit of measure shown."

3. FACILITY SIZE ALTERNATIVES AND ASSUMPTIONS

Although a number of parking facility sizes (number of parking spaces) were considered, this report focuses on three alternatives:

- 800-space State Facility (Low Case);
- 1,000-space State Facility (Base Case); and,
- 1,200-space State Facility (High Case).

3.1 Summary of the Key Assumptions

The key assumptions for the sizing of the parking facility and financial projections were based on discussions between MaineDOT, CCL, and NNEPRA.

These included:

- The future conditions assume that the CCL lot (South lot) will be reduced in size from 289 spaces to 200 spaces to accommodate the new and larger PTC terminal building/complex that is being proposed;
- The overflow surface lot (300 spaces) lease that is due to expire at the end of 2018 will not be extended or renewed due to the need for this space as Thompson's Point redevelopment continues;
- The 67 curb parking spaces will be lost due to reconstruction of the PTC main terminal building and improved circulation at the site;
- The primary users of the parking facility will be transit customers. Medical office employees and transient customers will be secondary users;
- Pricing would be assumed at a very conservative rate, initially remaining at $5 per space, per day, with a 2% inflation adjustment (increase) every other year starting in 2021; and,
- The 15 year financial forecast will assume the new structured parking facility will open in 2022.

Based on these assumptions, the proposed parking facility would need to accommodate, at a minimum, the future lost parking spaces including 300 overflow spaces, 89 CCL lot spaces (expected to be lost with the reconstructed terminal building) and 67 curb parking spaces currently allowed at peak times at both lots. The cumulative effect of these lost spaces translates to a need for a 4-level, 800-space parking structure (that would total 1,000 PTC spaces when combined with the remaining 200 South lot surface spots). This size facility however, would not support an increase in capacity, nor adequately address growth needs. It will only accommodate the existing condition/capacity currently housed on the site. However, this alternative is included in the report to allow a comparison to other larger parking facility alternatives.

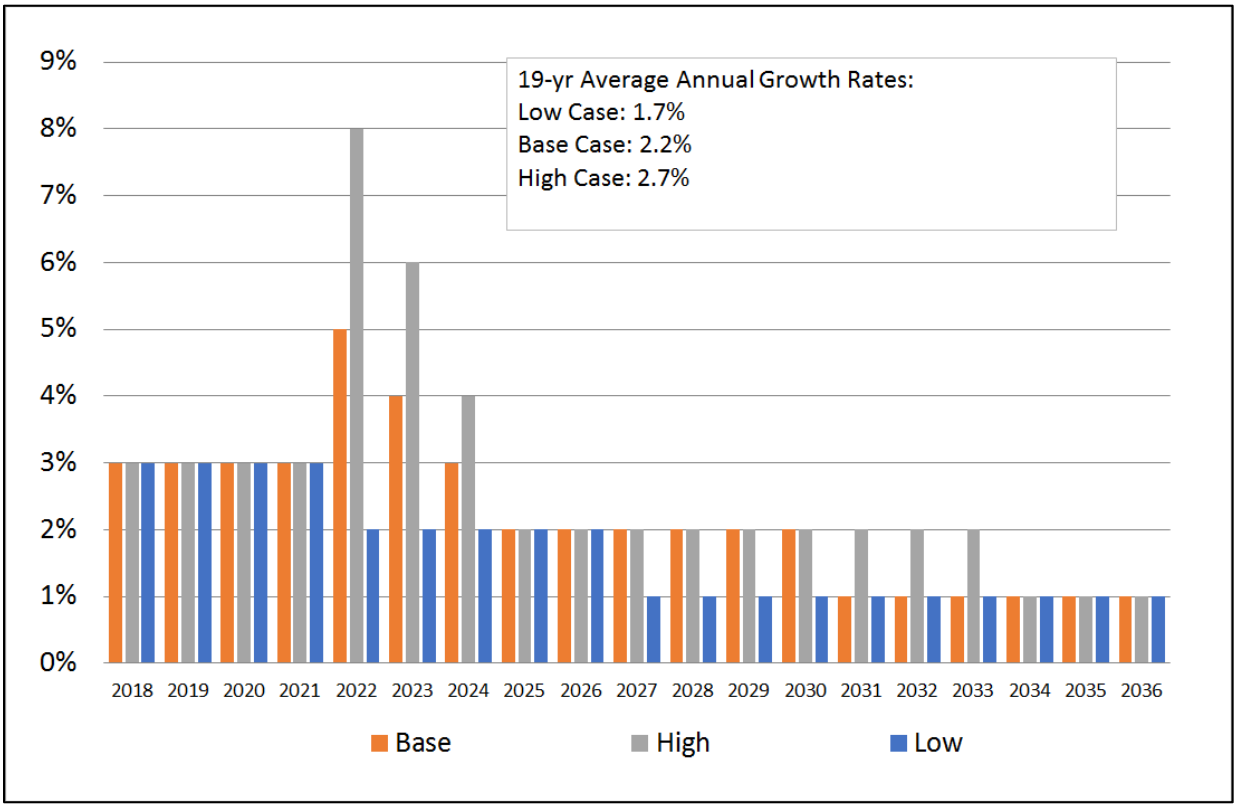
3.2 2018–2036 Demand Forecast

The demand forecast included a projection of the future growth in parking utilization (measured as average daily parking days sold) for three facility size alternatives. AECOM developed

projections based on CCL and NNEPRA historical passenger counts, CCL projected passenger counts and historical passenger counts at Logan (as discussed in Section 2.1).

Exhibit 3-1 summarizes the short- and long-term growth rates in parking utilization that correspond to each facility size alternative under various growth scenarios (High, Base, and Low). The growth scenarios were formulated by AECOM in coordination with the project stakeholder group.

Exhibit 3-1: Growth in Average Weekly Parking Days (Projections)



Source: AECOM projections based on CCL, NNEPRA and Logan data (Appendices A, B, C)

The demand for parking was assumed to grow at 3% in 2018-2021 for both CCL and NNEPRA passengers. The growth rate reflects a continued recovery in NNEPRA passenger counts (post 2015 dip in ridership due to weather and track maintenance) to 2014 passenger count levels, and plus continued growth in domestic and international travel at Logan, which propels both CCL and NNEPRA ridership.

Historically, ridership has ebbed and flowed based on a number of factors. One strong factor that seems to have a direct correlation to PTC ridership is Logan Airport usage, which is a leading destination for PTC passengers. Therefore, the average annual growth rates in PTC parking days sold from 2018 to 2036 were kept consistent with the 18-year average annual growth in passenger traffic at Logan Airport (~1.8% annual 18-year average growth rate plus allowances for a population and economic growth). As such, we've identified three growth scenarios to consider:

- ***800-space State facility*** (Low Case): growth is constrained by the size of the parking supply. A 19-year annual average of 1.7% was assumed;
- ***1,000-space State facility*** (Base Case): growth follows traffic growth at Logan (1.8%) plus allowance for a population increase (~0.4%); 19-year annual average of 2.2% was assumed; and,
- ***1,200-space State facility*** (High Case): growth follows traffic growth at Logan plus allowance for population increase and better economic conditions; 19-year annual average of 2.7% was assumed.

Exhibit 3-2 provides a summary of the alternatives.

Exhibit 3-2: Summary of Alternatives

Facility Alternative	Description
800-space State facility **+** **200-space CCL lot** **Total 1,000 spaces**	This alternative includes replacement of the existing 1,027 parking spaces including the temporary overflow (maximum 300 spaces), 89 CCL surface lot spaces to be lost with PTC modernization and 67 curb parking spaces with 1,000 new spaces (800-space facility and 200-space CCL surface lot). Under this alternative CCL no longer rents an overflow lot. Removed curb parking improves vehicle circulation. The existing allocation to adjacent medical offices remains at current level or 60 parking spaces/weekday.
1,000-space State facility **+** **200-space CCL lot** **Total 1,200 spaces**	This scenario includes replacement of the existing maximum capacity of 1,027 spaces and provision of additional capacity to accommodate the future growth in PTC travel to meet travel growth to Logan, new transit service to NYC and potential future increases in service levels. This alternative tests allocation of 120 spaces (additional 60 spaces to the existing 60) to medical offices through monthly permits and 5 spaces for *Zipcar*/Car Share Networks.
1,200-space State facility **+** ***200-space CCL lot*** **Total 1,400 spaces**	This alternative includes replacement of the existing maximum capacity of 1,027 and provision of additional capacity to accommodate the future travel growth at PTC to meet travel growth to Logan, the new service to NYC and potential future increases in service levels. This alternative allocates 180 spaces (additional 120 spaces to the existing 60) to medical offices through monthly permits and 10 spaces for *Zipcar* patrons.

Exhibit 3-3 summarizes the Low, Base and High growth scenarios starting from year 2017 parking days sold (actual PTC data) net of parking days sold to medical offices' employees.[7] It shows the frequency (measured in weeks) when average daily parking days sold (from Exhibit 1-2) exceeds the capacity of the total PTC parking supply under three different State facility size alternatives. The existing allocation to adjacent medical offices remains at a current level of 60 spaces/day/week (5 days-week) or 43 spaces/day/week (7 days-week).

Exhibit 3-3: Growth in Average Daily Parking Days Sold (Transit)

Low Growth Scenario	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	-	1	1	3	4	5
# of Weeks Parking Days Sold>1200	-	-	-	1	1	1
# of Weeks Parking Days Sold>1400	-	-	-	-	-	-

Base Growth Scenario	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	-	1	3	5	7	10
# of Weeks Parking Days Sold>1200	-	-	1	1	1	3
# of Weeks Parking Days Sold>1400	-	-	-	-	1	1

High Growth Scenario	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	-	2	5	6	14	26
# of Weeks Parking Days Sold>1200	-	-	1	1	3	5
# of Weeks Parking Days Sold>1400	-	-	-	-	1	1

Source: CCL, 2017

Exhibit 3-3 indicates that PTC may experience one week of overflow (over 1200 daily parking days sold) in years 3, 5, and 10, and 3 weeks of overflow in year 15 under Base Case growth scenario. This means the 1000-space State facility alternative (total 1200 spaces with CCL lot) may experience 3 weeks of overflow in year 15 from facility opening. In years 3, 5 and 10, the street parking can absorb the overflow. In year 15 there will be 3 weeks when transit users will need to look for alternative parking.

Under the 1,400 space baseline growth case scenario (1200 space structured parking plus 200 CCL station-side surface parking spaces), the PTC will experience only one week of overflow in years 10 and 15, making it the better choice. It would also perform similarly well under the High growth scenario.

[7] Medical offices' employees are not a transit customer per se and will not grow with the future travel growth to Boston, Boston Logan or other primary destinations. Medical offices' staff park 5 days per week for less than 8 hours. They currently utilize 60 spaces over a 5 day week.

Exhibits 3-4 and 3-5 below provide scenarios where 120 and 180 space allocations are given to medical office staff to provide for consistent revenue streams. However, the medical offices' employee parking is not tied to transit ridership growth, and can be adjusted year-to-year depending on availability.

Exhibit 3-4: Growth in Average Daily Parking Days Sold (Transit + 120 Medical Spaces)

Base Growth Scenario + 120 spaces/weekday for Medical Offices						
	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	1	3	6	7	19	27
# of Weeks Parking Days Sold>1200	-	1	1	1	3	5
# of Weeks Parking Days Sold>1400	-	-	-	-	1	1

High Growth Scenario +120 spaces/weekday for Medical Offices						
	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	1	5	8	11	31	38
# of Weeks Parking Days Sold>1200	-	1	1	3	6	8
# of Weeks Parking Days Sold>1400	-	-	1	1	1	3

Exhibit 3-5: Growth in Average Daily Parking Days Sold (Transit + 180 Medical Spaces)

Base Growth Scenario + 180 spaces/weekday for Medical Offices						
	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	1	5	7	10	26	34
# of Weeks Parking Days Sold>1200	-	1	1	3	5	7
# of Weeks Parking Days Sold>1400	-	-	-	1	1	1

High Growth Scenario +180 spaces/weekday for Medical Offices						
	2017	YR1	YR3	YR5	YR10	YR15
# of Weeks Parking Days Sold>1000	1	6	14	23	36	41
# of Weeks Parking Days Sold>1200	-	1	3	4	7	14
# of Weeks Parking Days Sold>1400	-	-	1	1	2	4

Source: CCL and AECOM: 2017

4. PARKING FACILITY LAYOUT AND ESTIMATED CAPITAL COSTS

The following section describes the physical site footprint dimensions that are available to accommodate a range of sizes of a parking facility. This section also summarizes the estimated capital cost to construct new facility alternatives.

4.1 Site Footprint of the New Parking Facility

The available property for the new facility is the existing surface parking North Lot that is owned by MaineDOT. The factors that influence the facility concept layout on the site are as follows:

- The site dimensions are approximately 240 feet x 500 feet, or 2.8 acres;
- The most efficient and likely cost effective layout for the new facility would be to construct a typical column spacing pattern. In order to achieve two-way traffic with parking on both sides of the drive lane (provides efficient layout), column spacing is needed of approximately 60 feet (typically within a range of 58 feet to 63 feet). The width of 180 feet is derived from three sections multiplied by 60 feet. The dimension is also an efficient layout for floorplate size to accommodate the number of parking spaces;
- A 10 to 12 foot height is a requirement for each parking facility level is typical for this type of structure; and,
- A parking facility efficiency of 350 square feet per space was applied as a reasonable rule-of-thumb for facility layout for planning purposes.

Applying the above information, AECOM estimated the general building footprint/floorplate that could be accommodated to achieve an optimal facility layout per level. Exhibit 4-1 indicates the site requirements, building size, and maximum number of parking spaces per level.

Exhibit 4-1: New Parking Facility Layout by Size

	800 Space Facility – 4L	1000 Space Facility – 5L	1200 Space Facility – 6L
Efficiency	325 square ft.	325 square ft.	325 square ft.
Supply/Capacity	800 spaces	1000 spaces	1200 spaces
Number of Levels	4 levels	5 levels	6 levels
Spaces per Level	200 spaces	200 spaces	200 spaces
TOTAL Building Area	260,000 square ft.	325,000 square ft.	390,000 square ft.
TOTAL Level Area	65,000 square ft.	65,000 square ft.	65,000 square ft.
Floor Plate Size	180 ft x 360 ft	180 ft x 360 ft	180 ft x 360 ft
Comments	Good fit on site access, circulation, setback landscaping, drainage accommodated	Good fit on site access, circulation, setback landscaping, drainage accommodated	Fit site. High car density traffic, access, circulation, setback landscaping, drainage accommodated.

4.2 Capital Cost Estimate

The new parking facility capital costs (2017 dollars) were estimated as follows:

- General construction costs for a new parking facility in the Portland, Maine region were estimated at $19,000 per space based on data from Carl Walker, Inc. (a division of WGI) annual (2017) statistical analysis of parking structure construction costs and new parking structure market forecasts/data nationwide. https://wginc.com/parking-structure-cost-outlook-october-2017/
- The parking facility structure type was assumed as a precast concrete because of its durability and that it can be assembled in the field faster than most other styles of parking structures. One ADA compliant elevator and a number of steel/concrete stairways would provide vertical access within the facility. Parking Access and Revenue Control Systems (PARCS) assumed for this facility are standard equipment that provide real time computerized parking systems for transient and credentialed customers;
- The per space construction cost assumption does not include architectural and engineering fees, environmental evaluations, materials testing, special inspections, geotechnical borings and recommendations, financing, owner administrative and legal, or other project soft costs. Soft costs are typically about 15 percent to 20 percent of total construction costs. Based on local conditions, AECOM estimated a value 15 percent for soft costs;
- At this preliminary stage of financial analysis, a contingency of approximately 20 percent of total project cost was applied to account for potential conditions related to the parking structure, site preparation work, or other unknown costs;
- Not included in the contingency category are costs associated with geotechnical and construction of a deep parking foundation, on- and off-site roadway, access, and traffic improvements associated with a multi-story parking facility serving a new intermodal transportation hub; and,
- Lastly, the new parking facility structure includes a covered pedestrian walkway bridge that would provide ease of access between the parking facility and the new/proposed PTC terminal building. The walkway was estimated to cost a flat $1.2 million ($2017).

Applying the above information, AECOM prepared a capital cost estimate by parking facility size as shown in Exhibit 4-2. Additional levels of parking require greater investment in structural costs and therefore increase exponentially by level.

Exhibit 4-2: New Parking Facility Capital Cost ($2017) By Size

# spaces	800	1000	1200
Levels	**4L**	**5L**	**6L**
Levels 1-4			
# spaces	800	800	800
Levels Above 4L	0	1L	2L
# spaces	0	200	400
Capital Cost (1-4L)	$15,200,000	$15,200,000	$15,200,000
Added Levels	$0	$4,560,000	$9,120,000
Subtotal	$15,200,000	$19,760,000	$24,320,000
Soft Costs	$4,560,000	$5,928,000	$7,296,000
Subtotal	$19,760,000	$25,688,000	$31,616,000
Contingency	$3,952,000	$5,137,600	$6,323,200
TOTAL	**$23,712,000**	**$30,825,600**	**$37,939,200**
Cost Per Space	*$29,640*	*$30,826*	*$31,616*

Summary			
Total State Garage Costs	$23,712,000	$30,825,600	$37,939,200
Add Ped Bridge Walkway	$1,200,000	$1,200,000	$1,200,000
TOTAL	**$24,912,000**	**$32,025,600**	**$39,139,200**

Source: AECOM, 2017

5. OPERATING COSTS AND REVENUES

This section summarizes parking revenues and operating and maintenance costs assumptions for the new parking facility.

As the projected demand (measured as parking days sold, discussed in Section 3.2) corresponds to all PTC parking facilities (both State and CCL owned), the projection included an assumption that the parking revenues from State and CCL surface lots would be split between the two facilities based on the respective share of spaces in the entire parking program.

The operating and maintenance (O&M) costs for both facilities were projected separately. Then, the annual O&M costs were netted from the annual parking revenues to derive annual net revenues over a 15-year projection timeframe.

Exhibit 5-3 provides a summary of State parking facility annual operating revenues and expenses for each parking facility size considered.

5.1 Operating Costs

Exhibit 5-1 provides a summary of the unit O&M costs used to project the annual O&M costs.[8]

Exhibit 5-1: Unit Operating Costs

Operating Expenses Assumptions	
Garage	**Surface Lot**
$380/space/year	$100/space/year
10% provision for replacement & renewals	5% provision for replacement and renewals
O&M inflation: annual 2%	

5.2 Operating Revenues

Exhibit 5-2 summarizes the existing parking utilization (measured as average daily parking days sold) based on the most recent PTC sales data. The data were aggregated on a quarterly basis, and the average daily utilization rate for each quarter was estimated.

Exhibit 5-2: Average Quarterly Parking Days Sold

	Total Parking Days Sold	Days in Quarter	Avg.Daily Parking Days Sold
Q1	59,868	90	665
Q2	65,213	91	717
Q3	57,756	92	628
Q4	55,804	92	607
Total	**238,642**	**365**	**654**

[8] The per space, per year unit O&M cost was based on actual experience of Long Island Rail Road (LIRR) parking facilities. The unit cost was reduced to reflect local conditions, lower labor costs, and snow removal in Maine.

The parking revenues were projected by applying the growth rates in parking demand (Section 3.2) to the Average Daily Parking Days Sold in Exhibit 5-2. Average Daily Parking Days Sold was multiplied by the number of days in a quarter. The quarterly revenue projections were aggregated to the annual projections of parking days sold. The projection of annual parking days sold was multiplied by an initial parking fee of $5/day, adjusted to inflation every other year starting in 2021.

Exhibit 5-3 provides pro forma operating budgets for each parking facility size alternative considered. The gross parking revenues were apportioned to the State Facility based on its share of the total number of parking space under each facility size alternative.

Since the capacity of the CCL surface lot would be reduced from 289 to 200 spaces, all medical offices spaces were assumed to be included in the new facility and revenues from medical offices parking days sold would accrue to the State Facility.

The cost of rental for *Zipcar* is assumed at $300 per month per space or $10 per day per space. The *Zipcar*/Car share revenues would also accrue to the State facility.

Pricing was assumed to continue at $5/day for all uses including medical office employees and adjusted for inflation (2%) starting in 2021 and every other year.

According to Exhibit 5-3, net operating revenues are estimated to be positive in every scenario (i.e., 800, 1,000, 1,200 spaces) in every year of operation. So regardless of which option is constructed, revenues should cover operating and maintenance (O&M) costs.

Exhibit 5-3: MaineDOT Parking Facility (only) Operating Budget Projections (YOE$)

OPERATING BUDGET - State Garage Only	#Spaces	Year of Expenditure Dollars															
Garage Size	800	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
SOURCES OF FUNDS																	
PARKING REVENUES																	
CCL Parkers		783,197	814,839	831,135	864,713	882,008	908,644	917,731	945,446	954,900	983,738	993,576	1,023,582	1,033,818	1,065,039	1,075,689	14,078,056
NNEPRA Parkers		261,066	271,613	277,045	288,238	294,003	302,881	305,910	315,149	318,300	327,913	331,192	341,194	344,606	355,013	358,563	4,692,685
Doctors Offices		80,045	81,645	81,645	83,278	83,278	84,944	84,944	86,643	86,643	88,376	88,376	90,143	90,143	91,946	91,946	1,293,994
Doctors Offices Monthly Permits		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Car Share Permit sales		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total - SOURCES OF FUNDS		**1,124,308**	**1,168,097**	**1,189,826**	**1,236,229**	**1,259,288**	**1,296,469**	**1,308,585**	**1,347,237**	**1,359,843**	**1,400,027**	**1,413,143**	**1,454,919**	**1,468,567**	**1,511,998**	**1,526,198**	**20,064,735**
USES OF FUNDS																	
OPERATING EXPENSE:																	
STATE GARAGE																	
Operating and Maintenance		326,805	333,390	340,108	346,961	353,953	361,085	368,361	375,784	383,356	391,081	398,961	407,001	415,202	423,568	432,103	5,657,718
Capital Reserve		32,680	33,339	34,011	34,696	35,395	36,109	36,836	37,578	38,336	39,108	39,896	40,700	41,520	42,357	43,210	565,772
Total - USES OF FUNDS		**359,485**	**366,729**	**374,119**	**381,657**	**389,348**	**397,194**	**405,197**	**413,362**	**421,692**	**430,189**	**438,857**	**447,701**	**456,722**	**465,925**	**475,314**	**6,223,490**
Net Revenues		**764,823**	**801,368**	**815,707**	**854,572**	**869,940**	**899,276**	**903,387**	**933,875**	**938,152**	**969,838**	**974,286**	**1,007,218**	**1,011,845**	**1,046,073**	**1,050,885**	**13,841,245**

OPERATING BUDGET - State Garage Only	#Spaces	Year of Expenditure Dollars															
Garage Size	1000	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
SOURCES OF FUNDS																	
PARKING REVENUES																	
CCL Parkers		839,826	890,887	917,614	954,685	973,779	1,013,120	1,033,382	1,075,131	1,096,633	1,129,752	1,141,049	1,175,509	1,187,264	1,223,119	1,235,350	15,887,099
NNEPRA Parkers		279,942	296,962	305,871	318,228	324,593	337,707	344,461	358,377	365,544	376,584	380,350	391,836	395,755	407,706	411,783	5,295,700
Doctors Offices		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Doctors Offices Monthly Permits		160,089	163,291	163,291	166,557	166,557	169,888	169,888	173,285	173,285	176,751	176,751	180,286	180,286	183,892	183,892	2,587,989
Car Share Permit sales		18,615	18,987	18,987	19,367	19,367	19,754	19,754	20,149	20,149	20,552	20,552	20,964	20,964	21,383	21,383	300,929
Total - SOURCES OF FUNDS		**1,298,472**	**1,370,128**	**1,405,763**	**1,458,837**	**1,484,296**	**1,540,468**	**1,567,485**	**1,626,943**	**1,655,613**	**1,703,639**	**1,718,702**	**1,768,595**	**1,784,268**	**1,836,100**	**1,852,409**	**24,071,717**
USES OF FUNDS																	
OPERATING EXPENSE:																	
STATE GARAGE																	
Operating and Maintenance		408,506	416,737	425,135	433,702	442,441	451,356	460,451	469,730	479,195	488,851	498,702	508,751	519,002	529,460	540,129	7,072,148
Capital Reserve		40,851	41,674	42,513	43,370	44,244	45,136	46,045	46,973	47,919	48,885	49,870	50,875	51,900	52,946	54,013	707,215
Total - USES OF FUNDS		**449,356**	**458,411**	**467,648**	**477,072**	**486,685**	**496,492**	**506,496**	**516,703**	**527,114**	**537,736**	**548,572**	**559,626**	**570,902**	**582,406**	**594,142**	**7,779,362**
Net Revenues		**849,115**	**911,716**	**938,115**	**981,766**	**997,611**	**1,043,976**	**1,060,988**	**1,110,240**	**1,128,498**	**1,165,903**	**1,170,131**	**1,208,969**	**1,213,366**	**1,253,694**	**1,258,266**	**16,292,355**

OPERATING BUDGET - State Garage Only	#Spaces	Year of Expenditure Dollars															
Garage Size	1200	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
SOURCES OF FUNDS																	
PARKING REVENUES																	
CCL Parkers		888,501	960,648	999,073	1,039,436	1,060,225	1,103,058	1,125,119	1,170,574	1,193,985	1,242,222	1,267,067	1,318,256	1,331,439	1,371,648	1,385,365	17,456,616
NNEPRA Parkers		296,167	320,216	333,024	346,479	353,408	367,686	375,040	390,191	397,995	414,074	422,356	439,419	443,813	457,216	461,788	5,818,872
Doctors Offices		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Doctors Offices Monthly Permits		240,134	244,936	244,936	249,835	249,835	254,832	254,832	259,928	259,928	265,127	265,127	270,429	270,429	275,838	275,838	3,881,983
Car Share Permit sales		37,230	37,975	37,975	38,734	38,734	39,509	39,509	40,299	40,299	41,105	41,105	41,927	41,927	42,766	42,766	601,858
Total - SOURCES OF FUNDS		**1,462,032**	**1,563,774**	**1,615,009**	**1,674,484**	**1,702,202**	**1,765,084**	**1,794,499**	**1,860,992**	**1,892,208**	**1,962,528**	**1,995,654**	**2,070,031**	**2,087,608**	**2,147,468**	**2,165,756**	**27,759,329**
USES OF FUNDS																	
OPERATING EXPENSE:																	
STATE GARAGE																	
Operating and Maintenance		490,207	500,085	510,162	520,442	530,929	541,628	552,542	563,676	575,034	586,621	598,442	610,501	622,803	635,352	648,155	8,486,577
Capital Reserve		49,021	50,008	51,016	52,044	53,093	54,163	55,254	56,368	57,503	58,662	59,844	61,050	62,280	63,535	64,816	848,658
Total - USES OF FUNDS		**539,228**	**550,093**	**561,178**	**572,486**	**584,022**	**595,790**	**607,796**	**620,043**	**632,537**	**645,283**	**658,286**	**671,551**	**685,083**	**698,888**	**712,971**	**9,335,235**
Net Revenues		**922,804**	**1,013,681**	**1,053,831**	**1,101,998**	**1,118,180**	**1,169,294**	**1,186,703**	**1,240,949**	**1,259,670**	**1,317,245**	**1,337,368**	**1,398,481**	**1,402,525**	**1,448,580**	**1,452,786**	**18,424,095**

Notes: 1. Table includes O&M costs for MaineDOT garage / site only.

2. Analysis includes set aside for a capital reserve fund to cover future repairs and non-regular O&M needs.

Source: AECOM, 2017

5.3 Potential for Leveraging Project Net Revenues

This section describes, at the high level, potential private sector financial interest in participating in the Project under each parking facility size alternative.

A private sector entity (a developer or an investor) could be interested in investing in the Project if, at minimum, the Project annual net revenues (i.e., excess revenues after all Project operating and maintenance expenses are paid for) are sufficient to provide an adequate return on investment (ROI) made by the private entity. There are other factors that influence private sector interest that are unique and to be considered at the delivery phase, such as: environmental and other risks related to site development, long term demand for parking services, construction cost overrun, and others.

To gauge a potential private sector interest in the Project, a calculation of the Present Value (PV) of the net parking revenues was used to size a potential contribution of private funds to finance the Project capital costs.

The calculations involved discounting the 15-year net parking revenues (Exhibit 5-3) at 6% and at 10% discount rates to year 2021 dollars (i.e., PV of net revenues in 2021 when the Project is under construction). The discount rates represent an approximation of a potential minimum internal rate of return (IRR) or a return on investment threshold which may be required by the private sector. The discount rates were used for illustration purposes only.

Exhibit 5-4 provides a summary of a potential capital funding mix (public and private shares) under each parking facility alternative. It shows:

- The total capital costs requirement under each parking facility alternative which includes the pedestrian walkway;
- The minimum share of a State/Federal public sector funding and/or combination with grant funding required for each parking facility size alternative to allow at 6% or 10% ROI on private investment; and,
- Public sector funding ranges from 66% to 72% of capital expenditures (capex) with 34% to 28% private investment at 6% ROI; and 74% to 78% public sector funding of capex with 36% to 22% private investment at 10% ROI. Additionally, public sector funding (described in Section 6 below) could partially contribute to the new parking facility construction from grant fund sources, which do not need to be repaid by the State of Maine or from the parking facility revenues.

Under the scenarios described in Exhibit 5-4, the issuance of public sector revenue bond, for example, that range from 5-7 percent interest rate over a 30-year maturity period are less expensive than the private sector financing of the construction cost of the parking facility.

Moreover, bonds issued for public projects are exempt from federal and state income taxes, which makes the state's interest cost on financing mechanism less than it otherwise would be.

Exhibit 5-4: Summary of the Project Potential Public & Private Funding Mix by Alternative

		800-space Facility	1,000-space Facility	1,200-space Facility
Capital Cost	Total Capex ($2021), including Pedestrian Walkway[1]	$25M (Facility); 1.2M (Walkway)	$32M (Facility); 1.2M (Walkway)	$40M (Facility); 1.2M (Walkway)
Public and Private Sector Participation Shares	Public Sector Grant Share in Capex to provide 6% Private Sector IRR	66%	69%	72%
	Public Sector Grant Share in Capex to provide 10% Private Sector IRR	74%	76%	78%

Note 1: 1.5% annual construction inflation rate was assumed to bring 2017$ cost estimates to year 2021$.

6. CAPITAL FUNDING AND PROJECT DELIVERY OPTIONS

This section provides an overview of funding and project delivery options for the Project.

Building a new parking facility, such as the structured parking facility, will require a significant upfront capital investment. This investment can take many forms, including capital funds, grants (which do not need to be repaid), bonds, and private investment. As noted previously, the parking revenues from the proposed new facility (Exhibit 5-3) were projected to cover the annual operating and maintenance costs for the new facility and provide positive net revenues beyond O&M costs. If excess revenue is not used to address other PTC site or MaineDOT needs, these funds could be used to cover debt service or attract private investment if construction cost is not paid fully by other means.

Section 6.1 provides a high level overview of the Project potential funding sources to be considered and Section 6.2 discusses potential Project delivery options.

6.1 Funding Sources

A number of funding sources are available to fund this type of project. After discussion and consideration by the Stakeholders, it was determined that the most promising public funding sources for the Project capital needs are the:

- Federal US DOT Congestion Management Air Quality (CMAQ) program
- State of Maine, General Obligation (Revenue) Bonds

6.2 Project Delivery Options

Public-private partnerships, or P3, are a form of alternative project delivery mechanism that many institutions and governmental entities are employing as a way to build mixed-use (commercial, transportation and/or other uses) projects with parking facilities. The mechanism has been employed for improvements of transportation services at campuses, downtowns, airports, or in limited cases large-scale multimodal hubs.

When properly structured, partnerships between public and private entities can be beneficial to each party. Both entities share the project risks and capital costs which reduces the burden to one single party (typically cash-strapped public entity). Partnering with the private sector may expedite the delivery of a much needed project or improve the service quality. However, projects need to be attractive to public investors. As noted in Section 5.3, significant public sector investment would still be required to make this Project attractive to the private sector. In other words, the majority of the construction cost will still need to consist of public funds that will not need to be repaid. And the more public investment involved, the more attractive the project to a private entity.

Exhibit 6.1 describes several mechanisms commonly used for projects to improve financing capacity. Any of these could be options to procure and/or operate this facility, with the right level of public investment.

In 2009, the State of Maine enacted comprehensive transportation P3 procurement legislation. The legislation enables state and local agencies to contract for private sector participation in development, financing, operation and maintenance, and leasing of transportation facilities. http://www.mainelegislature.org/legis/statutes/23/title23sec4251.html

Exhibit 6-1: Description of Project Delivery Options

Mechanism	Description
Joint development (public-private)	Joint Development (JD) typically involves a mixed-use development of publicly-owned transportation facilities (stations, multimodal facilities, and/or land in and around such facilities) whereby the public sector engages a commercial real estate developer to upgrade the facility to allow both commercial and transportation (or parking uses) on the same site or premises. Under JD, the commercial developer often carries the bulk of the initial capital investment responsibility. *Example: SEPTA (Philadelphia) construction of a $31 million, 425 space garage and pedestrian connection to the historic 69th St. Terminal building as a P3 (Public-Private Ownership) procurement process that was started in Fall 2014. Construction began in Winter 2014. The facility opened in Summer 2017.*
Condominium	A condominium structure can be used to achieve the separate ownership of a joint parking structure developed to serve a variety of users. In this mechanism both the public and private entities would own and maintain its condominium interest in the parking structure. The condominium legal structure would avoid issues of tax exemption from the real property taxation point of view which will be important to the public entity, and it would also provide the added benefit that the public entity would own its parking garage and control future management. *Example: The condominium structure is a common mechanism with apartment dwellings and commercial buildings where the parking space is deeded and sold separately from the unit or tenant space.*
Lease-leaseback	In this structure, the public entity as the owner of the property enters into a long-term agreement (normally 30 years) with a developer who designs, builds, and finances (DBF) the project. The land is leased to the developer under a ground lease arrangement, and then the improvement (a parking garage) is leased back to the public entity for their use. The lease amount covers debt service, operating expenses, and reserves for maintaining the asset for a 30 year period. Using this structure, the public entity can operate the parking facility or as a component of the lease agreement, the developer or a third party operator can manage the garage. At the end of the lease, assuming all debt obligations have been met, the asset would revert to the public entity for a very small fee, typically $1. *City of Pueblo, CO. The Pueblo Main Street Garage Corporation and the Pueblo Urban Renewal Authority previously entered into a financing for the Pueblo Main Street Garage (750 space) involving a New Markets* *Tax structure partially funded from the proceeds of the Authority's issuance of $10 million in revenue bonds. The City is the owner of the land on which the garage is built. As part of the original financing, the City conveyed a leasehold in the land to the Corporation and received a subordinate leasehold interest in the land and the garage in a lease-leaseback arrangement with the Corporation.*

design-build (DB) design-build- finance (DBF)	The design-build form of construction contract lends itself well to fast tracking a parking structure project and can produce savings of cost and time. Where a parking garage owner lacks expertise in procuring design and construction services, a professional construction manager can be retained to supervise the entire project from inception to completion. Some DBs are structured as a fixed-cost DB contract, intended to incentivize design innovation and transfer construction risk to the development team, with delays and cost overruns being the responsibility of the developer. *Example of DBF: A $33 million ($2017) design-build parking garage located on Fairmount Avenue between Christopher Columbus Boulevard and Mississippi Avenue in Atlantic City. The Wave is a five-story building with six levels of parking and covers 411,690 square feet, including 16,170 square feet of retail space and 1,180 parking spaces. A 54,000 square foot rooftop solar array consisting of 1,677 solar panels and six spaces for electric vehicles completed the 400kW photovoltaic system. Also, a joint development with Casino Reinvestment Development Authority (CRDA) of Atlantic City who was the operator designer, and financing authority.*
design-build-finance + operate and/or maintain (DBF+O/M)	Another form of P3 that has been applied to parking is the use of Design-Build-Operate-Manage (DBOM) to construct new facilities. *Example: In 2000, the State of Connecticut issued bonds to construct a new parking facility at the Bradley Airport in Hartford, Conn. The bonds were guaranteed by a private entity. The state's arrangement used the same entity to design and build the facility and then after construction, to operate and manage through a lease from the state. The lease payments cover the state's debt service and the facility revenues cover the lease payments. Excess revenues are split between the state and the private operator. Should the lease payments and revenue sharing prove insufficient to cover the debt service, the private operator is responsible for making up the difference.*

7. CONCLUSIONS

7.1 Optimal Facility Size Alternative

Exhibit 7-1 provides a summary of findings on each of State parking facility alternatives considered in this report. The exhibit also compares three alternatives against the key decision criteria. Based on consideration of the information developed for this Project, the stakeholder group determined that a 1,200-space parking facility providing a combined capacity of 1,400 spaces (includes 200 CCL station-side spaces) would be the preferred option to address short- and long-term transit/site needs.

In summary, the 1,200 space parking facility preferred alternative:

1. Accommodates future transit parking demand under both Base and High transit demand growth scenarios.
2. Allows increase in medical offices' spaces up to 180 parking spaces without significantly crowding out transit users after Year 10 (compared to 1,000-space parking facility alternative).
3. Provides a slightly higher present value (PV) of net revenues compared to other parking facility alternatives, and thus is potentially more attractive to potential private investors.

Exhibit 7-1: MaineDOT Parking Facility Alternatives Comparison

Criteria	800-space Facility	1,000-space Facility	1,200-space Facility
Total PTC parking capacity[1]	1000 spaces	1200 spaces	1400 spaces
Accommodates future transit parking demand by Year 10 under *Low, Base, and High* Transit Growth Scenarios?	No. Constrains growth in transit passengers in the near term.	Yes: Yrs 1 to 9 (*Low, Base, & High*) No: Yrs 10 to 15 overflow/peak demand lasts 3-5 weeks/year (*Base & High*)	Yes: Yrs 1 to 15 overflow lasts 1 week/year (*Low, Base, & High*)
Accommodates medical offices and Zip/car/share demand?	No. Many of the existing 60 medical office spaces may need to be freed-up to accommodate the future growth in transit passengers.	Yes. Accommodates medical offices parking allowance for a total 120 spaces & 5 spaces for Zip/Car/Share in the near term. 3-5 weeks/year peak demand starts Yrs 10-15	Yes. Accommodates medical offices parking allowance for a total 180 spaces & 10 spaces for Zip/Car/Share until year 15 with one week of overflow annually under Base growth scenario
# of weeks in a full year when total PTC parking capacity is exceeded?	3 weeks in Yrs. 3 & 5 *(Low, Base)* 5 weeks in Yr. 3 *(High)*	3-5 weeks *(Base)* & 6-8 weeks *(High)* in Yrs. 10 to 15	1 week/year *(Base):* 2-4 weeks/year in Yrs. 10 to 15 *(High)*
Total Capital Cost ($2021), including Ped. Walkway[2]	$25M (Facility); 1.3M (Walkway)	$32M (Facility); 1.3M (Walkway)	$40M (Facility); 1.3M (Walkway)
15-yr Average Annual Operating Revenue ($YOE)	$1.3M	$1.6M	$1.8M
15-yr Average Annual Operating Cost ($YOE)	$0.4M	$0.5M	$0.6M
15-yr Average Annual Net Revenue ($YOE)	$0.9M	$1.1M	$1.2M
Potential Investor Funds Contribution (high level estimate) to Capex	33% 26%	30% 24%	28% 22%
State/Federal Grant Share in Capex Required	67% 74%	70% 75%	72% 78%

Note 1: Each State Parking Facility Alternative assumes that CCL surface lot will include 200 spaces after PTC's planned modernization
Note 2: 1.5% annual construction inflation was assumed to bring 2017$ costs estimates to 2021$.

7.2 Summary

The following summary is based on the preceding analysis described in this report:

- In the long-term, the peaks in future demand would occur with sufficient frequency (3-6 weeks during a year) and at levels to justify a long-term investment in a new parking facility;
- All parking facility alternatives considered generate revenues that are sufficient to cover both the estimated O&M cost and generate positive net revenues;
- A new parking facility would require a significant capital investment:
    - the PV of the projected net revenues (discounted at 6%) would be insufficient to cover the full cost of building a facility under either of the considered alternatives;
    - the PV of the projected net revenues (discounted at 10%) would be insufficient to attract a private developer/investor for the full cost of the facility; and,
    - Federal/State funding would be necessary at levels described in Exhibit 7-1 to make-up the financing gap for the new parking facility. Grant funding sources provided by federal and/or state programs that do not need to be repaid by the Project (as opposed to revenue bonds), would be the most favorable funding sources for this Project. Use of these public funds makes the remaining cost to finance less expensive because there are no financing costs associated with them. While a number of private funding and/or operating scenarios, the potential for each is dependent on a number of market and other factors, including the level of public funding.
- Additional revenue enhancement potential to be considered for the Project implementation could come from the following sources:
    - Off-peak/evening and weekend special event parking;
    - Private monthly parking membership from area medical offices employees and patients;
    - Maine Medical Center overflow parking potential;
    - Advertisement opportunities at facility; and,
    - Dynamic pricing that could be adjusted as conditions warrant.

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Memorandum

99607

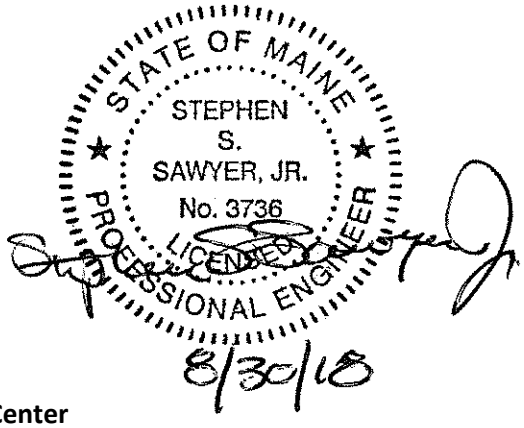
To: **Thomas Errico, PE, T.Y. Lin**

From: **Steve Sawyer, PE, Sebago Technics**

Nikki Scott, EI, Sebago Technics

Date: **August 30, 2018**

Subject: **Site Traffic Analysis for the Portland Transportation Center**



The purpose of this memorandum is to address the traffic related site comments obtained from the City of Portland in regards to the Portland Transportation Center (PTC) Traffic Movement Permit (TMP) Application. A formal Section 1 – 6 was submitted to the City and a Scoping Meeting was held on August 2, 2018.

Data Collection

To address the City's comments about ridership and site circulation, field observations and a license plate study were completed on August 10, 2018 during the mid-day period from 11:00 AM to 12:30 PM in order to quantify activity in the pick-up/drop-off area directly in front of the terminal during the peak hour period from 11:15 AM to 12:15 PM. The Portland Transportation Center has noted that mid-day Fridays in August are their peak times for drop-offs and pick-ups, therefore the day observed was likely a peak event.

In order to conduct the license plate analysis, a photo was taken both as a vehicle entered and exited the pick-up/drop-off loop. Each photo was then classified to a vehicle type: passenger vehicle, taxi, shuttle, or a ridesharing vehicle such as UBER or LYFT. Additionally, time stamp data from each photo was processed and correlated to each image number and then assigned to the respective license plate number. The entering and exiting license plates were then matched and the associated time stamp data was used to calculate the total time spent within the pick-up/drop-off loop. The following table shows a percentage of the number of minutes spent in the loop per vehicle in five-minute increments:

Table 1 –Time Spent in Pick-Up/Drop-Off Loop

Minutes	Frequency (Vehicles)	Cumulative Percentage (%)	Density Percentage (%)
5	78	70.27%	70.27%
10	9	78.38%	8.11%
15	6	83.78%	5.41%
20	4	87.39%	3.60%
25	0	87.39%	0.00%
30	1	88.29%	0.90%
35	4	91.89%	3.60%
40	5	96.40%	4.50%
45	2	98.20%	1.80%
50	2	100.00%	1.80%
55+	0	100.00%	0.00%

As shown in the Table 1, a total of 111 vehicles entered and exited the loop during the period from 11:15 AM to 12:15 PM, or a total of 222 trip-ends. It is important to note that this number does not depict the total trip generation to the site as it does not include trips associated with long-term parking or the vehicles that did not both enter and exit the loop within the peak hour. For instance, there were vehicles that exited the loop during the peak hour but entered prior to the peak hour. However, this total provides a justifiable baseline that August volumes, in terms of site trip generation, are likely similar to those previously counted in June.

Also of importance, is that during the observation period one of the buses arrived later than scheduled. Because of this, the parking spaces were not turning over as quickly because those that arrived at the proper time to pick up were waiting longer than expected, thus occupying a space for longer. The employees at the PTC were proactive about this and instead of allowing vehicles to continuously circle around the loop searching for parking without intervention, as a few did, they directed most vehicles to park in LOT “A” across the street and walk over to greet their arrivals. Therefore, some of the 78 vehicles that are designated as waiting five minutes or less, likely actually waited longer. However, because they entered and exited the loop and then were directed to park, they still appear in the data as pick-up in nature.

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Taxis

The City of Portland commented at the Scoping Meeting about the number of taxis that currently wait around the PTC and how to accommodate them within the proposed redesign. The taxis are presently provided a few parking spaces on-site and they utilize three spaces along Thompsons Point Connector Road. The taxis tend to wait extended periods of time in these spaces awaiting a bus or train arrival, and thus a potential customer. Additionally, City of Portland Staff noted that taxis tend to park at the cul-de-sac on Sewell Street so that they can see when an arrival occurs and circle around via Congress Street and Fore River Parkway to the PTC. Therefore, to quantify the number of taxis for design purposes, they were observed and counted both parked on-site, parked off-site, and within the queue completing a ride. The results for observations at five minute increments during the peak hour period are summarized in the table below:

Table 2 – Number of Taxis at the PTC

Time	Total Taxis (#)	Within the On-site Queue (#)	Parked (#)
11:15 AM	8	0	8
11:20 AM	6	1	4
11:25 AM	3	0	3
11:30 AM	2	0	2
11:35 AM	3	0	3
11:40 AM	6	0	6
11:45 AM	8	1	7
11:50 AM	7	0	7
11:55 AM	7	0	7
12:00 PM	7	1	6
12:05 PM	6	0	6
12:10 PM	8	0	8
12:15 PM	7	2	5

As shown above, the total number of taxis at the PTC did not surpass eight (8) during the peak hour period, based on observations of every five minutes. The number of parked taxis includes both on-site and off-site (Thompsons Point spaces and Sewell Street area). Only one taxi was noted parked at Sewell Street from 11:00 AM to 11:25 AM. One taxi was also observed at 11:40 driving back and forth on Thompsons Point Connector Road looking at the on-site parking.

It is possible, based on comments from the City, that during off-peak times, there are higher volumes of taxis parked around the site. However, during the peak, the taxis are generally busy. It was observed that they seem to have a system in place that prioritizes the first taxi in line to the first customer. The taxi in the closest parking spot takes the first customer. The taxis then shift over one spot respectively so that the taxi in the second parking space is now next in line for the next customer. The taxis off-site will then filter on-site.

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METRO

The City of Portland also asked about the number of riders on the METRO and how many pick-ups and drop-offs occur. This was also observed during the peak hour period with the following results:

11:15 AM – 5 passengers were dropped off via the METRO Bus
11:45 AM – 7 passengers were dropped off via the METRO BREEZ Bus
11:50 AM – 1 passenger was dropped off via the METRO Bus
1 passenger got on the METRO bus

A total of 14 passengers during the peak hour period utilized the METRO Bus services.

Ridership Data

Information that the City of Portland would like addressed is how people are getting to and from the terminal and what services are likely being utilized. Ridership data was obtained from the PTC for the peak hour period and is summarized as follows:

CCL	11:30 AM	32 passengers got off the three arriving buses 68 passengers got on to the three buses for departure
	11:45 AM	48 passengers got off the arriving bus 10 moved to the departing 11:55 bus as a continuation
	11:55 AM	37 passengers got off the arriving bus 14 got on the bus for a continuation (10 from 11:45 bus and 4 from the train)
	12:05 PM	22 passengers got on departing bus
Downeaster	11:35 AM	62 passengers got off the train
	11:55 AM	51 passengers got on the train

There were a total 12 possible services during the peak hour period and a total of 320 passengers, not including passengers that connected to a continuing bus and therefore did not leave the terminal. Based on previously submitted ridership data for Friday, August 12, 2016 (277 riders for 9 services), this is an increase in ridership of approximately 8% annually during the Friday summer mid-day peak.

This ridership data was then compared with results from the license plate study, taxi and METRO observations, and parking data provided by PTC for August 10. The METRO data is simple to correlate given the association is between the same variable. The 14 METRO passengers make up 4% of the PTC ridership during the peak hour. The remaining 306 PTC riders were divided analyzing the trip distribution obtained from the license plate study and shown in the following table:

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Table 3 – Trip Distributions by Arrival/Departure Type

Trip Distribution	% of Total Trips
222 Total Pick-Ups/Drop-Offs	85%
168 passenger vehicles	64%
12 Taxi Trips	5%
36 Ridesharing Trips	14%
6 Shuttle Trips	2%
30 Parked Vehicle Entering Trips	11%
10 Parked Vehicle Exiting Trips	4%
262 Total Trips	100%

These percentages would result in the following distribution, identifying how riders are choosing to arrive and depart from the PTC during the peak hour:

Table 4 – Number of Riders Per Arrival/Departure Type

Arrival/Departure Mode	Riders (#)
Total Pick-Ups/Drop-Offs	260
Passenger Vehicles	196
Taxis	15
Ridesharing Uses	43
Shuttles	6
Parking	46
METRO	14

As demonstrated above, of the 320 passengers that utilized the PTC during the peak hour period from 11:15 AM to 12:15 PM, 260 were estimated as pick-ups and drop-offs, 46 were estimated as parkers, and 14 riders utilized the METRO service. Of the drop-offs, approximately 15 utilized taxi service, 43 used ridesharing applications such as UBER and LYFT, and 6 used a shuttle, such as one from a hotel. It is likely that the number of people utilizing ridesharing applications during the peak hour was actually higher. The only way to identify the difference between an UBER/LYFT and a standard passenger vehicle was if the vehicle had an identification sticker on the back, or if the vehicle showed up more than once within the peak hour (and is not so close in time that it was just a loop around looking for parking).

Additionally, it was noted during the observation period that there were no bicyclists or pedestrians coming to or from the PTC. Based on the number of riders with luggage of significance makes this observation understandable. However, the PTC is still providing 37 bicycle racks, 12 new in conjunction with this project.

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On-Site Circulation Analysis

Existing Queue Analysis

Based on discussions at the Scoping Meeting, City Staff requested additional analysis regarding queuing and site circulation within the pick-up/drop-off loop. It has been noted previously that vehicles queue from the pick-up/drop-off loop and spillback onto Thompsons Point Connector Road. Therefore, existing available queuing lengths were measured. The designated drop-off zone is currently 100 feet. From the beginning of the drop-off zone to the loop entrance is another 200 feet. Vehicles can then queue another 85 +/- feet before impacting Thompsons Point Connector Road. Therefore, the existing loop provides a total storage length of 300 feet or approximately 12 vehicles. An added three vehicles can queue between the start of the loop entrance and Thompsons Point Connector Road.

Given this, queues were observed during the study period with special note taken when the queue extended past the loop entrance and back onto Thompsons Point Road. What was discovered was that the queues that back onto Thompsons Point Connector Road were not caused by the loop itself being at capacity, i.e. the loop did not have 12 vehicles stacked up. The queues that were observed were almost entirely attributed to an activity occurring within the site loop, such as a vehicle dropping off a rider outside of the drop-off zone. Each observed queue, measured from just prior to the loop entrance back to Thompsons Point Connector Road is summarized in the table with the associated time and cause for queue:

Table 5 –Queue Lengths Prior to Loop Entrance

Time	Queue Length (# of Vehicles)	Observed Cause
11:12 AM	3	Slow backing from parking space at beginning of loop
11:25 AM	6	A vehicle missed the drop-off/pick-up entrance and attempted to back up and then turnaround and go in
11:35 AM	4	Two vehicles attempted to park in LOT “B” and the lot was full, caused a queue while attempting to turnaround
11:38 AM	9	Vehicle parked with hazards on at the beginning of loop with no space to bypass
11:41 AM	6	Taxi parked near taxi spaces with no room to bypass
11:47 AM	6	Two vehicles were pulled off near each other on opposite sides of the loop with no ability to bypass
11:53 AM	9	Multiple parked vehicles within loop and short-term parking at 100% capacity
12:10 AM	7	Two vehicles slowly backing from parking spaces near beginning of loop

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As you can see from the observations, the spillback onto Thompsons Point Connector Road should not be totally attributed to a lack of queue space within the pick-up/drop-off loop. Instead, those queues are caused by obstructions within the loop or near the entrance to the loop, such as backing from parking spaces and vehicles parking and dropping off in incorrect locations. Many of the queues dissipated quickly when the obstruction was cleared and traffic became free flowing again through the pick-up/drop-off loop.

At a point between the 11:47 and 11:53 AM, when loop congestion was high, an employee from the PTC that had been stationed at parking LOT "A" came and began enforcing that no vehicles stop within the loop prior to the drop-off zone. When vehicles would stop and let people off prior to the drop-off zone, this also prevented other vehicles from being able to exit from parked spaces, thus reducing the ability for parking space turnover, which is what the short-term parking is intended for. The PTC employee helped stop the pick-up/drop-off vehicles in the loop to allow vehicles to back out from their spaces resulting in quicker turnover. The employee also directed others in the loop to continue across the street and park in LOT "A" given the lack of parking spaces due to the late bus, as discussed previously.

Site Circulation Observations

One of the understandings that came from the observation period was that much of the congestion and cause of adverse impacts was not due to the number of vehicles within the pick-up and drop-off loop, but more due to the number of potential conflict points occurring within the area. Some of these observations during the 11:00 AM to 12:30 PM include:

- Four vehicles initially missed the entrance, either backed up or attempted to turnaround with vehicles queuing behind waiting to enter the loop.
- During the observation period, LOT "B" became full and eight vehicles attempted to pull in and utilize this lot not realizing it was full. They then had to turnaround within the same area of the pick-up/drop-off exit and caused some minor delays for vehicles exiting the loop. These vehicles then had to go back across the street to LOT "A" to park.
- When there is a vehicle parked within the pick-up/drop-off loop outside the designated drop-off zone and vehicles begin to queue up, the vehicles behind the obstruction begin letting off riders, creating additional delay and pedestrian conflicts.
- There was a period right before the PTC employee began directing traffic from approximately 11:43 AM to 11:48 AM when approximately five vehicles dropped off riders before even entering the loop. These vehicles then continued through the loop to exit the facility, causing unnecessary vehicle congestion within the loop.
- When parking was at 100% occupancy, vehicles use the interior connection to continue circling the loop looking for parking. These vehicles were not double counted in the license plate study. Their actual time on-site was calculated correctly since these vehicles were not fully exiting the loop and reentering.

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Proposed Queue Analysis

In terms of designing the site plan in such a way that supports the existing queues, the data from Table 1 was reviewed. During the peak hour period, 78 vehicles, or 70% of vehicles traveling within the loop area spent less than five minutes within the pick-up/drop-off loop and therefore would be categorized as drop-offs with some pick-ups in which there was little to no waiting for the rider to exit the PTC. This means the remaining 30% of the vehicles, or 33 vehicles spent over 5 minutes parking and dropping off or picking up. With the new design, these vehicles would be relocated to a new short term, "Kiss & Ride", lot and would no longer utilize the loop in front of the terminal.

The arrival and departure times of these 78 vehicles were reviewed to determine the number of vehicles in the system, both in the drop-off zone and queued outside of the zone. Based on this analysis, the average number of vehicles in the system was four (4) vehicles. The 95th percentile was seven (7) vehicles, with the maximum number in the system was nine (9) vehicles. These results demonstrate that without the added obstructions within the loop and conflicts from the parking maneuvers, the existing queuing space should adequately support the peak hour queues, given that the loop operates as intended in a more free-flowing manner.

Site Plan Recommendations

Given the collected data and observations of the site the following recommendations have been implemented into the site plan since the Scoping Meeting. The updated site plan is attached to this memorandum.

Lane Configuration

The new site plan provides two lanes through the drop-off/pick-up loop, instead of the three previously proposed. The outer lane will be provided for passenger vehicles, ridesharing vehicles, etc. The inner lane will be taxi stand space to allow the taxis waiting for customers to queue up in front of the PTC. By providing a queuing lane, this eliminates the usage of multiple short-term parking spaces and allows the taxis to operate with the same procedure previously utilized, without having to shuffle between parking spaces and creating conflicts within the loop. In addition, it is expected there is enough queuing space provided to remove the taxis from off-site locations since a maximum of eight (8) were counted during the observation period.

As the two lanes come into the designated loading and unloading zone in front of the PTC, curb alterations have been made so that the drop-off loop flows directly into the pull off bay. Given the existing width, the striping was altered to allow for the drop-off space, the taxi queue lane, and adequate bypass space so that taxis can exit the queue, and vehicles that mistakenly enter the loop, or realize the rider they are picking up is not immediately available, can free flow through and continue to short-term parking, if need be. Additionally, supplemental pavement markings are proposed to reinforce each lane use.

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Signage

A considerable amount of new signage has been added to the site to attempt to better portray where each driver needs to be going. The follow implementations are proposed:

- A pre-arrival electronic message sign to alert drivers which long-term lots are full. This will mitigate the existing problem in which drivers enter the site looking for parking in LOT "B" and subsequently do not discover the lot is full until at the lot itself. These vehicles then have to back up and exit the site to park across the street, causing added unnecessary congestion. This signage would likely resolve the existing problem.
- A post-mounted "NO PARKING, IMMEDIATE PICK-UP AND DROP-OFF ONLY" sign to be installed at the access to the pick-up/drop-off loop. Supplemental "No Parking Taxis Only" signs to accompany the taxis only lane to further discourage driver pull offs and parking.
- An overhead sign structure with signage directing to both short-term and long-term parking.
- New "RIDESHARE PARKING ONLY" signs at the six parking spaces adjacent to the building. Overhead signage will direct UBERs/LYFTs to pick-up in this lot. By adding these designated spaces the hope is that riders utilizing these services will have an easier time identifying their ride and will not have to walk throughout the parking lot trying to identify the correct vehicle, and therefore minimizing pedestrian conflicts.

It is expected that some signage development with the PTC will also be necessary, to direct riders arriving inside the terminal to the correct locations for pick-up.

Pedestrian Connectivity

New sidewalk modifications have also been proposed. The first, as discussed at the Scoping Meeting is a shorter connection with stairs from the sidewalk in front of the PTC to the METRO Bus Shelter. The second is an added sidewalk adjacent to the taxi queue lane. This will allow riders that want to utilize the taxis to cross at the crosswalk and access the taxis from the sidewalk instead of within the loading and unloading area.

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Conclusions

Based on the analysis, we believe the proposed site plan mitigates a number of existing concerns within the PTC site. The positive impacts of this new site design are summarized as follows:

- With the movement of short-term parking from the drop-off area, less conflict points within the drop-off loop are expected, including vehicles backing from parking spaces and circling looking for parking. This will allow the drop-off lane to operate at a higher level of functionality, as ideally it should only service immediate loading and unloading maneuvers.
- With no parking available within the drop-off area and associated signage stating such, this should also discourage people from attempting to park and unload outside the loading/unloading zone which would reduce much of the queuing issues.
- An added taxi stand queue lane will allow taxis awaiting an arriving bus or train to queue up and service riders on a first come, first serve basis. Riders can cross to the sidewalk adjacent to the taxi lane and continue to each respective taxi in line, as the first rider will take the first taxi, second at the second taxi, etc. This is a similar process the taxis utilize now, however, giving them a specific waiting lane will reduce conflict points and maximize the number that can remain on-site.
- Minimizing pavement space to two lanes will prohibit the ability to pull over and park to unload in any widened pavement area, as is done with the existing layout. The designated drop-off lane is funneled directly to the front of the PTC building at the unloading bay, with bypass area provided only in the loading/unloading area.
- An increase in short-term spaces from 31 existing to 48 proposed will provide added parking for when peak events, such as a late bus occur. Given that the taxis are also removed to their own queue stand space, this frees more of the short-term parking for other passenger vehicles.
- Increased signage will likely reduce driver confusion and reduce conflict points on the site as well as unnecessary trips throughout the site and back onto Thompsons Point Connector Road.
- Designated ridesharing parking should reduce potential pedestrian conflicts as riders will be directed to where their pick-up is waiting (directly off of a sidewalk) instead of searching the parking lot for the correct vehicle.

It is our professional opinion that the movement of the parking spaces and non-immediate services to a separate “Kiss & Ride” short-term lot to the east of the terminal will positively impact the site. In addition to signage, and easier access to taxi and ridesharing amenities, the site should experience better circulation, reduced queues, and should benefit from an overall more functional layout.

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LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	MILL PAVEMENT AREA	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

SIGN LEGEND

- S-1 EXISTING STOP SIGN TO REMAIN
- S-2 EXISTING "PARKING ONLY / LEFT ARROW "SIGN TO REMAIN
- S-3 EXISTING "DO NOT ENTER" SIGN TO REMAIN
- S-4 EXISTING ADA PARKING SIGN TO REMAIN
- S-5 EXISTING "TAXI STAND" SIGN RELOCATE
- S-6 EXISTING METRO BUS SIGN TO REMAIN
- S-7 NOT USED
- S-8 EXISTING "CUSTOMER DROP OFF / NO PARKING" SIGN TO REMAIN
- S-9 EXISTING EXIT SIGN TO REMAIN
- S-10 NEW STOP SIGN
- S-11 NEW 24" X 24" "SHORT TERM PARKING/ STRAIGHT ARROW AND LONG TERM PARKING / / LEFT ARROW" SIGN, BLACK LETTERS ON WHITE BACKGROUND
- S-12 SALVAGED "PARKING RATES" SIGN
- S-13 SAVAGED "LOT B" AND ILLUMINATED "FULL" SIGN
- S-14 SALVAGED "ONE WAY DO NOT ENTER" AND "PARKING RATES" SIGN
- S-15 SALVAGED ADA PARKING SIGN
- S-16 NEW ADA "VAN ACCESSIBLE" PARKING SIGN
- S-17 EXISTING PTC SIGN TO REMAIN
- S-18 NEW "NO PARKING, IMMEDIATE PICK UP AND DROP OFF ONLY / RIGHT ARROW" SIGN (SEE DETAIL)
- S-19 NEW "TAXIS ONLY/ LEFT LANE" SIGN
- S-20 NEW "NO PARKING, TAXIS ONLY" SIGN
- S-21 NEW "TAXIS/LEFT ARROW" SIGN
- S-22 NEW "RIDESHARE PARKING ONLY" SIGN
- S-23 NEW SHORT TERM PARKING / STRAIGHT ARROW" SIGN (SEE DETAIL)
- S-24 NEW LONG TERM PARKING / LEFT ARROW" SIGN (SEE DETAIL)
- S-25 NEW PRE-ARRIVAL ELECTRONIC MESSAGE SIGN (SEE DETAIL)

NOTE - SIGN NOS. S-10 THRU S-15 SIGNS SHALL BE MOUNTED ON A SCH. 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL 30 INCHES BELOW GRADE IN A 12 INCH X 36 INCH CONCRETE FILLED SONATUBE.

SIGN NO. S-16 TO BE ST ON A SCH 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL POST 18 INCHES INTO CONCRETE FILLED STEEL BOLLARD.

LIGHT FIXTURE LEGEND

- E EXISTING BASE AND POLE TO REMAIN, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- R EXISTING BASE AND POLE TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- RS EXISTING BASE, POLE AND SECURITY CAMERA TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- N NEW BASE, 20 FOOT SQUARE POLE, COLOR BLACK, AND NEW FIXTURE

NOTE: ALL FIXTURES SHALL BE BEACON LED VIPER SERIES VPS - 48L - 110 - 4K7, COLOR BLACK

THOMPSON'S POINT CONNECTOR

PORTLAND TRANSPORTATION CENTER

EXISTING METRO BUS SHELTER

41 SPACES

12 SPACES

2 SPACES

5 SPACES

14 SPACES

23 SPACES

5 SPACES

23 SPACES

565 SPACES INSIDE GATED AREA

17 SPACES

17 SPACES
5'X9' TREE WELL, TYP.

15 SPACES

14 SPACES

13 SPACES

13 SPACES

44 COMPACT SPACES (8'x18')

SEE ENLARGED AREA PLAN ON SHEET 7

2 SPACES

6 SPACES

9 SPACES

11 SPACES

14 SPACES

KISS & RIDE
48 SPACES

6 SPACES

DROP OFF LANE

TAXIS ONLY

NON-JURISDICTIONAL STREAM

P PORTLAND TRANSPORTATION CENTER

LONG TERM PARKING
LOT (A)
LOT (B) FULL
SHORT TERM PARKING

SIGN S-25

NO PARKING
IMMEDIATE PICK-UP AND DROP-OFF ONLY

SIGN S-18

SHORT TERM PARKING
ALL NON-IMMEDIATE DROP-OFFS AND PICK-UPS MUST PARK
RIDESHARE PARKING

SIGN S-23

LONG TERM PARKING
LOT (B)

SIGN S-24

NO PARKING
TAXIS ONLY

SIGN S-20

SIGN DETAILS

SITE PLAN KEY NOTES

1. PAVEMENT SAW CUT, TYPICAL (SEE DEMOLITION PLANS)
2. EXISTING ASPHALT PAVING TO REMAIN
3. MILL OFF 1.5 INCHES EXISTING ASPHALT PAVING AND INSTALL NEW 1.5 INCH ASPHALT OVERLAY SURFACE COURSE
4. NEW FULL DEPTH ASPHALT PAVING SECTION
5. EXISTING CURBING TO REMAIN
6. NEW CONCRETE SLIPFORM CURBING
7. NEW 4.0 INCH CONCRETE SIDEWALK
8. NEW ADA TACTILE WARNING PANELS, TYPICAL
9. EXISTING 4.0 INCH WHITE PAINT STRIPING TO REMAIN
10. NEW 4.0 INCH WHITE PAINT STRIPING
11. EXISTING 24 INCH WHITE PAINT BARS TO REMAIN
12. NEW 24 INCH WHITE PAINT BARS, 24 INCHES APART
13. EXISTING BLUE PAINTED ADA SYMBOL TO REMAIN
14. NEW BLUE PAINTED ADA SYMBOL, TYPICAL
15. EXISTING WHITE PAINTED ARROW, TYPICAL
16. NEW WHITE PAINTED ARROW, TYPICAL
17. (25) EXISTING BIKE RACKS
18. (12) NEW BIKE RACKS - DERO BIKE HITCH MODEL, COLOR BLACK, SPACED 24 INCHES APART
19. TIP DOWN CURB, TYPICAL
20. NEW WHITE PAINTED LETTERS, 6 FEET TALL
21. EXISTING SIDEWALK TO REMAIN
22. CORTEN VEHICLE GUARDRAIL WITH W-BEAM CRASH BARRIER END TREATMENT
23. SALVAGED CARD READERS
24. SALVAGED CABINET AND GATE ARM
25. INSTALL (2) OR (3) CAST CONCRETE STEPS, TOP TREAD TO MATCH EXISTING SIDEWALK, BOTTOM RISER TO MATCH SIDEWALK ON STREET MAXIMUM RISER 7", MINIMUM TREAD 11"
26. BLACK STEEL CANTILEVERED OVERHEAD SIGN STRUCTURE
27. BIKE RACKS TO REMAIN

WILLIAM T. CONWAY RLA 108
LANDSCAPE ARCHITECT
REGISTERED
STATE OF MAINE
08/10/18

CRAIG BURGESS, P.E. #12638
STATE OF MAINE
REGISTERED PROFESSIONAL ENGINEER
08/10/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
D	WTC	08-10-18	RESUBMIT TO CITY
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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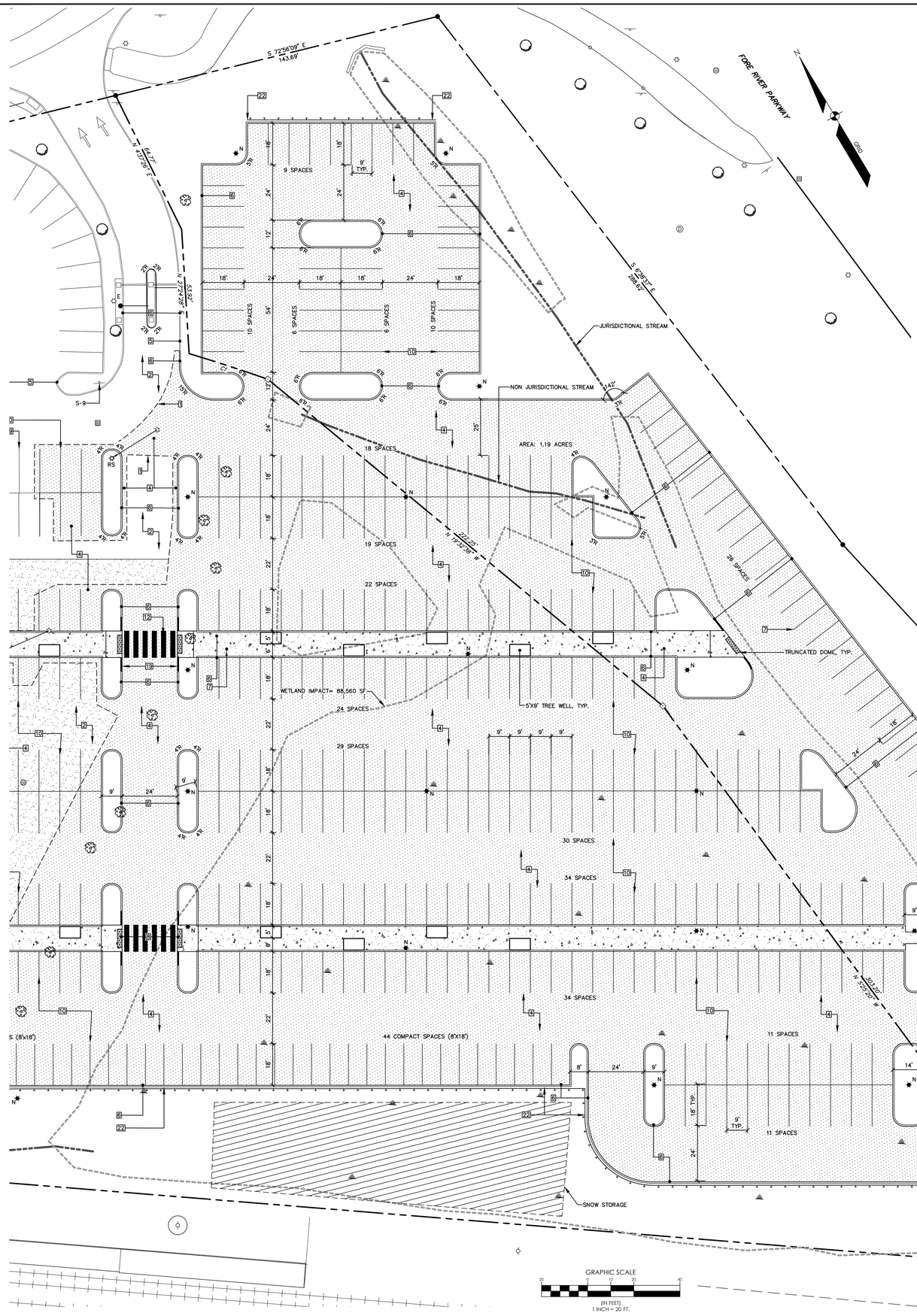
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

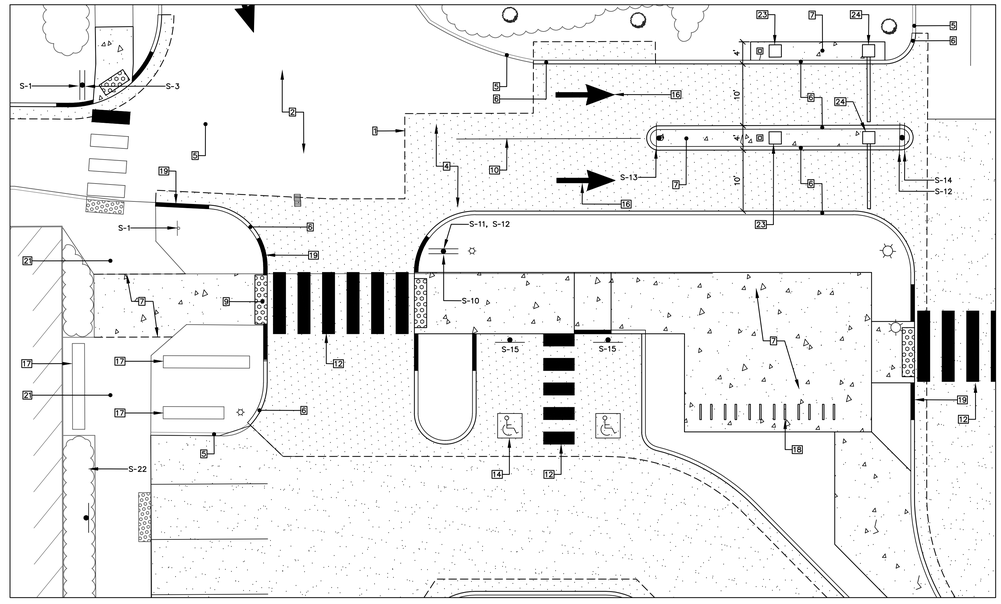
SITE PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 6 OF 21

99607S-dwg, TAB:S1





ENLARGED AREA SITE PLAN

SCALE: 1" = 10'

SIGN LEGEND

- S-1 EXISTING STOP SIGN TO REMAIN
- S-2 EXISTING "PARKING ONLY / LEFT ARROW "SIGN TO REMAIN
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- S-4 NOT USED
- S-5 EXISTING "TAXI STAND" SIGN TO REMAIN
- S-6 EXISTING METRO BUS SIGN TO REMAIN
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- S-15 SALVAGED ADA PARKING SIGN
- S-16 NEW ADA "VAN ACCESSIBLE" PARKING SIGN
- S-17 EXISTING PTC SIGN TO REMAIN

NOTE - SIGN NOS. S-10 THRU S-15 SIGNS SHALL BE MOUNTED ON A 2" SCH. 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL 30 INCHES BELOW GRADE IN A 12 INCH X 36 INCH CONCRETE FILLED SONATUBE.

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SITE PLAN KEY NOTES

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2. EXISTING ASPHALT PAVING TO REMAIN
3. MILL OFF 1.5 INCHES EXISTING ASPHALT PAVING AND INSTALL NEW 1.5 INCH ASPHALT OVERLAY SURFACE COURSE
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19. TIP DOWN CURB, TYPICAL
20. NEW WHITE PAINTED "TAXIS ONLY" LETTERS, 12 INCHES TALL
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22. CORTEN VEHICLE GUARDRAIL WITH W-BEAM CRASH BARRIER END TREAMENT
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24. SALVAGED CABINET AND GATE ARM

LIGHT FIXTURE LEGEND

- E EXISTING BASE AND POLE TO REMAIN, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- R EXISTING BASE AND POLE TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
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NOTE : ALL FIXTURES SHALL BE BEACON LED VIPER SERIES VPS - 48L - 110 - 4K7, COLOR BLACK

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	MILL PAVEMENT AREA	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

STATE OF MAINE REGISTERED LANDSCAPE ARCHITECT WILLIAM T. CONWAY 108 08/10/18

STATE OF MAINE CRAIG A. BURGESS No. 12638 REGISTERED PROFESSIONAL ENGINEER 08/10/18

REV.	BY:	DATE:	STATUS:
E	WTC	08-10-18	RESUBMIT TO CITY
D	WTC	07-10-18	RESUBMIT TO CITY
C	WTC	06-21-18	REVISED PER MDEP COMMENTS
B	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVEW
A	CDM	01-18-18	EXHIBIT B LAND ACQUISITION SKETCH ISSUED TO STATE OF MAINE

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DESIGNED WTC | CHECKED WTC

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel: 207-200-2100

SITE PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 25'

SHEET 7 OF 21

99607S.dwg, 1:48:52

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

PTC- other items from 8.2.18 meeting esp. wetland info

1 message

Steve Sawyer <ssawyer@sebagotechnics.com> Fri, Aug 31, 2018 at 1:47 PM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Will Conway <wconway@sebagotechnics.com>, "Barhydt, Barbara" <bab@portlandmaine.gov>, "O'Brien, Stuart" <sgo@portlandmaine.gov>, Tom Errico <thomas.errico@tylin.com>, "Bartlett, Jeremiah" <jbartlett@portlandmaine.gov>, "Peverada, John" <jbp@portlandmaine.gov>, "Hyman, Bruce" <bhyman@portlandmaine.gov>, Benjamin Blunt <bblunt@concordcoachlines.com>, "Blunt Harry (hblunt@concordcoachlines.com)" <hblunt@concordcoachlines.com>, Brandon Blake <bblake@sebagotechnics.com>, Nicole Scott <nscott@sebagotechnics.com>, "Andrea Cianchette Maker (amaker@pierceatwood.com)" <amaker@pierceatwood.com>

Good Afternoon Jean –

I hope your time away was restful and relaxing. In your absence we have been busy collecting and assembling additional information for you and the PB with regard to our project. Some items are in response to your memo and others are to respond to the PB feedback we got at our workshop. Accordingly, please see the following:

1. A traffic memo in response to our TMP scoping meeting with a revised site plan for the terminal entrance area.

2. A copy of the Vernal Pool investigation we performed in the spring. None were found. No other wetland investigations were performed as part of the project.

3. A copy of the justification for the wetland filling prepared by the MaineDEP which is thoroughly described in their Findings of Fact, attached. This includes a discussion of the wetlands of special significance under Section 6. See paragraph 1 in Section 6, which talks about the filling of wetlands of special significance.

4. I spoke with the permit project manager at MaineDEP about the use of the in lieu fee funds that we will be paying and she indicated that these go into a conservation grant program that is managed by Maine Natural Resources Conservation Program (not the DEP) and they will be directed towards projects that are proposed in the biophysical area around Portland. Two maps that represent their boundaries are attached. They don't get community specific for this program because of the scarcity of viable projects around the state. As such they have created similar regions based on biophysical characteristics. If Portland has a project they would like to propose, this money could be used for it if it met their requirements.

5. A copy of a Study performed for MaineDOT this year regarding the feasibility of constructing a parking garage on the MaineDOT's Park and Ride Lot across the street from the PTC. This report has traffic forecasts as well as garage construction costs – two items of interest to the PB.

Let me know if you think a face-to-face meeting is warranted with your staff prior to the 25th or if you think we have missed something that the PB would need to render a decision on our project at that meeting. As we have discussed, if we don't get the go ahead on the 25th, we may not be able to complete the construction this fall which causes us a major problem come next spring when our Thompson's Point lease is up.

Thanks again for your help with these matters and we look forward bringing this project to fruition.

P.S. Will Conway will upload this information to the City's website as requested along with a new landscaping plan, which was a matter we discussed with your arborist.

Stephen Sawyer, Jr., PE *Senior Vice President, Transportation*

Office: 207.200.2100 | Direct: 207.200.2082 | Mobile: 207.232.1281

75 John Roberts Rd., Suite 4A, South Portland, ME 04106

ssawyer@sebagotechnics.com | www.sebagotechnics.com

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From: Jean Fraser [mailto:jf@portlandmaine.gov]
Sent: Friday, August 03, 2018 5:51 PM
To: Steve Sawyer <ssawyer@sebagotechnics.com>
Cc: Bradley Lyon <blyon@sebagotechnics.com>; Will Conway <wconway@sebagotechnics.com>; Barhydt, Barbara <bab@portlandmaine.gov>; O'Brien, Stuart <sgo@portlandmaine.gov>
Subject: PTC- other items from 8.2.18 meeting esp. wetland info

Steve

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

RE: PTC- other items from 8.2.18 meeting esp. wetland info

2 messages

Steve Sawyer <ssawyer@sebagotechnics.com> Thu, Aug 9, 2018 at 10:43 AM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: "Woodruff, Christine" <Christine.Woodruff@maine.gov>, Marcia Bowen <mbowen@normandeau.com>, Sarah Allen <sallen@normandeau.com>, Benjamin Blunt <bblunt@concordcoachlines.com>, Brandon Blake <bblake@sebagotechnics.com>, "Blunt Harry (hblunt@concordcoachlines.com)" <hblunt@concordcoachlines.com>, Will Conway <wconway@sebagotechnics.com>

Good Morning Jean –

With this email I hope I can provide you with answers to all of your and the PB's concerns with the one exception being the access and circulation information that was raised last week at the TMP Scoping Meeting. We hope to have that information compiled for you in the next week or so.

1. The vernal pool study report is attached. No additional wetland information beyond that which was included as part of the ACOE and DEP permit applications was generated, and the City has all of this information.

2. The DEP's NRPA Permit Justification Memo is a great overview of their thinking with regard to the wetlands in relation to the Project Purpose. Further in this regard, I spoke with Chris Woodruff at the DEP yesterday and she directed me to Section 6 of the Permit, which describes her rationale in justifying the situation of the wetland filling. In addition, she directed me to Chapter 310 of the statute, Section 5.A.1.d, which describes provisions for filling wetlands of special significance in association with expanding existing facilities that cannot be relocated.

3. The "In Lieu Fee Compensation Program" that is mentioned in our NRPA permit is described in the attached Fact Sheet. It is my understanding from Chris at DEP that monies collected from this program are placed in the Maine Natural Resources Conservation Fund, which is a grant program to fund qualified natural resource conservation projects. The monies are allocated on a regional rather than community basis for practicality reasons. CCL's funds would be allocated to the Southern Maine Biophysical Region. Two more specific maps are included herein for your reference. If the City of Portland wanted to apply for these funds for an eligible conservation project within the City, they could.

4. Future parking demand was mentioned as a concern – as was future long range facility planning. I have attached a Study completed this year by MaineDOT with cooperation from CCL and NNEPRA that addresses future parking demand and the prospects for a garage (albeit on the MaineDOT Park-and-Ride Lot). This assessment suggests a new 1200 space garage at a cost of $40 million. Unfortunately, no funding is available at this time for this project. In addition, subsequent discussions between MaineDOT, NNEPRA, Chris Thompson, and CCL have redirected the focus of this garage onto the CCL property. It is our understanding that there is a meeting of the major stakeholders (the City included) scheduled for August 21 to confirm this fact. CCL has taken the lead in conceptualizing how this could be done on their parcel, but the fact remains that the first step in even this process is that we need to fill in the wetlands to create enough land area on the site to accommodate the garage and new terminal. We are open to sharing CCL's concept sketches for this prospect with the PB at our next meeting if you think it would be helpful. A primary stumbling block is still the $40 million, though.

5. With regard to the TMP, it appeared from our Scoping Meeting that the City has no issues with our application for a permit other than you would like to see some more data supporting our collective interest in mitigating the

traffic congestion and queueing at the Terminal itself. As I mentioned above, this additional data is being assembled and will be forwarded to you in the next week or two.

I hope that this information is helpful to you and the PB in their deliberations. Please let me know if you think you need anything further from us in this regard.

P.S. Let me know if we need to upload this information to your website and we will do so.

Stephen Sawyer, Jr., PE *Senior Vice President, Transportation*

Office: 207.200.2100 | Direct: 207.200.2082 | Mobile: 207.232.1281

75 John Roberts Rd., Suite 4A, South Portland, ME 04106

ssawyer@sebagotechnics.com | www.sebagotechnics.com

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From: Jean Fraser [mailto:jf@portlandmaine.gov]
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Subject: PTC- other items from 8.2.18 meeting esp. wetland info

Steve

After the TMP meeting yesterday I mentioned some of the other items that need to be followed up in terms of providing info to the Planning Board, such as data on how people get to the terminal, data on future trips and parking demand, value of the wetlands and where the wetlands mitigation contribution will be focused, the long term/strategic plan, etc. It might be useful for us to have an update conversation on how these are being addressed.

In the meantime I was wondering if you could follow up regarding any additional wetland information that is available in respect of the highlighted text below. The Planning Board member who was particularly concerned about the loss of Wetlands was referring to the following two sections (quoted below) of Normandeau Associates report (section 11 of the original SLODA application):

- (pages 1-2 if the Report): "Vernal pool surveys were not performed in 2017. According to Maine Department of Inland Fisheries and Wildlife (IF&W) guidelines, potential pools are visited a minimum of two times during the vernal pool survey window, which occurs from approximately mid-April to early May. The project begun after this survey window had passed, but will be performed during the appropriate time of 2018 and included as an addendum to this survey report."
- (pages 2-3 of the report): "Wetland W01: This 2.03 acre emergent wetland is the dominant feature on site, and consists largely of a broad-leaved cattail (Typha latifolia), and common reed (Phragmites australis) dominated marsh, with some wetland tree species such as ash-leaved maple (Acer negundo var. negundo) and gray birch (Betula populifolia) along the perimeter. Hybrid cattail (Typha x glauca) was also likely observed in the interior of the wetland, although its identification is

not certain due to the variable nature of this hybrid. The wetland is bordered by uplands consisting of fill material and associated with Interstate 295 on/off ramps, the existing parking area for the transportation center, and the railroad embankment. All three drainages on the site flow into this wetland. The outlet is a 36-inch culvert under the railroad tracks draining to the Fore River.

The principal function of this wetland is that of sediment and toxicant retention, due to its confined

basin, dense vegetation, proximity to developed areas and receiving of stormwater from the

culverts. Floodflow alteration and wildlife habitat are also suitable functions due to the overall size

of the wetland, its vegetation structure and urban setting. Groundwater recharge is also likely

although proximity to tidal waters limits the potential ability of this wetland to contribute

significantly to groundwater resources. The lack of vegetation diversity within the wetland limits its

value as wildlife habitat, however its presence as a habitat island within an urbanized landscape

allows for avian use and provides nesting habitat. This area is also within 250 feet of a tidal wetland

and composed of greater than 20,000 square feet of emergent vegetation, rendering it a Wetland of

Special Significance (WOSS) and subject to greater legal protection under the Maine Natural

Resources Protection Act (NRPA). This wetland discharges through a 36-inch culvert under the

railroad tracks into a tidal wetland area between I-295 and Thompson’s Point. It supports an

assemblage of disturbance tolerant species as well as freshwater species such as spotted touch-menot

(Impatiens capensis) near this outlet, and does not appear to be subject to frequent salt or

brackish water. The culvert invert appears high enough to prohibit regular tidal flows, but it is likely

that occasional storm surges flow into Wetland 01 via in the culvert."

Could you please send us the vernal pool survey as noted in the first paragraph, and also send copies of any further information that may have been provided to the MDEP Christine Woodruff re NRPA regarding the value of this wetland.

Thank you

Jean

Jean Fraser, Planner

Planning & Urban Development Department

City of Portland
389 Congress Street
Portland, ME 04101
phone: (207) 874-8728

email: jf@portlandmaine.gov

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5 attachments

PTC - VP memo.pdf
152K

Langdon_Street_Real_Estate_Inc_L20318BN.PDF

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CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Stormwater Management Report

To:

Maine Department of Environmental Protection

Portland Transportation Center

Thompson's Point Connector
Portland, Maine

Prepared for:
Langdon Street Real Estate
7 Langdon Street
Concord, NH 03301

Prepared by:
Sebago Technics, Inc.
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

September 2018

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Attachment B – Pre-Development Stormwater Modeling
Attachment C – Preload-Development Stormwater Modeling
Attachment D – Post-Development Stormwater Modeling
Attachment E – Inspection, Maintenance, and Housekeeping Plan

Stormwater Management Narrative

A. General

This Stormwater Management Plan has been prepared to address the potential impacts associated with the proposed modification in stormwater runoff characteristics for the proposed development at Portland Transportation Center located at Thompson's Point Connector in Portland. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements to evaluate the pre- and post-development conditions.

The existing development consist of approximately 8.74 acres of impervious areas and associated vegetated areas. Proposed improvements to the site include the construction of paved surfaces for parking and vehicular traffic with the remaining developed area comprised of vegetated side slopes and landscaped areas. The project will result in a net increase in impervious area of 2.86 acres, for a total impervious area of approximately 6.32 acres.

B. Existing Conditions

The site has been developed in the past dating back to 1996. The existing site includes a building totaling 15,600 square feet accessed by paved parking lot located off of Thompson's Point Connector. The remaining developed land consists of paved areas used for vehicular traffic and parking, landscaped areas and a stormwater detention basin.

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond. For stormwater calculating purposes, runoff was analyzed at two study points where the runoff exits the subject parcel. Study Point 1 (SP-1) is located at the southeastern corner of the property. Runoff at SP-1 leaving the property enters into the Fore River. Study Point 2 (SP-2) is located along Thompson's Point Connector along the north western sideline of the property. Runoff at this location enters into the existing closed storm drain system.

C. Preload Site Improvements

Based on the recommendations of the geotechnical engineer, it will be necessary to preload the proposed developed area for a period of approximately 12-18 months to eliminate the majority of the anticipated settlement that will occur from the weak underlying soils before any permanent drainage structures or pavement is installed. Prior to the placement of any preload material, trees and shrubs will be removed down to ground level, leaving as much vegetation along the perimeter of the preload area to minimized the potential for erosion. A stormwater bypass pipe will be installed to direct runoff that currently drains onto the property from offsite around the perimeter of the preload area to the existing 36-inch diameter culvert that flows under the railroad tracks. The initial preload fill will consist of a three foot thick sand layer placed directly onto the cleared wetland area. From there, common borrow material will be installed to an elevation of one-foot below the proposed elevation of the parking lot subbase gravel. One foot of gravel borrow will be installed upon the preload fill prior to the installation of the pavement subbase and base gravels. After the

subbase and base gravels are installed 3 inches of reclaimed asphalt pavement will be installed to cap the fill and help minimize erosion during the preload phase.

During the preload phase, stormwater from the existing building and parking lots flowing to the existing detention basin will be treated by constructing a "drainage ring" within the footprint of the detention basin. The drainage ring will be constructed by installing an open bottom 8-foot diameter concrete structure surrounded by crushed stone. The concrete structure will be perforated to allow stormwater to flow out the sides of the structure to the surrounding crushed stone. The concrete structure will be installed on a base of crushed stone over a sand filter layer. Perforated pipes installed in crushed stone under the sand filter layer will be installed to collect the treated stormwater and direct it to the existing 36-inch culverts under the railroad tracks.

During the preload phase of approximately 12-18 months, stormwater from the surface of the preload area will be treated by constructing two underdrained soil filters in the south east corner of the preload area. Sediment forebays will be constructed adjacent to each of the underdrained soil filters to pretreat the stormwater prior to overflowing into the underdrained soil filter. Stormwater will then pass through a layer of mulch and a layer of soil filter media before being collected in the underdrain pipes. The proposed underdrained soil filters have been designed to conform to the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

D. Proposed Site Improvements

Proposed improvements involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the total impervious surfaces by approximately 2.86 acres over the existing impervious areas that exist today. With the development of the site, stormwater BMPs will be constructed to treat runoff prior to entering into the existing drainage system. The proposed stormwater BMP, a proposed Subsurface Sand Filter, has been designed to treat stormwater runoff prior to leaving the site. The proposed stormwater BMP has been designed to conform to the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

The stormwater management plan was designed so that existing drainage patterns are not significantly altered at the two study points SP-1, and SP-2.

E. Soils

Soil information for the site was obtained via the USDA United States Department of Agriculture and Natural Resources Conservation Service's Web Soil Survey. The Hydrologic Soil Group (HSG) of the site soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Type	Symbol	HSG	Drainage Class
Belgrade	BgB	B	Moderately Well Drained
Belgrade	BgC2	B	Moderately Well Drained
Cut and Fill	Cu	-	Moderately Well Drained
Gravel Pits	Gp	-	
Tidal Marsh	Tm	-	Very Poorly Drained
Windsor	WmB	A	Very Well Drained
Water	W	-	

F. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland for the 2-year, 10-year and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.10
10-yr	4.60
25-yr	5.80

G. Pre-Development Watershed Model

The pre-development watershed model consists of eleven (11) subcatchments.

Subcatchments 1S through 6S, includes a majority of the subject parcel. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to an existing wet pond. Stormwater flows generally from west to east, designated as Study Point 1 (SP-1).

Subcatchment 7S includes portions of the site east of the existing parking lot with runoff that drains to the existing wetland, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchment 9S includes a portion of the site in the southwestern corner of the property. This area flows to an existing culvert that discharges directly into the existing wetland, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S.

H. Preload-Development Watershed Model

The pre-development watershed model consists of twelve (12) subcatchments.

Subcatchments 1S through 5S, includes a majority of the existing development. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to a proposed drainage ring. Stormwater is collected in the underdrain system below the drainage ring. Stormwater then flows through the proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchments 6S and 7S includes the preload surface area. Stormwater from the preload surface will be directed to two undrained soil filters. Treated stormwater will flow through undrain collection pipes and discharged to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 9S and 11S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S. These offsite subcatchments are not included in the development but are used to account for the total outflow at the Fore River in the preload-development condition.

I. Post-Development Watershed Model

The post-development watershed model consists of nineteen (19) subcatchments. Modeling reflects on-site ground cover changes to include proposed landscaping and impervious areas associated with the parking lot and associated sidewalks. Existing drainage patterns will be generally maintained with the proposed stormwater design.

Subcatchments 1S through 7S and 9S through 15S includes the existing parking areas, portions of the existing building, the proposed parking areas and proposed landscape areas associated the expansion. The area is graded to discharge runoff through a closed storm drain system to the proposed Subsurface Sand Filter. Stormwater will then flow through proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 16S and 17S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S. These offsite subcatchments are not included in the development but are used to account for the total outflow at the Fore River in the post-development condition.

J. Stormwater Quality Management (General Standard)

Runoff from the existing development that was treated in the wet pond, along with the proposed development will be directed to a subsurface sand filter. The subsurface sand filter is designed in general conformance with Section 7.3 of the BMPs Technical Design Manual. An inlet control structure will distribute flow from a 1 inch rain storm evenly to four isolator rows within the system. Through the isolator rows, flow will disperse equally to exterior chambers so that a consistent water level is maintained throughout the entire system. An outlet control structure will be constructed with a weir installed so that storage is provided for at least the first 1 inch of runoff. Additional runoff from larger storm events will be diverted along the easterly side of the system so that additional flow does not impact conditions upstream. Runoff contained in the chambers will first pass through a media for treatment before discharging to the project's closed storm drainage system.

The new impervious surface combined with the existing impervious areas currently being treated in the wet pond would require a total impervious treatment of 246,946 square feet (SF). The new landscape areas combined with the existing landscape areas currently being treated would require a total landscape treatment of 30,974 square feet (SF). Therefore, the proposed development will treat stormwater to a much greater extent than what is actually required to be treated through a strict interpretation of the MeDEP Stormwater Law regulations.

Test pits were observed within the general area of the proposed development. Test pits indicate the presence of groundwater approximately two feet below existing ground level in the lower area adjacent to the proposed subsurface sand filter. Given the existing topography in the area of the proposed parking lot, the proposed subsurface sand filter will be constructed entirely in fill conditions. This will place the bottom of the proposed subsurface sand filter approximately four feet above groundwater table. As a safety measure, a liner will be used to prevent any potential groundwater or tidal water from backing up into the proposed subsurface sand filter.

Stormwater management design calculations for the Subsurface Sand Filter, and for General Standard compliance, are enclosed as part of **Attachment A**.

K. Stormwater Quantity Management (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project area. Calculations and computer modeling data sheets are provided with this report.

The HydroCAD model predicts increases in estimated peak flow rates during the 2-, 10- and 25-year storm events at SP-1. During a 25-year storm event, the increase of flow to the existing four 36-inch culverts will increase by approximately 5 inches over existing conditions. This increase in water level remains below the top of the existing culverts. At SP-2 the model predicts that peaks flows remain constant during the 2- and 10-year storms and decreases slightly during the 25-year storm. Stormwater exiting the site will enter into Fore River.

As permitted under Chapter 500 §4.F(3)(a), the project is eligible for a waiver from the Flooding Standard since it is within the direct watershed of a coastal wetland with adequate capacity and the stormwater is conveyed through a piped system directly to Fore River. Fore River, which separates South Portland and Portland, is a direct tributary to Casco Bay. Due to the proximity to Casco Bay and ultimately the Atlantic Ocean, Fore River is subject to tidal influence, as such, there are no anticipated detrimental impacts to downstream receiving structures, drainage channels, or properties. A waiver from the flooding standards has been requested. Please refer to Attachment B, Attachment C and Attachment D for pre-, preload- and post-development stormwater modeling.

Preload Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Preload (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Preload (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Preload (cfs)**	**Diff. (cfs)**
SP-1	31.48	39.43	7.95	51.99	69.89	17.90	73.39	97.09	23.70
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**
SP-1	31.48	38.32	6.84	51.99	71.84	19.85	73.39	99.49	26.10
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

L. Inspection & Maintenance

Provisions for periodic inspection and maintenance of the subsurface sand filter are included in the Inspection, Maintenance, and Housekeeping Plan included in this section of the application.

M. Summary

An Erosion and Sedimentation Control Plan has been developed using the Maine Department of Environmental Protection's 2015 Erosion and Sediment Control Field Guide for Contractors for the project site placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan is incorporated into the design plans and includes the locations of the erosion control provisions (i.e., silt fence, construction entrance) along with a narrative and construction details for reference by the contractor during construction.

The proposed development will include the construction of a Subsurface Sand Filter to which a majority of runoff from impervious and developed areas will be directed. The construction of the Subsurface Sand Filter will provide water quality treatment of stormwater runoff from the site so that the General Standards are satisfied. Increases in post-development peak flow rates during the 10-year, and 25-year storm events are anticipated to have negligible impact on flow characteristics of Fore River, immediately downstream of the site and further downstream.

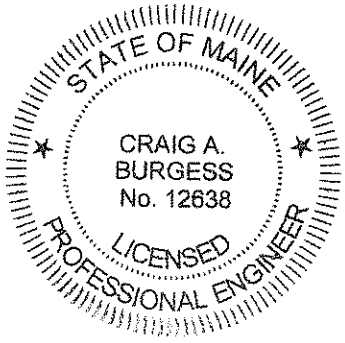
With incorporation of these measures, no significant impacts to off-site drainage are anticipated due to the development of the property

Prepared by

SEBAGO TECHNICS, INC.

Craig Burgess

Craig A. Burgess, P.E.
Senior Project Engineer



9.14.18

CAB/BJB

Attachment A

Water Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	-	**246,946**	**25,892**	**272,838**	-

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

SEBAGO TECHNICS, INC.
75 John Roberts Road, Suite 1A
South Portland, ME 04106
(207) 856-0277 FAX (207) 856-2206

JOB	99607		
SHEET NO.	1	OF	2
CALCULATED BY	BJB	DATE	6/12/2018
CHECKED BY	CAB		
FILE NAME	99607-WQC	PRINT DATE	9/13/2018

MDEP Site Location of Development Submission

Note: Underdrained Soil Filters are sized in accordance with Chapter 7.1 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Underdrained Soil Filter #1 (UDSF-1) - Preload Phase									
Subcatchments tributary to UDSF-1 include 6S									
WQV Calculation									
(WQV = Water Quality Volume)									
Total Impervious Area =			55,468.0	sf					
Total Landscaped Area=			0.0	sf					
WQV Required= 1" x Impervious Area + 0.4"x Landscape Area =						4,622.3	cf		
WQV Provided =		**7,437.0**	cf @ 1.5' depth						
Filterbed Area Calculation									
Filterbed Area Required = 0.05 x Impervious + 0.02 x Landscape =						2773.4	sf		
Filterbed Area Provided=			**3,003.0**	sf					
Pre-treatment Sediment Forebay Volume Calculation									
Sand Application Rate=			50.0	cf/acre/year					
Total Impervious Area=			55,468.0	sf					
Tributary to UDSF #1									
Required Pre-treatment Volume=			63.7	cf					
Provided Pre-treatment Volume=			126.0	cf					

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JOB	99607		
SHEET NO.	2	OF	2
CALCULATED BY	BJB	DATE	6/12/2018
CHECKED BY	CAB		
FILE NAME	99607-WQC	PRINT DATE	9/13/2018

MDEP Site Location of Development Submission

Note: Underdrained Soil Filters are sized in accordance with Chapter 7.1 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Underdrained Soil Filter #2 (UDSF-2) - Preload Phase									
Subcatchments tributary to UDSF-2 include 7S									
WQV Calculation									
(WQV = Water Quality Volume)									
Total Impervious Area =			70,595.0	sf					
Total Landscaped Area=			2,733.0	sf					
WQV Required= 1" x Impervious Area + 0.4"x Landscape Area =						5,974.0	cf		
WQV Provided =		**9,919.0**	cf @ 1.5' depth						
Filterbed Area Calculation									
Filterbed Area Required = 0.05 x Impervious + 0.02 x Landscape =						3584.4	sf		
Filterbed Area Provided=			**4,077.0**	sf					
Pre-treatment Sediment Forebay Volume Calculation									
Sand Application Rate=			50.0	cf/acre/year					
Total Impervious Area=			70,595.0	sf					
Tributary to UDSF #2									
Required Pre-treatment Volume=			81.0	cf					
Provided Pre-treatment Volume=			93.0	cf					

SEBAGO TECHNICS, INC.
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Tel. (207) 200-2100

JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/15/2018
FILE NAME	99607-WQC.xls	PRNT DATE	9/13/2018

UNDERDRAINED SUBSURFACE SAND FILTER-1

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.3.2
   a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
   b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
   c. "treatment flow rate for the Stormtech Isolator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	fs/chamber
SC-740	0.20	fs/chamber
DC-780	0.20	fs/chamber
MC-3500	0.30	fs/chamber
Cultech 150XLHD	0.185	fs/chamber
Cultech 330XLHD	0.227	fs/chamber

Tributary to Subsurface Sand Filter

Landscaped Area	30,974	SF
Impervious Area	246,946	SF

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	30,974	SF	Area	619.5	SF
Total Impervious Area	246,946	SF	Area	12,347.3	SF
Required Minimum Surface Area				12,966.8	SF
Provided Surface Area				16,932.0	SF

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	30,974	SF	Volume	1,032.5	
Impervious Area	246,946	SF	Volume	20,578.8	
Treatment Volume Required				21,611.3	CF (0.496 AF)
Provided Treatment Volume				24,354.0	CF (Elev.= 13.00)

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	14.28	cfs
ISO Row sizing for:	**SC-740**	**0.2** cfs
Total number of Isolator Row Chambers required:	72	

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JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/29/2018
FILE NAME	99607-WQC.xls	PRNT DATE	9/13/2018

ORIFICE SIZING CALCULATION

SUBSURFACE SAND FILTER #1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{TV}{tCF}$$

T = Treatment Volume (cf)
t = Recovery Time (hrs)
CF = Conversion Factor = 3600 sec/hr

TV = 24,354 cf
t = 24 hr

$$Q = \frac{TV}{tCF} = 0.28 \text{ cfs}$$

surface area of filter = 16,932 SF

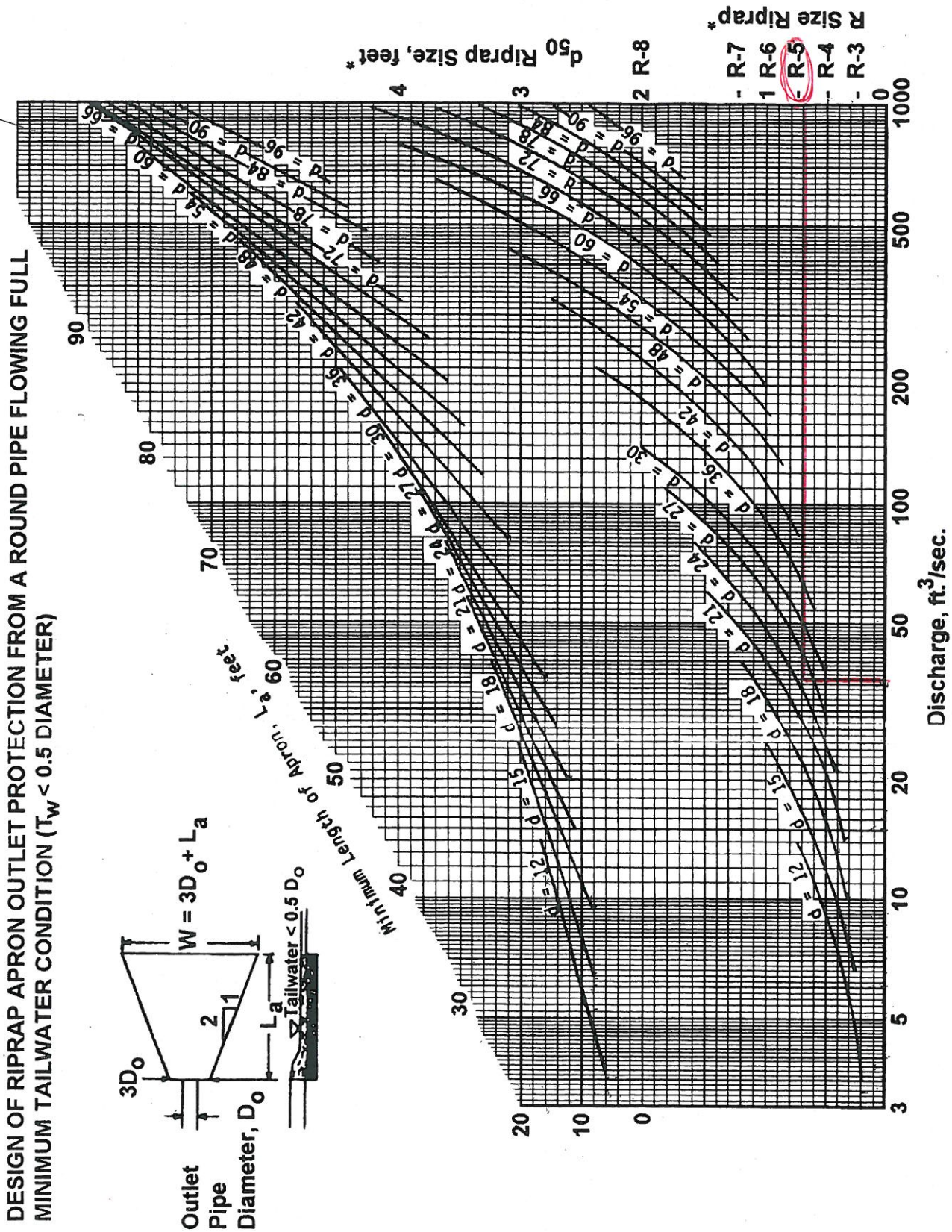
h = 1.44 ft

$$A = \frac{Q}{C\sqrt{(2gh)}}$$

A = 0.049 sf = 7.03 sq. in.

Diam = 2.99 in

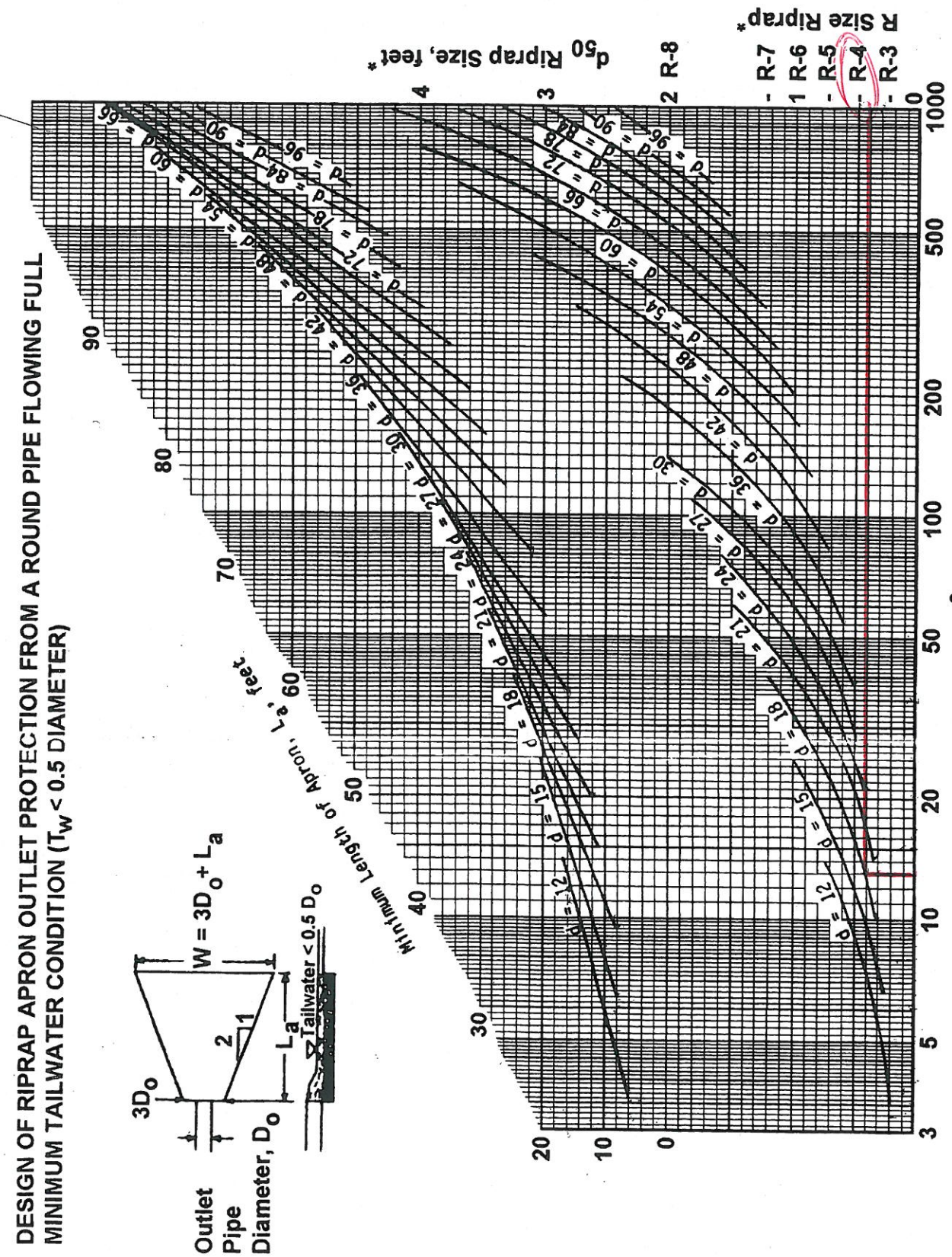
FIGURE 21
Riprap Apron Design, Minimum Tailwater Condition



* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

DMH-1 (offsite Flow)
25-year Storm event
Q = 40.60 cfs
D = 42"
Riprap Size = R-5

FIGURE 21
Riprap Apron Design, Minimum Tailwater Condition

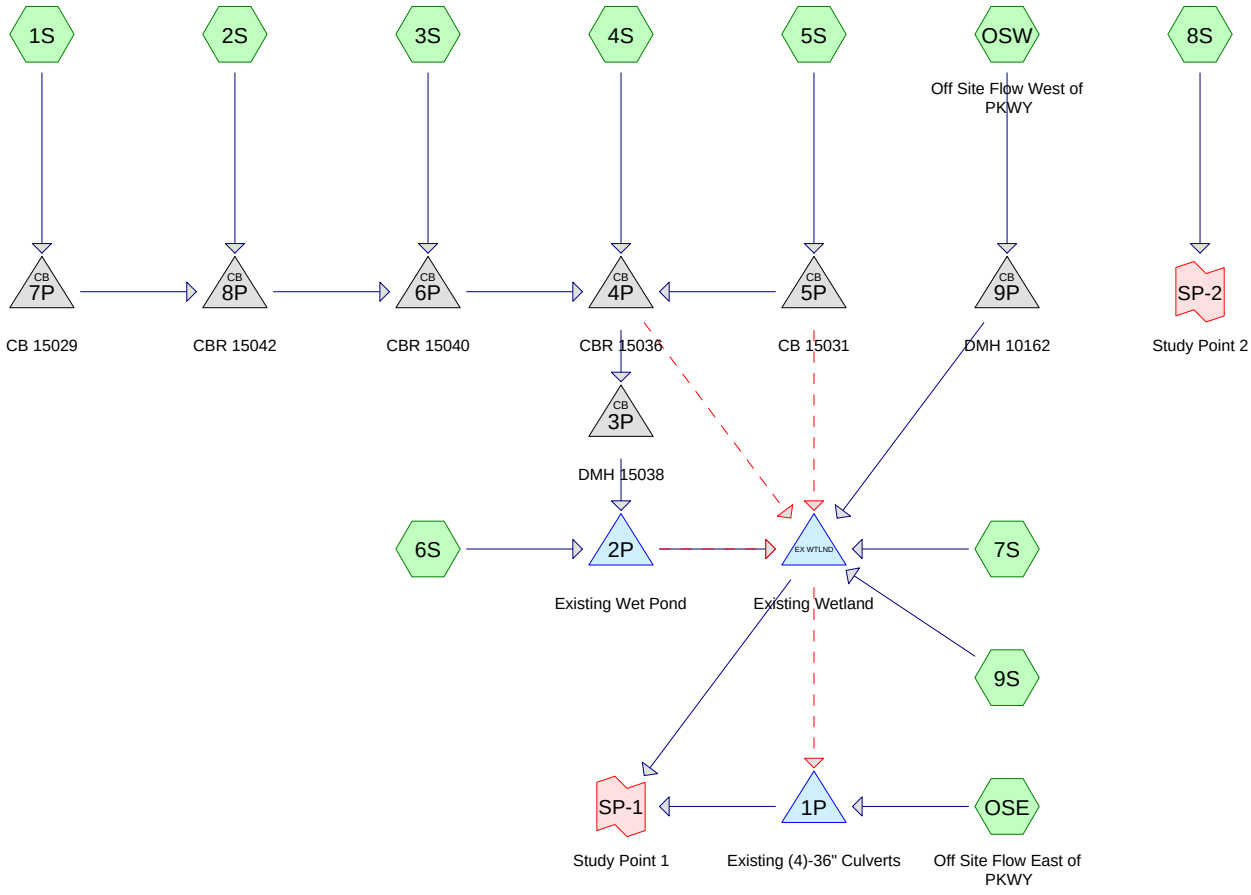


* For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

Riprap Size = R-4
25-year Storm Event
Q = 12.93 cfs
D = 24"
Subsurface Sand Filter
Outlet Control Structure Discharge Pipe

Attachment B

Pre-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Pre
Prepared by Sebago Techincs, Printed 9/13/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
415,703	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, OSE)
80,663	80	>75% Grass cover, Good, HSG D (6S, 7S)
589,516	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 9S, OSE, OSW)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 7S, 9S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
7,169	98	Water Surface, HSG B (7S)
84,579	98	Water Surface, HSG D (6S, 7S)
1,729,428	**86**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.43 cfs 4,740 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=1.98 cfs 6,694 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.91 cfs 9,217 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=1.33"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.29 cfs 906 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=1.60"
Flow Length=306' Tc=6.3 min CN=84 Runoff=9.09 cfs 28,446 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=5.78' Storage=2,040 cf Inflow=14.53 cfs 82,901 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=14.50 cfs 82,184 cf

Pond 2P: Existing Wet Pond Peak Elev=14.61' Storage=8,947 cf Inflow=8.75 cfs 30,609 cf
Primary=5.59 cfs 26,082 cf Secondary=0.48 cfs 176 cf Outflow=6.07 cfs 26,257 cf

Pond 3P: DMH 15038 Peak Elev=15.55' Inflow=8.47 cfs 29,703 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=8.47 cfs 29,703 cf

Pond 4P: CBR 15036 Peak Elev=16.65' Inflow=8.47 cfs 29,703 cf
Primary=8.47 cfs 29,703 cf Secondary=0.01 cfs 0 cf Outflow=8.47 cfs 29,703 cf

Pond 5P: CB 15031 Peak Elev=21.03' Inflow=2.91 cfs 9,217 cf
Primary=2.03 cfs 8,422 cf Secondary=0.88 cfs 795 cf Outflow=2.91 cfs 9,217 cf

Pond 6P: CBR 15040 Peak Elev=17.13' Inflow=4.46 cfs 14,587 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.46 cfs 14,587 cf

Pond 7P: CB 15029 Peak Elev=23.84' Inflow=1.80 cfs 5,805 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=1.80 cfs 5,805 cf

Pond 8P: CBR 15042 Peak Elev=17.57' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 9P: DMH 10162 Peak Elev=10.85' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=19.88 cfs 118,098 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.83' Storage=26,521 cf Inflow=27.73 cfs 179,068 cf
Primary=17.83 cfs 179,087 cf Secondary=0.00 cfs 0 cf Outflow=17.83 cfs 179,087 cf

Link SP-1: Study Point 1 Inflow=31.48 cfs 261,271 cf
Primary=31.48 cfs 261,271 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 266,885 cf Average Runoff Depth = 1.85"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.17 cfs 7,395 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.98 cfs 10,314 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.66 cfs 15,115 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=2.55"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.56 cfs 1,741 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=2.91"
Flow Length=306' Tc=6.3 min CN=84 Runoff=16.47 cfs 51,713 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=6.18' Storage=2,740 cf Inflow=29.03 cfs 163,337 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=29.00 cfs 162,620 cf

Pond 2P: Existing Wet Pond Peak Elev=14.86' Storage=9,875 cf Inflow=10.63 cfs 47,480 cf
Primary=6.46 cfs 40,990 cf Secondary=2.77 cfs 2,137 cf Outflow=9.23 cfs 43,128 cf

Pond 3P: DMH 15038 Peak Elev=16.23' Inflow=10.07 cfs 45,739 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=10.07 cfs 45,739 cf

Pond 4P: CBR 15036 Peak Elev=17.59' Inflow=12.83 cfs 46,700 cf
Primary=10.07 cfs 45,739 cf Secondary=2.76 cfs 961 cf Outflow=12.83 cfs 46,700 cf

Pond 5P: CB 15031 Peak Elev=21.19' Inflow=4.66 cfs 15,115 cf
Primary=2.96 cfs 13,320 cf Secondary=1.70 cfs 1,795 cf Outflow=4.66 cfs 15,115 cf

Pond 6P: CBR 15040 Peak Elev=18.25' Inflow=6.88 cfs 23,065 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.88 cfs 23,065 cf

Pond 7P: CB 15029 Peak Elev=24.16' Inflow=2.80 cfs 9,284 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=2.80 cfs 9,284 cf

Pond 8P: CBR 15042 Peak Elev=18.59' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 9P: DMH 10162 Peak Elev=11.37' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=31.45 cfs 191,269 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.22' Storage=56,078 cf Inflow=46.25 cfs 298,303 cf
Primary=24.03 cfs 292,032 cf Secondary=3.27 cfs 6,290 cf Outflow=27.29 cfs 298,322 cf

Link SP-1: Study Point 1 Inflow=51.99 cfs 454,652 cf
Primary=51.99 cfs 454,652 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 460,934 cf Average Runoff Depth = 3.20"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.76 cfs 9,529 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.78 cfs 13,217 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.04 cfs 19,911 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=3.60"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 2,462 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=4.01"
Flow Length=306' Tc=6.3 min CN=84 Runoff=22.50 cfs 71,335 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=6.57' Storage=3,623 cf Inflow=46.36 cfs 247,405 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=46.33 cfs 246,689 cf

Pond 2P: Existing Wet Pond Peak Elev=14.95' Storage=10,235 cf Inflow=11.98 cfs 60,344 cf
Primary=6.78 cfs 51,984 cf Secondary=3.95 cfs 4,008 cf Outflow=10.73 cfs 55,992 cf

Pond 3P: DMH 15038 Peak Elev=16.70' Inflow=11.19 cfs 57,882 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=11.19 cfs 57,882 cf

Pond 4P: CBR 15036 Peak Elev=18.41' Inflow=16.24 cfs 60,292 cf
Primary=11.19 cfs 57,882 cf Secondary=5.05 cfs 2,410 cf Outflow=16.24 cfs 60,292 cf

Pond 5P: CB 15031 Peak Elev=21.29' Inflow=6.04 cfs 19,911 cf
Primary=3.66 cfs 17,177 cf Secondary=2.38 cfs 2,733 cf Outflow=6.04 cfs 19,911 cf

Pond 6P: CBR 15040 Peak Elev=19.46' Inflow=8.79 cfs 29,897 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,897 cf

Pond 7P: CB 15029 Peak Elev=24.51' Inflow=3.60 cfs 12,095 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=3.60 cfs 12,095 cf

Pond 8P: CBR 15042 Peak Elev=20.04' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 9P: DMH 10162 Peak Elev=11.76' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=40.62 cfs 250,553 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.46' Storage=75,208 cf Inflow=62.32 cfs 395,740 cf
Primary=27.79 cfs 368,997 cf Secondary=10.51 cfs 26,748 cf Outflow=38.30 cfs 395,744 cf

Link SP-1: Study Point 1 Inflow=73.39 cfs 615,685 cf
Primary=73.39 cfs 615,685 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 622,591 cf Average Runoff Depth = 4.32"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Summary for Subcatchment 1S:

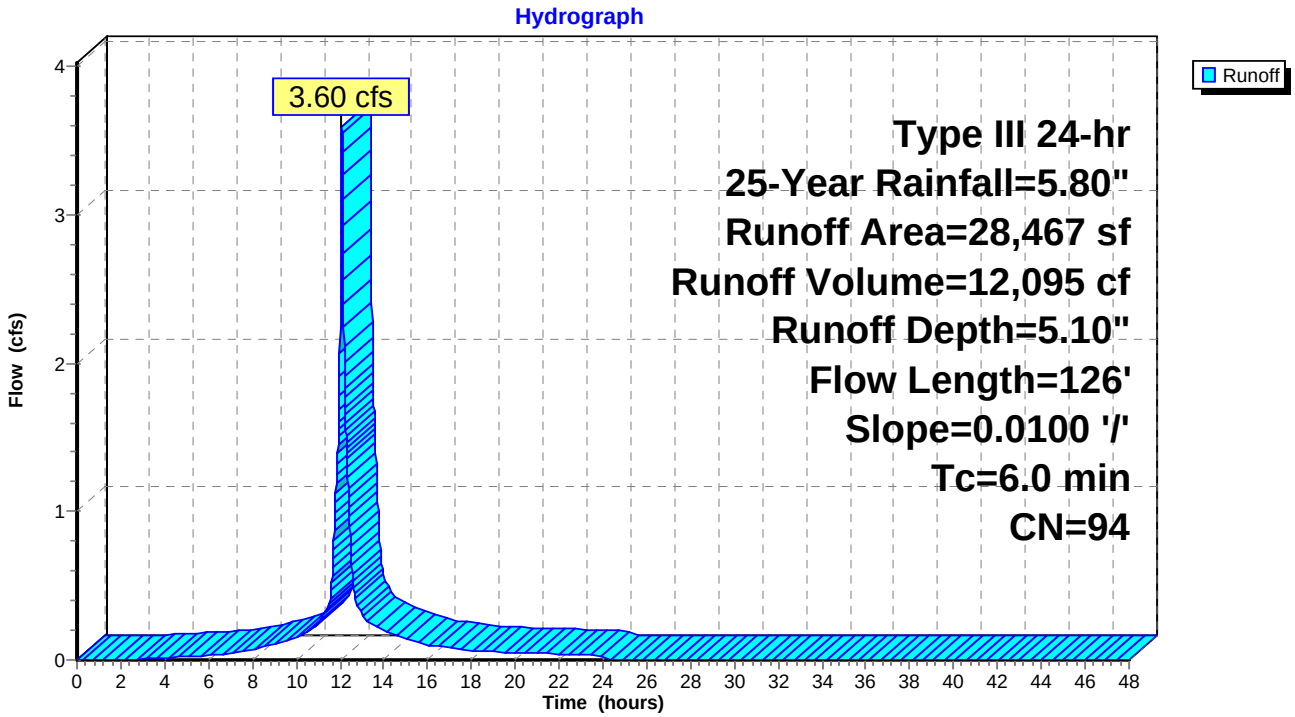
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

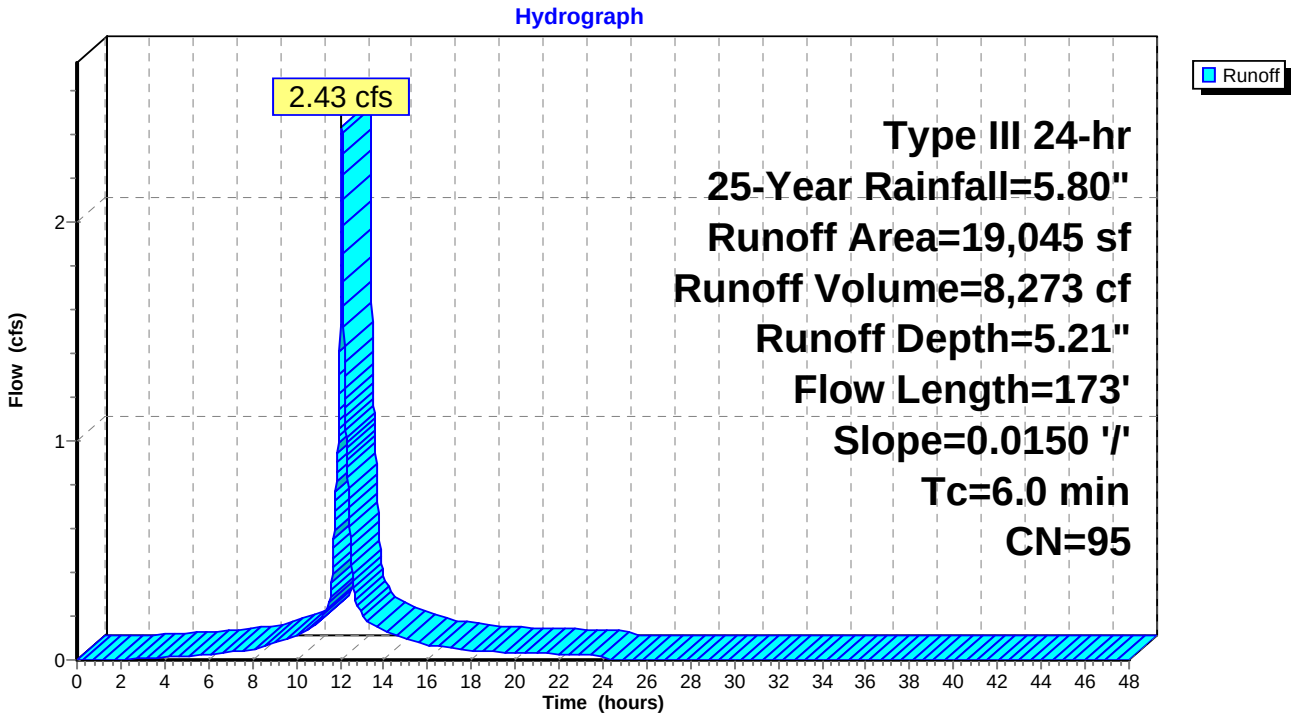
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

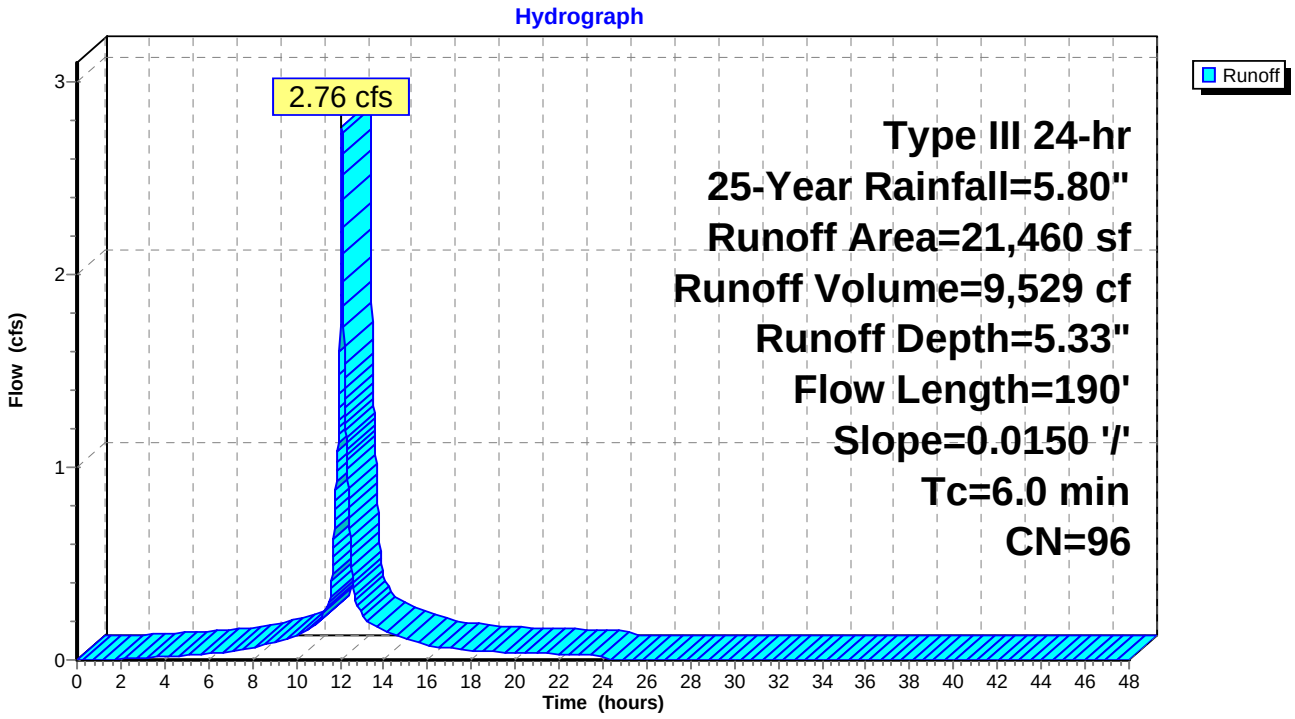
Runoff = 2.76 cfs @ 12.08 hrs, Volume= 9,529 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
259	98	Roofs, HSG B
19,851	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,460	96	Weighted Average
1,350		6.29% Pervious Area
20,110		93.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

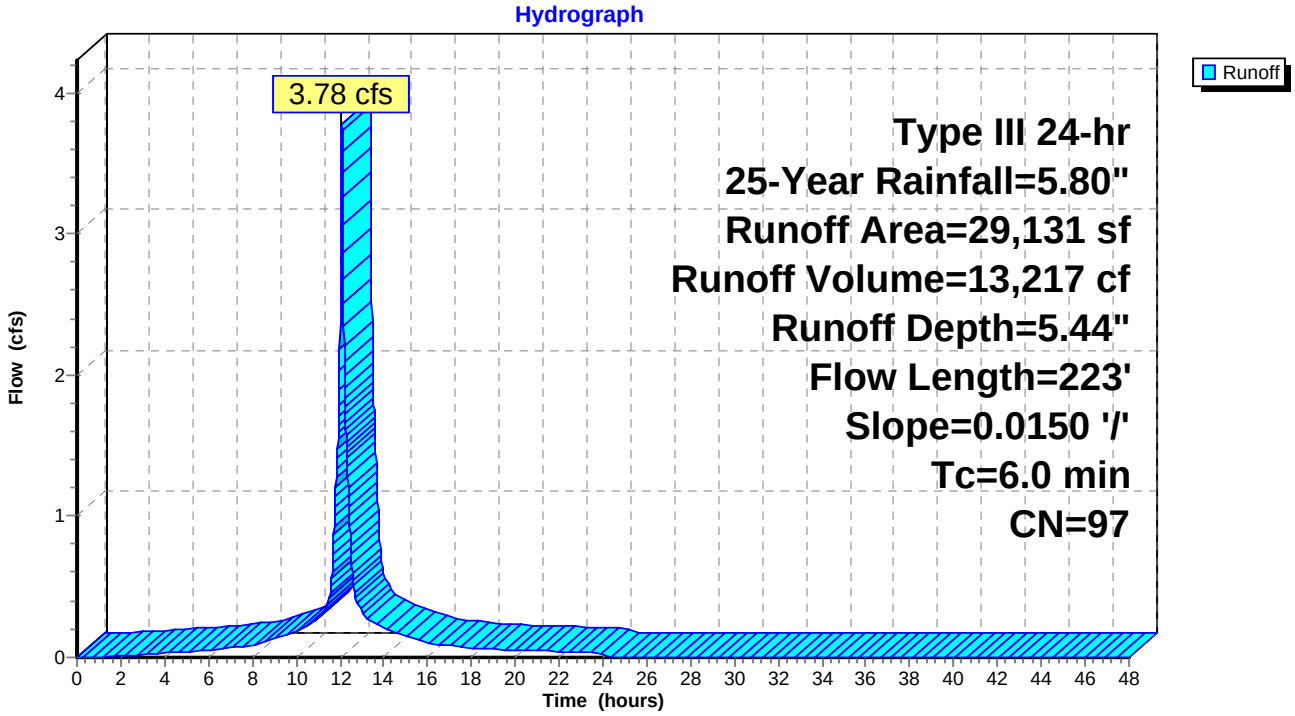
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 13,217 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
28,151	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
29,131	97	Weighted Average
980		3.36% Pervious Area
28,151		96.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

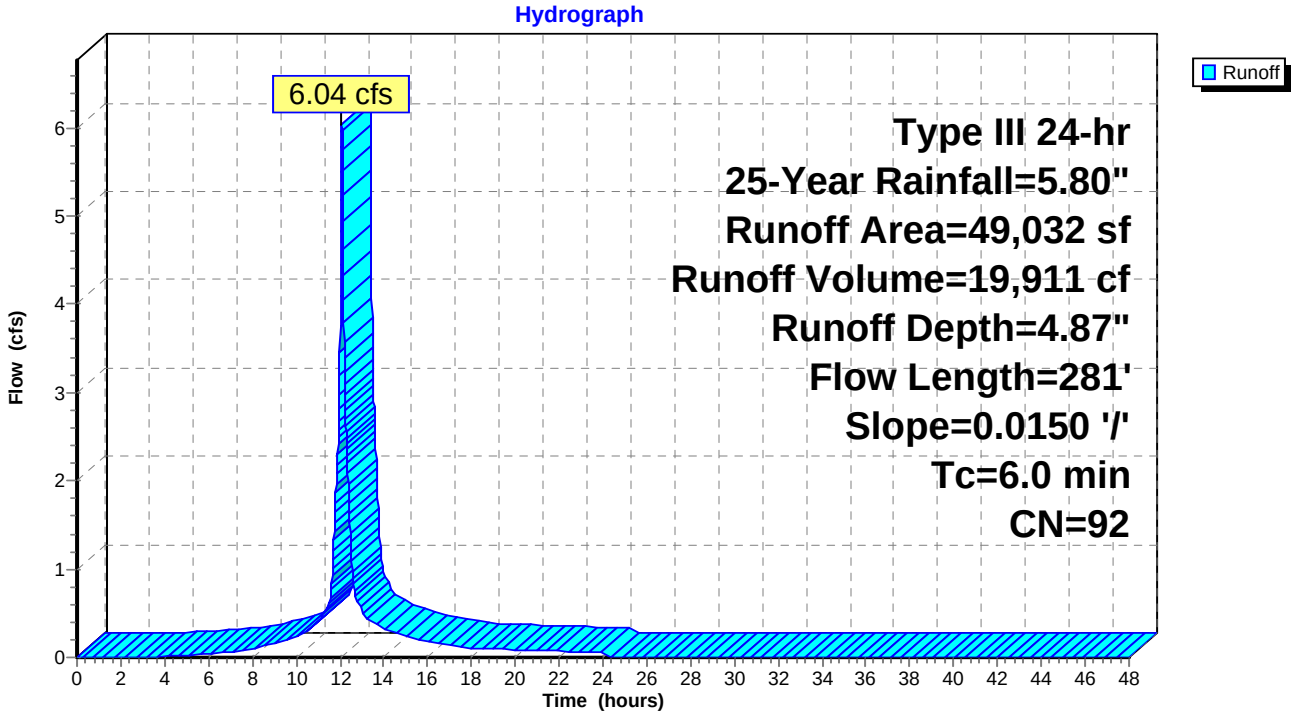
Runoff = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,586	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,032	92	Weighted Average
8,446		17.23% Pervious Area
40,586		82.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S:



Summary for Subcatchment 6S:

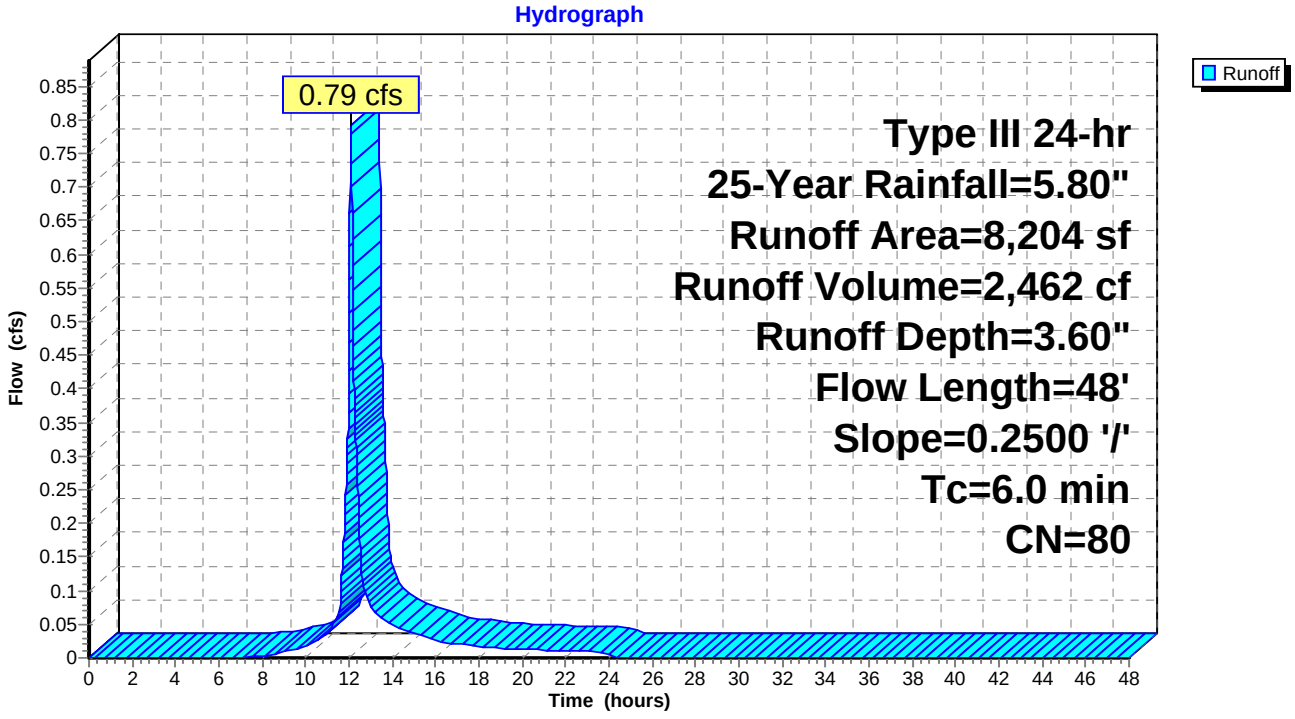
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,462 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
3,041	61	>75% Grass cover, Good, HSG B
1,992	80	>75% Grass cover, Good, HSG D
3,171	98	Water Surface, HSG D
8,204	80	Weighted Average
5,033		61.35% Pervious Area
3,171		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	48	0.2500	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
4.0					**Direct Entry,**
6.0	48	Total			

Subcatchment 6S:



Summary for Subcatchment 7S:

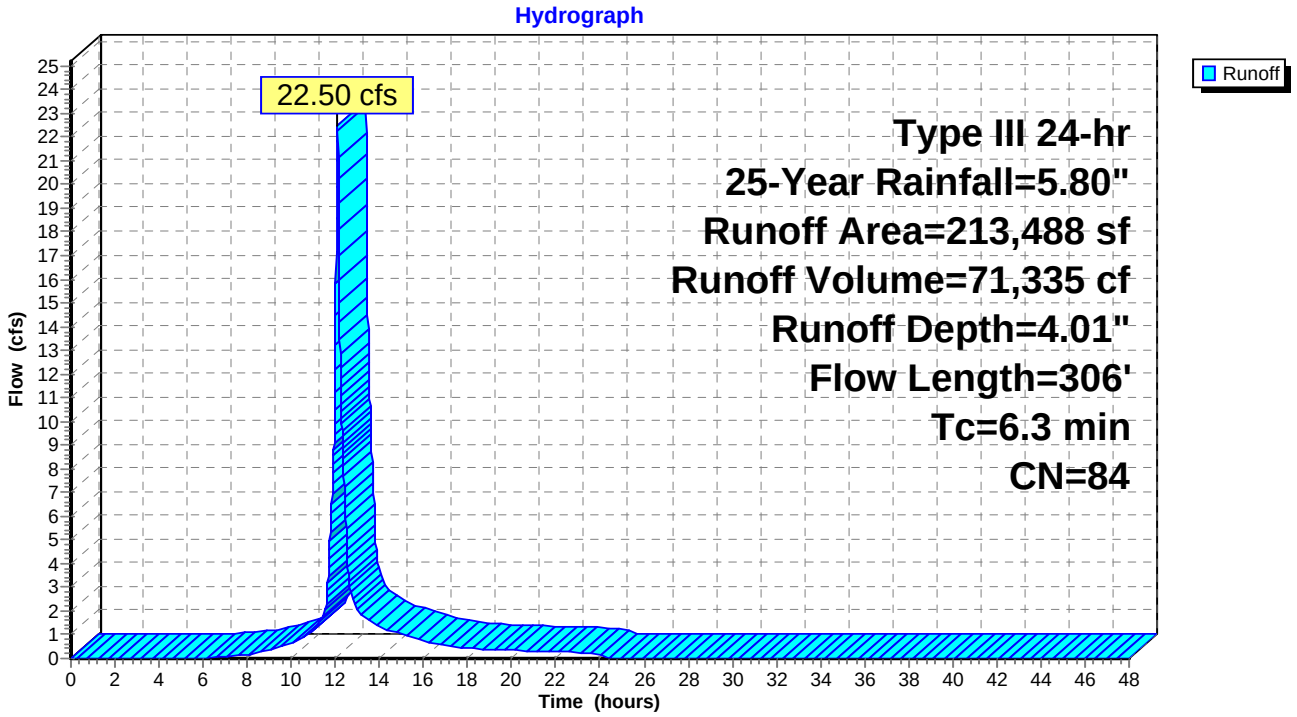
Runoff = 22.50 cfs @ 12.09 hrs, Volume= 71,335 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
45,283	61	>75% Grass cover, Good, HSG B
78,671	80	>75% Grass cover, Good, HSG D
7,169	98	Water Surface, HSG B
81,408	98	Water Surface, HSG D
957	98	Roofs, HSG B
213,488	84	Weighted Average
123,954		58.06% Pervious Area
89,534		41.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.2	44	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	191	0.0100	4.15	45.69	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=1.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
6.3	306	Total			

Subcatchment 7S:



Summary for Subcatchment 8S:

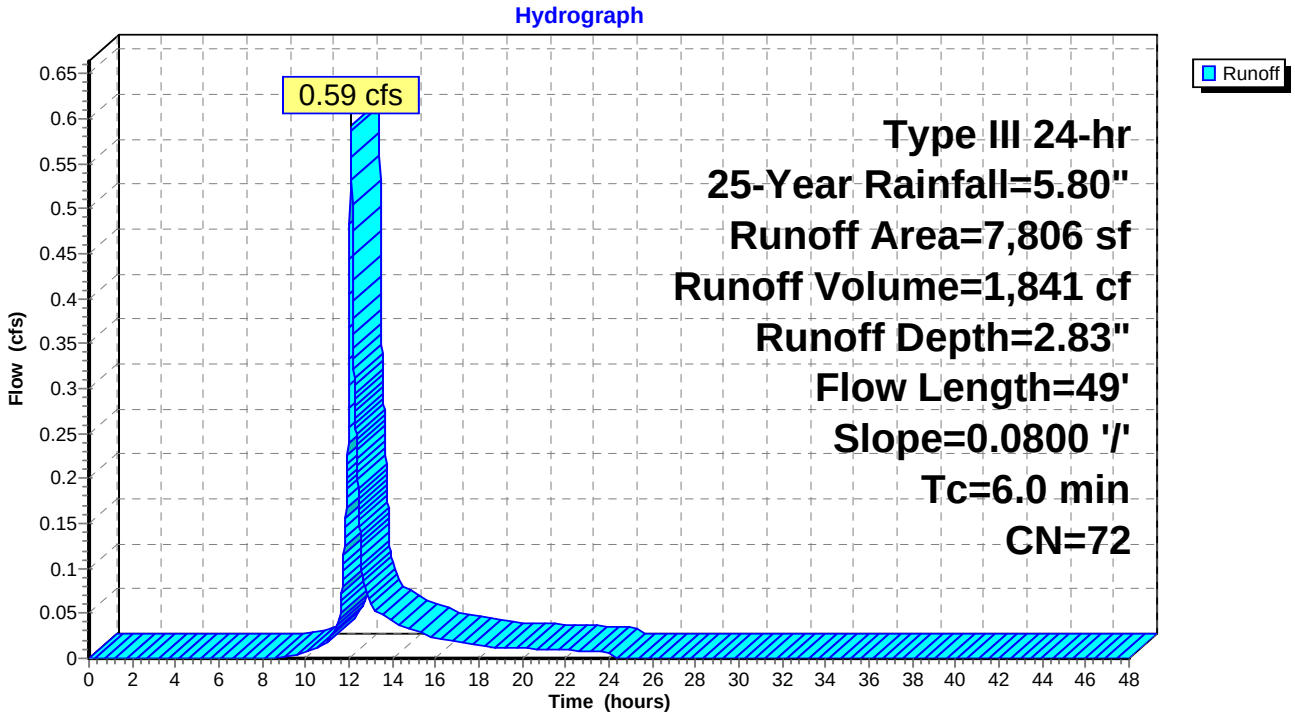
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S:



Summary for Subcatchment 9S:

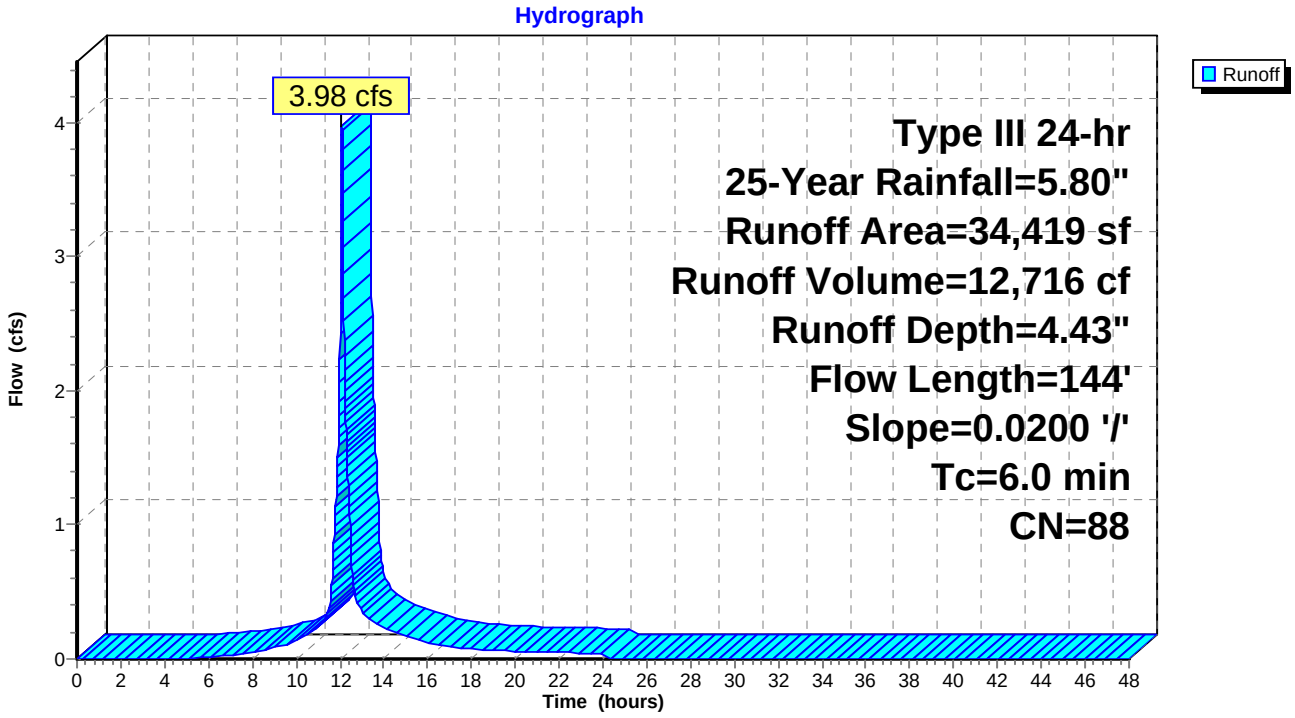
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 9S:



Summary for Subcatchment OSE: Off Site Flow East of PKWY

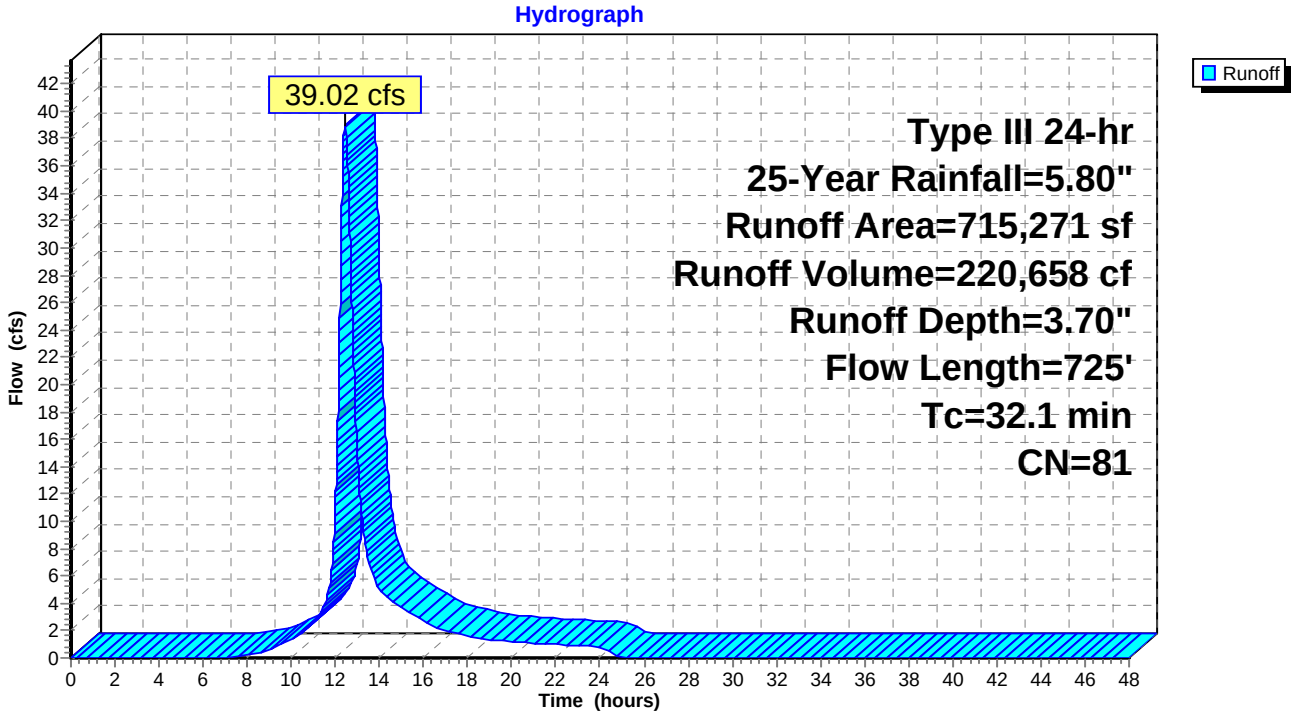
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

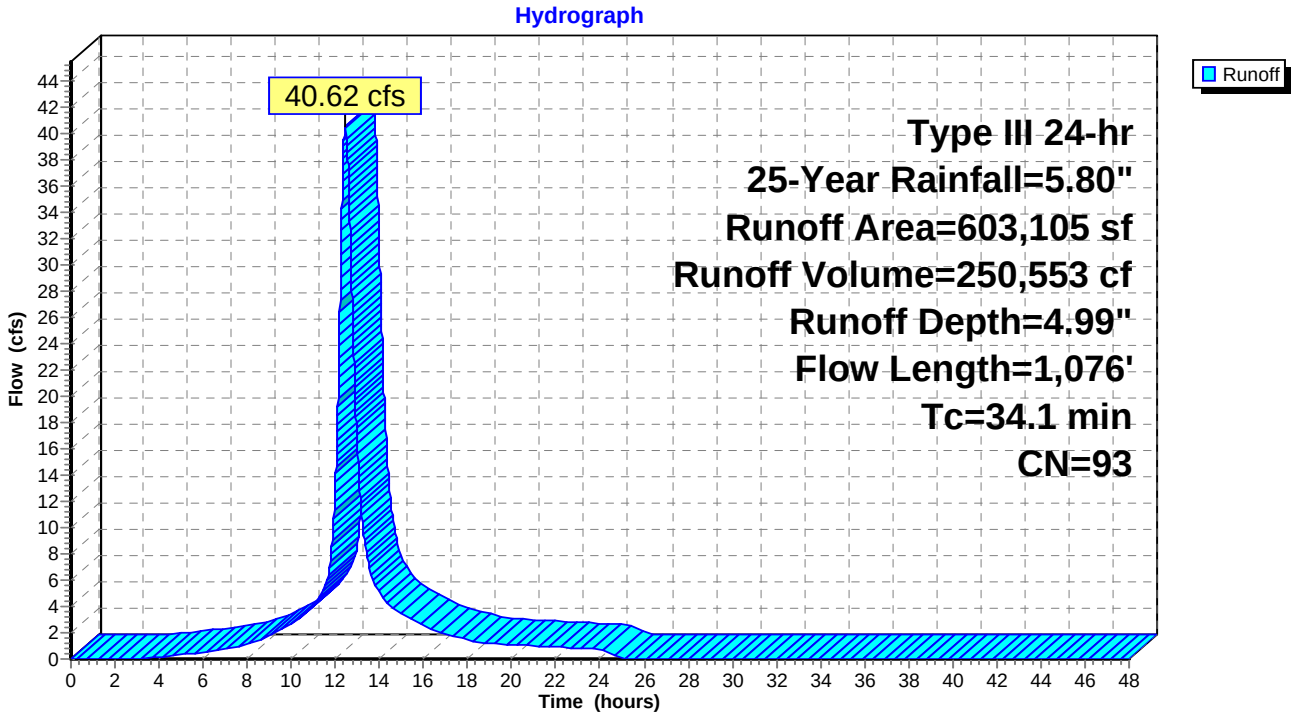
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.15" for 25-Year event
Inflow = 46.36 cfs @ 12.50 hrs, Volume= 247,405 cf
Outflow = 46.33 cfs @ 12.52 hrs, Volume= 246,689 cf, Atten= 0%, Lag= 0.8 min
Primary = 46.33 cfs @ 12.52 hrs, Volume= 246,689 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.57' @ 12.52 hrs Surf.Area= 2,580 sf Storage= 3,623 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 5.3 min calculated for 246,689 cf (100% of inflow)
Center-of-Mass det. time= 3.3 min (832.8 - 829.5)

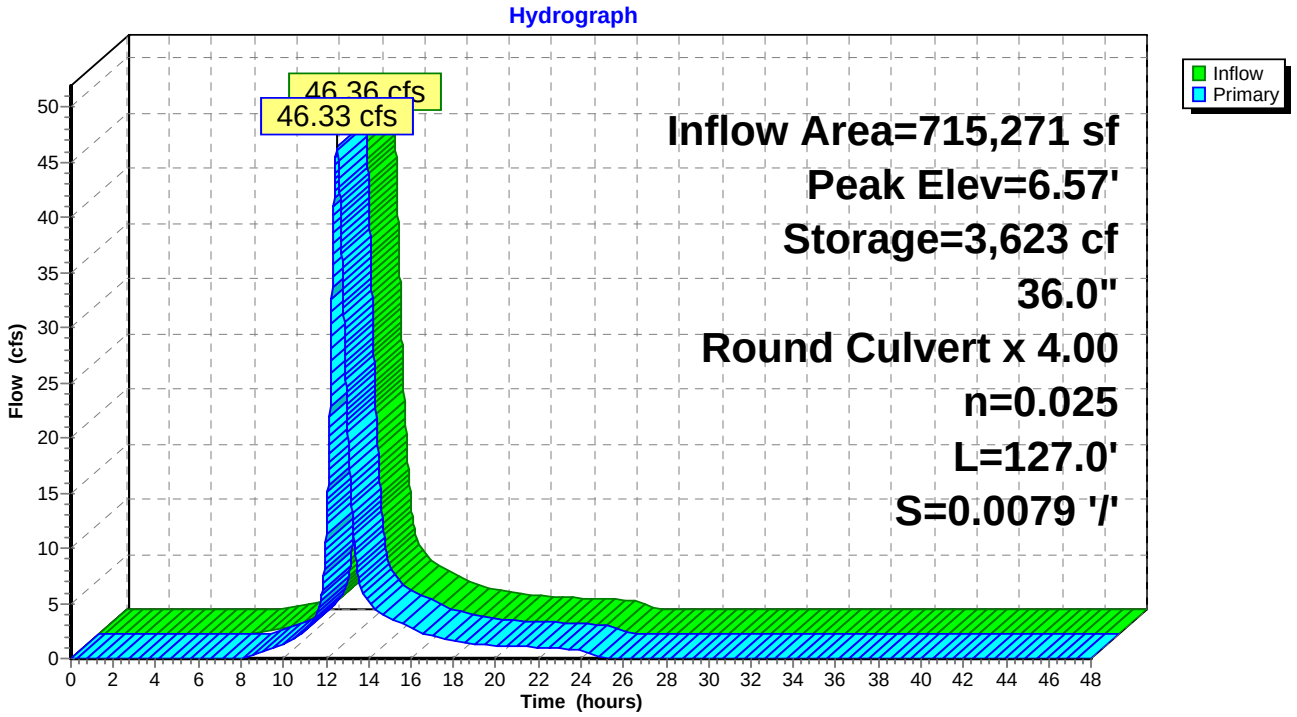
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=46.32 cfs @ 12.52 hrs HW=6.57' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 46.32 cfs @ 3.98 fps)

Pond 1P: Existing (4)-36" Culverts



Summary for Pond 2P: Existing Wet Pond

Inflow Area = 155,339 sf, 87.13% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 60,344 cf
Outflow = 10.73 cfs @ 12.14 hrs, Volume= 55,992 cf, Atten= 10%, Lag= 3.4 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 51,984 cf
Secondary = 3.95 cfs @ 12.14 hrs, Volume= 4,008 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.95' @ 12.14 hrs Surf.Area= 3,953 sf Storage= 10,235 cf
Flood Elev= 16.00' Surf.Area= 4,707 sf Storage= 14,792 cf

Plug-Flow detention time= 89.8 min calculated for 55,980 cf (93% of inflow)
Center-of-Mass det. time= 50.8 min (822.8 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	14,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

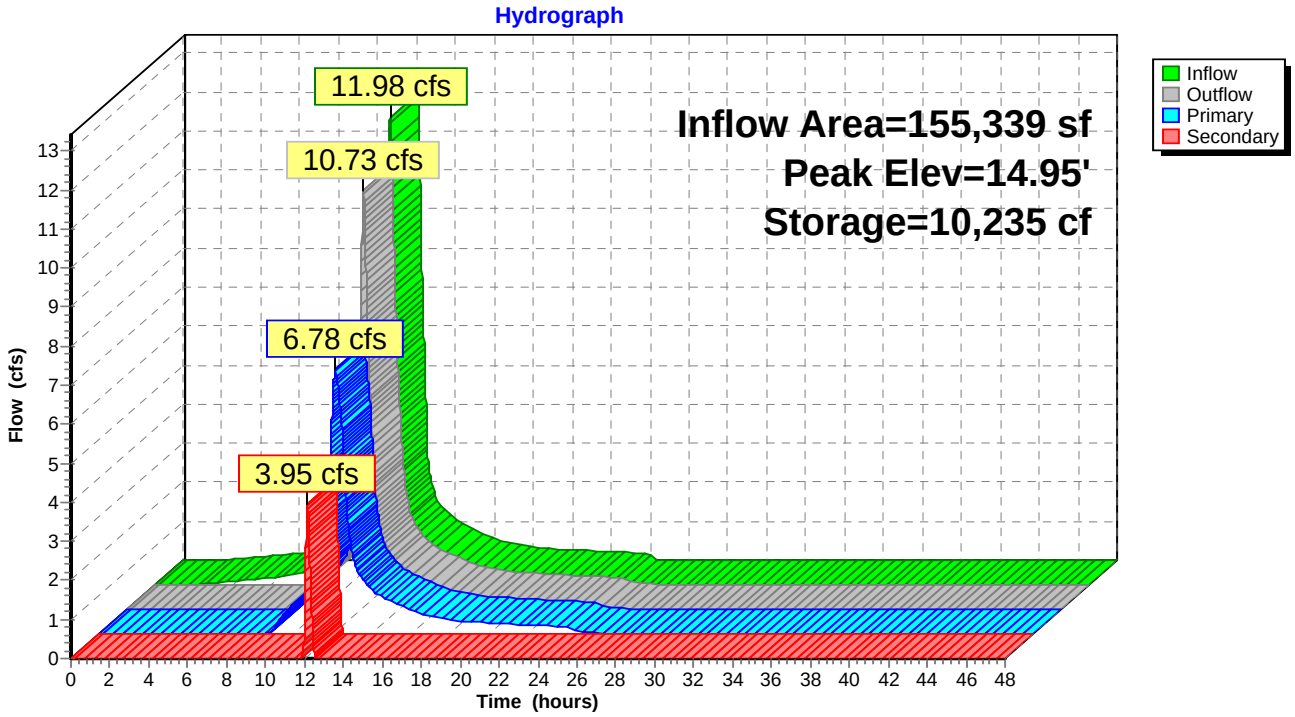
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
9.00	38	0	0
10.00	287	163	163
11.00	765	526	689
12.00	1,474	1,120	1,808
13.00	2,613	2,044	3,852
14.00	3,290	2,952	6,803
15.00	3,990	3,640	10,443
16.00	4,707	4,349	14,792

Device	Routing	Invert	Outlet Devices
#1	Primary	8.16'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.16' / 7.78' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	13.18'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.18' / 12.96' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Secondary	14.50'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=14.95' TW=6.93' (Dynamic Tailwater)
1=Culvert (Passes 6.78 cfs of 28.73 cfs potential flow)
2=Culvert (Inlet Controls 6.78 cfs @ 3.83 fps)

Secondary OutFlow Max=3.95 cfs @ 12.14 hrs HW=14.95' TW=6.93' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Weir Controls 3.95 cfs @ 1.77 fps)

Pond 2P: Existing Wet Pond



Summary for Pond 3P: DMH 15038

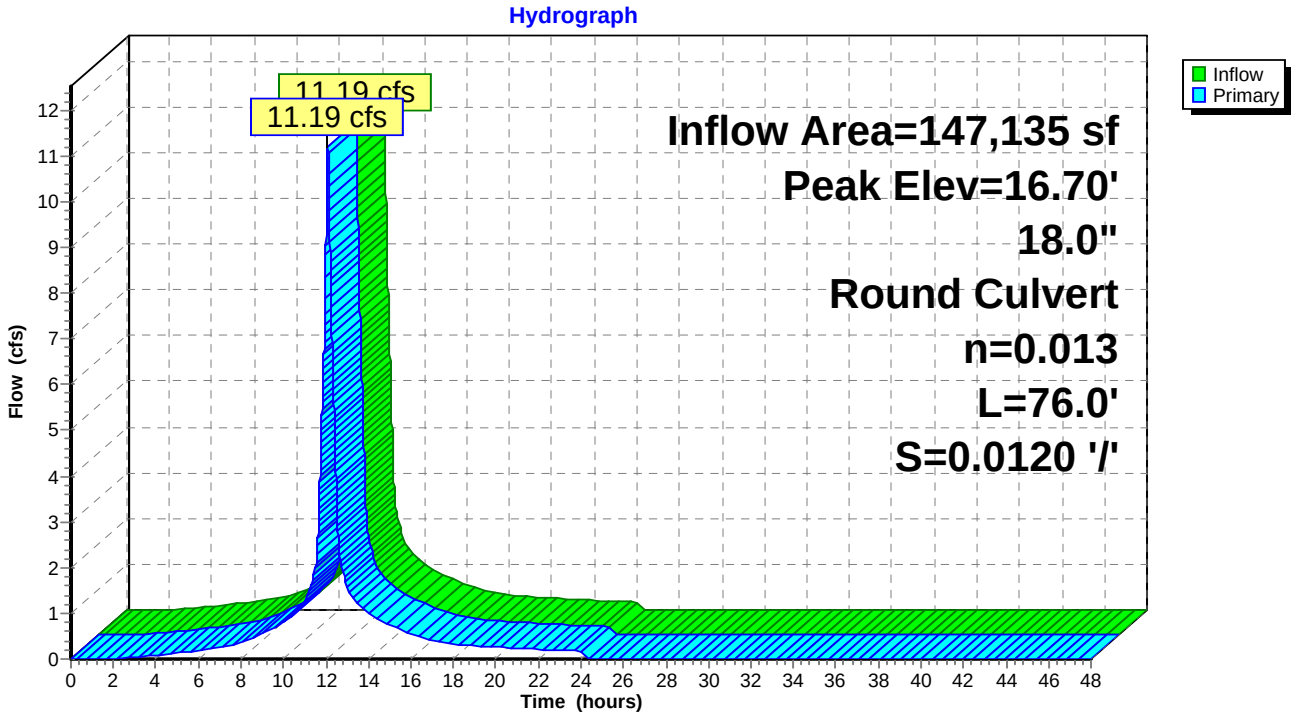
Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Outflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.70' @ 12.09 hrs
Flood Elev= 21.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.81'	**18.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.81' / 12.90' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.18 cfs @ 12.08 hrs HW=16.69' TW=14.89' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 6.32 fps)

Pond 3P: DMH 15038



Summary for Pond 4P: CBR 15036

Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.92" for 25-Year event
Inflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf
Outflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Secondary = 5.05 cfs @ 12.08 hrs, Volume= 2,410 cf

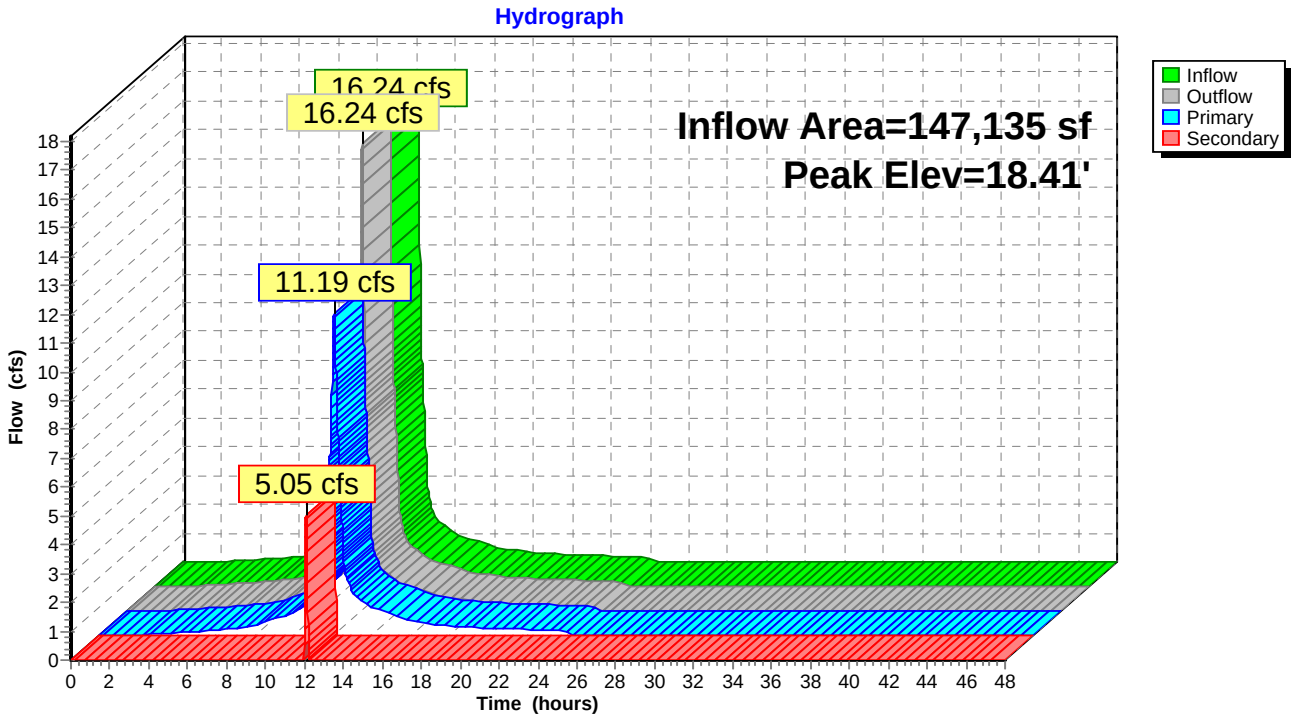
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.41' @ 12.08 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 13.91' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	16.61'	**15.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.61' / 10.60' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=11.14 cfs @ 12.08 hrs HW=18.40' TW=16.69' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 11.14 cfs @ 6.30 fps)

Secondary OutFlow Max=5.03 cfs @ 12.08 hrs HW=18.40' TW=6.80' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 5.03 cfs @ 4.10 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

Inflow Area = 49,032 sf, 82.77% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.08 hrs, Volume= 17,177 cf
Secondary = 2.38 cfs @ 12.08 hrs, Volume= 2,733 cf

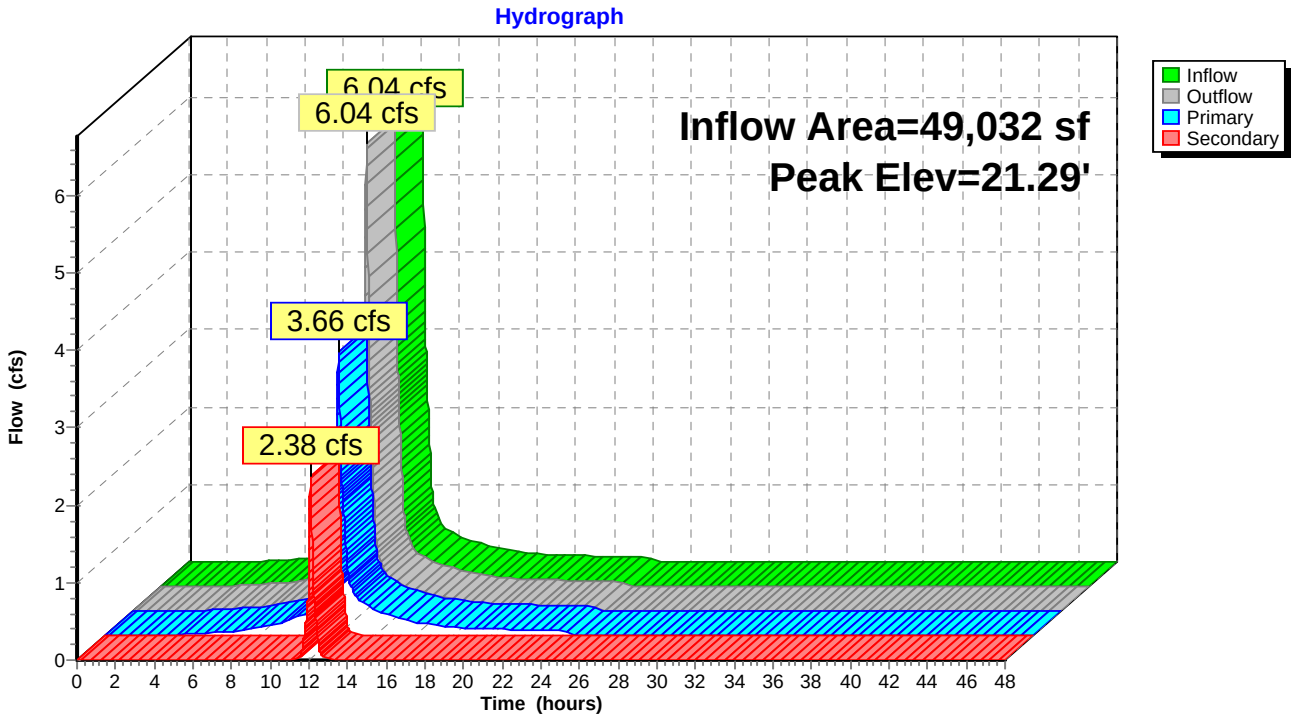
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.29' @ 12.08 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	20.65'	**24.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.65' / 13.39' S= 0.1037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.08 hrs HW=21.29' TW=18.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.66 cfs @ 3.25 fps)

Secondary OutFlow Max=2.37 cfs @ 12.08 hrs HW=21.29' TW=6.80' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.37 cfs @ 2.73 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

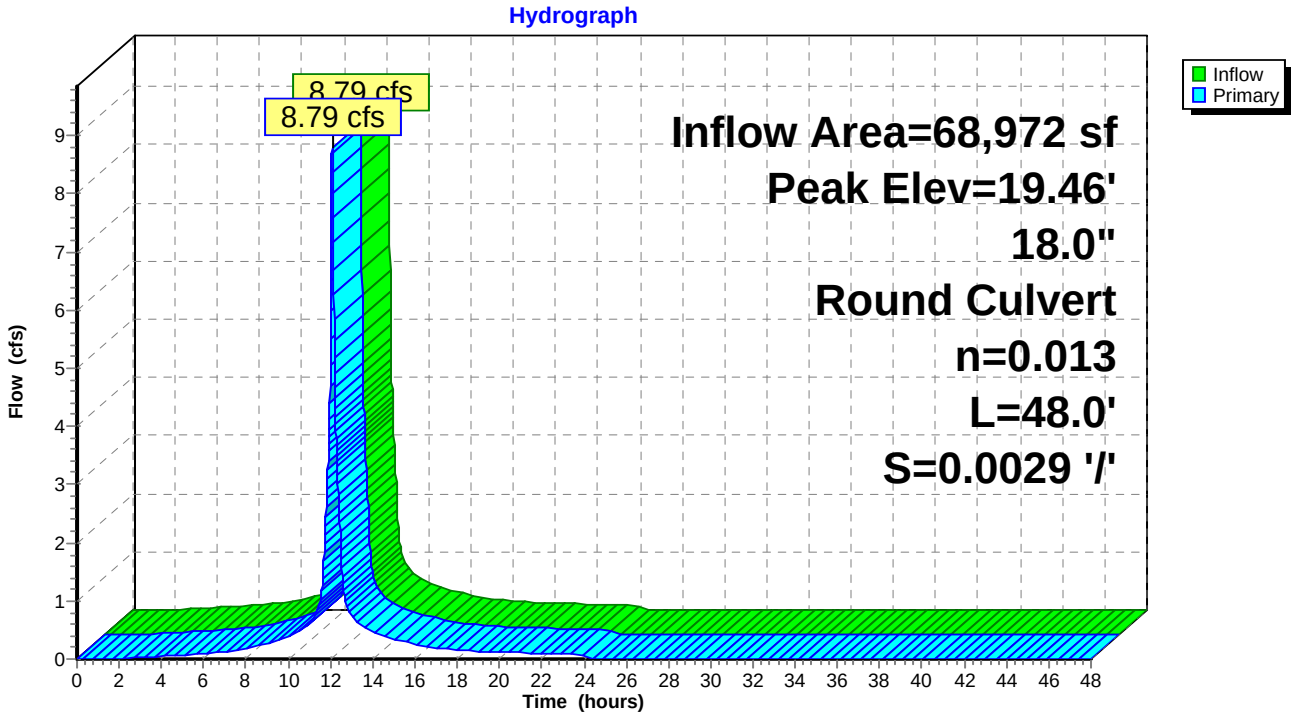
Inflow Area = 68,972 sf, 91.97% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.46' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.71 cfs @ 12.08 hrs HW=19.45' TW=18.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.71 cfs @ 4.93 fps)

Pond 6P: CBR 15040



Summary for Pond 7P: CB 15029

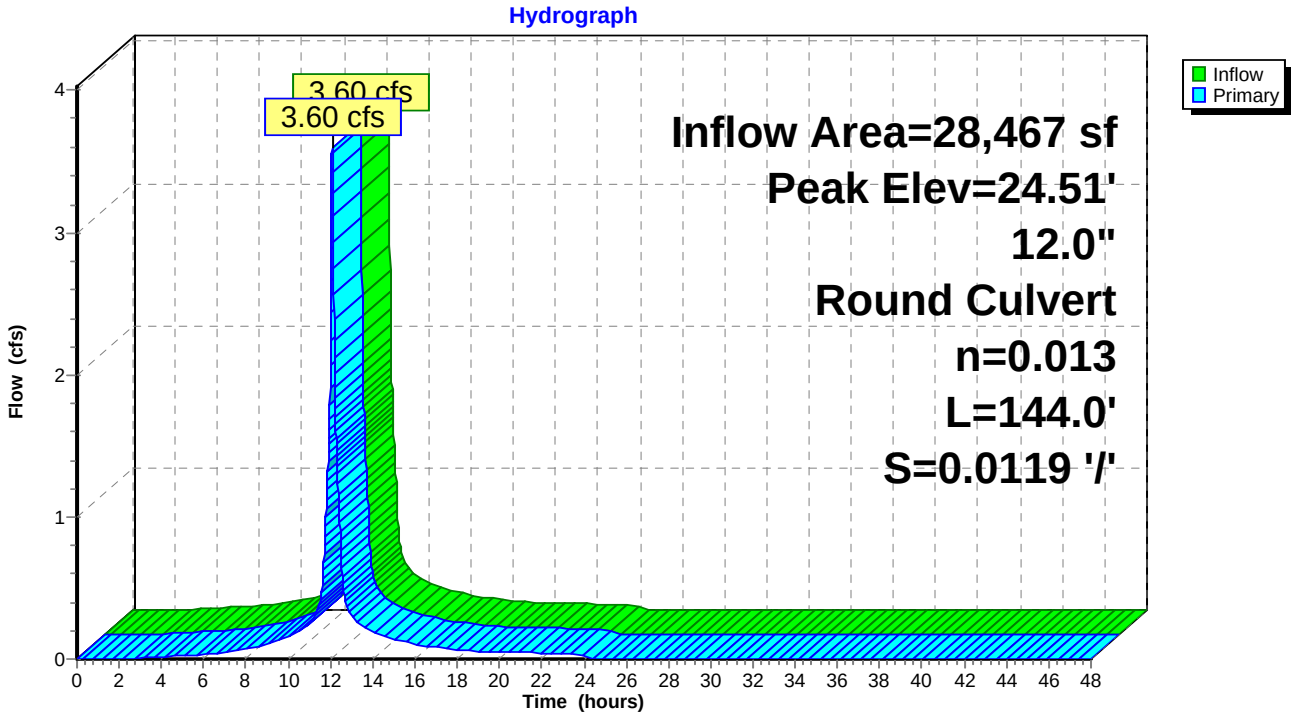
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.51' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.11'	**12.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.11' / 21.40' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.59 cfs @ 12.08 hrs HW=24.51' TW=20.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.59 cfs @ 4.57 fps)

Pond 7P: CB 15029



Summary for Pond 8P: CBR 15042

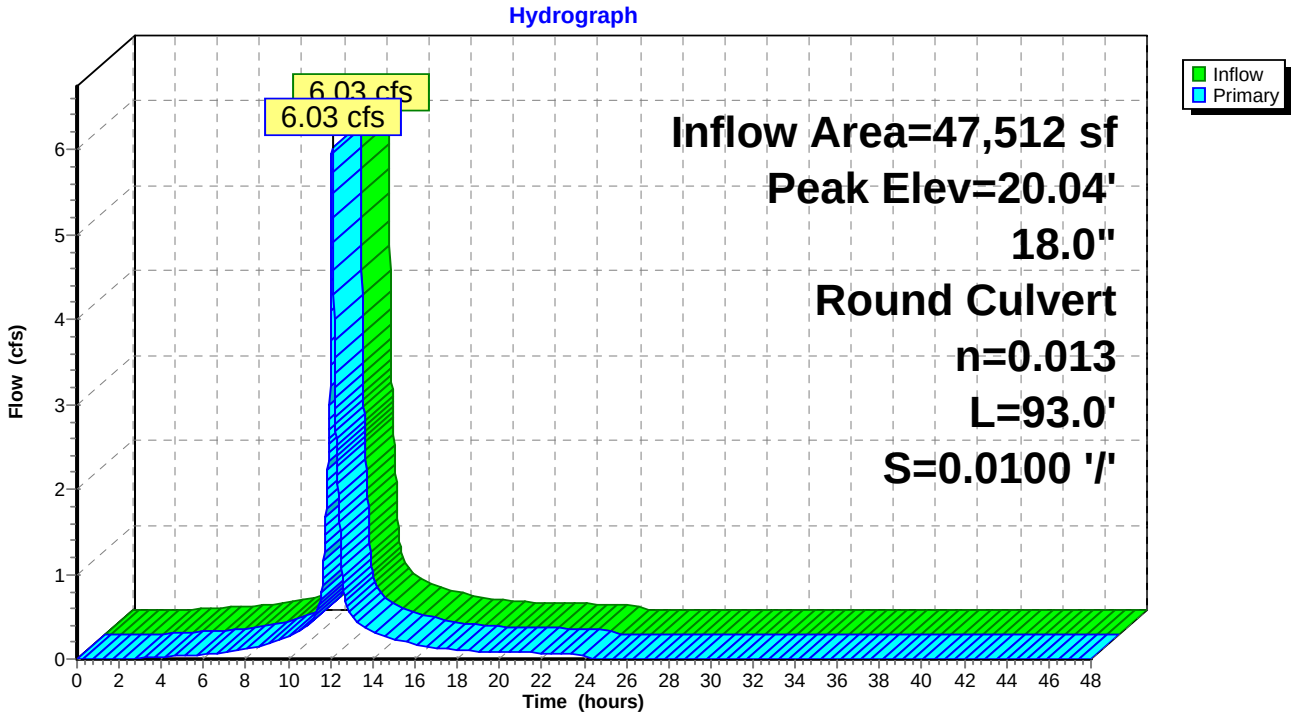
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.04' @ 12.09 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.94 cfs @ 12.08 hrs HW=20.01' TW=19.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.94 cfs @ 3.36 fps)

Pond 8P: CBR 15042



Summary for Pond 9P: DMH 10162

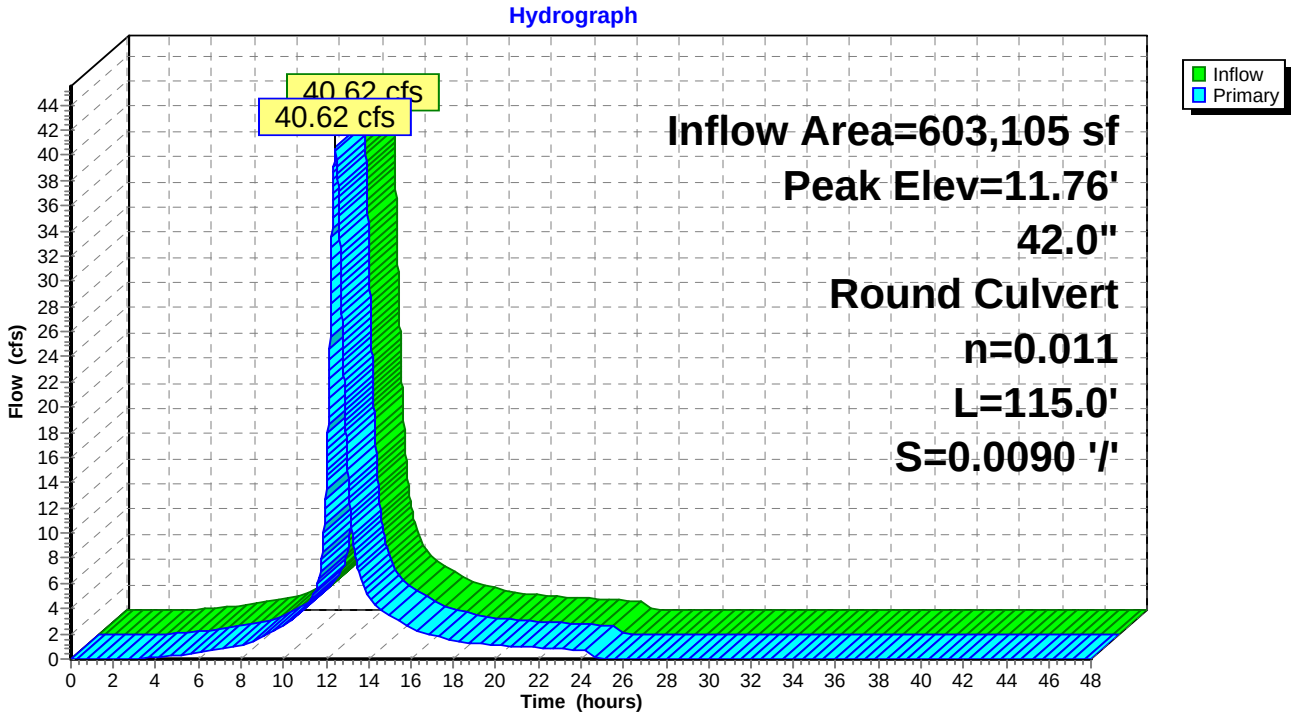
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.76' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 115.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.15' S= 0.0090 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=11.76' TW=7.36' (Dynamic Tailwater)
1=Culvert (Barrel Controls 40.61 cfs @ 7.44 fps)

Pond 9P: DMH 10162



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,351 sf, 76.79% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 62.32 cfs @ 12.10 hrs, Volume= 395,740 cf
Outflow = 38.30 cfs @ 12.68 hrs, Volume= 395,744 cf, Atten= 39%, Lag= 34.8 min
Primary = 27.79 cfs @ 12.68 hrs, Volume= 368,997 cf
Secondary = 10.51 cfs @ 12.68 hrs, Volume= 26,748 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.46' @ 12.68 hrs Surf.Area= 81,430 sf Storage= 75,208 cf
Flood Elev= 9.00' Surf.Area= 86,688 sf Storage= 120,546 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.7 min (820.6 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	120,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

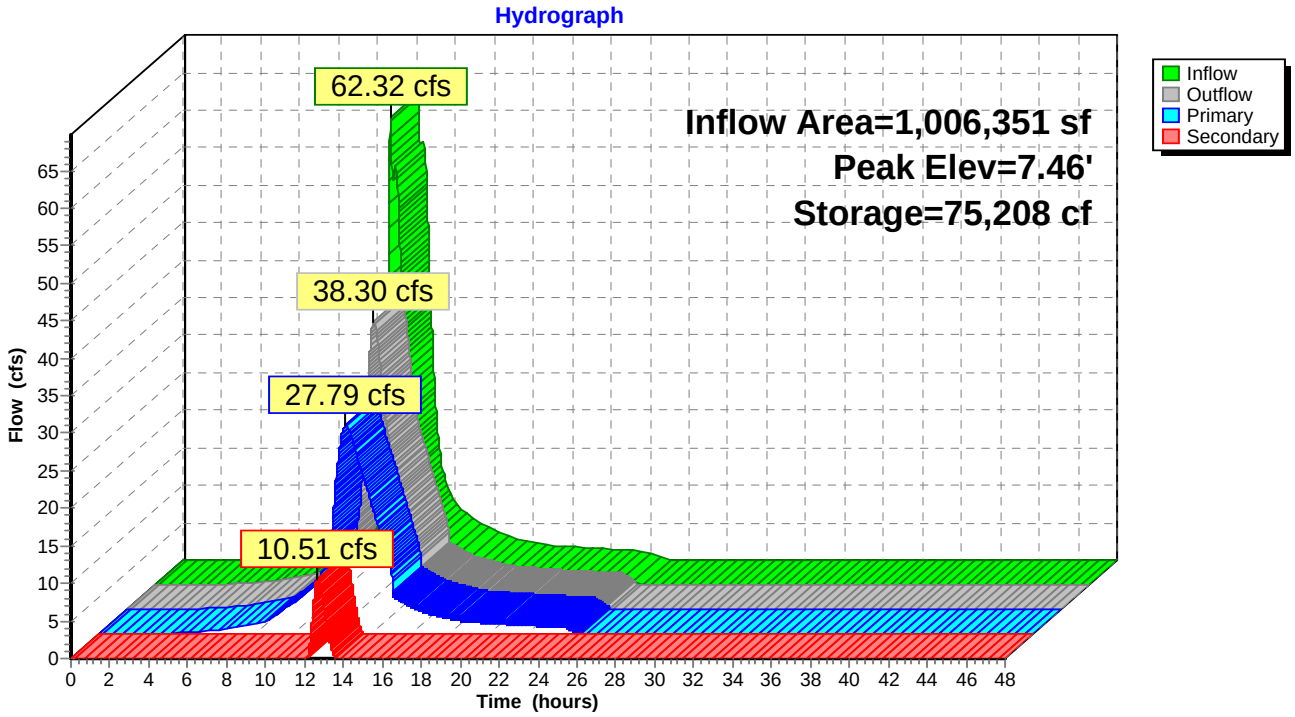
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	523	0	0
7.00	76,940	38,732	38,732
8.00	86,688	81,814	120,546

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=27.79 cfs @ 12.68 hrs HW=7.46' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.79 cfs @ 4.31 fps)

Secondary OutFlow Max=10.51 cfs @ 12.68 hrs HW=7.46' TW=6.45' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 10.51 cfs @ 1.75 fps)

Pond EX WTLND: Existing Wetland

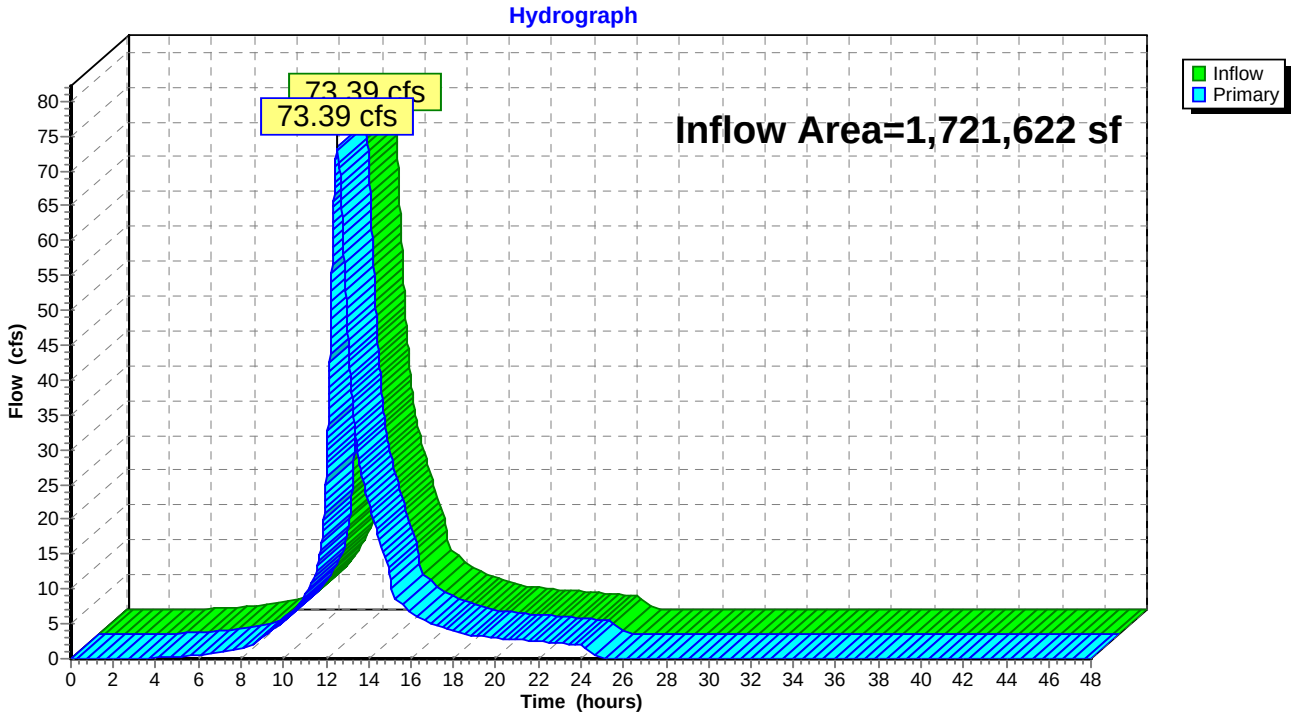


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,622 sf, 66.81% Impervious, Inflow Depth = 4.29" for 25-Year event
Inflow = 73.39 cfs @ 12.53 hrs, Volume= 615,685 cf
Primary = 73.39 cfs @ 12.53 hrs, Volume= 615,685 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

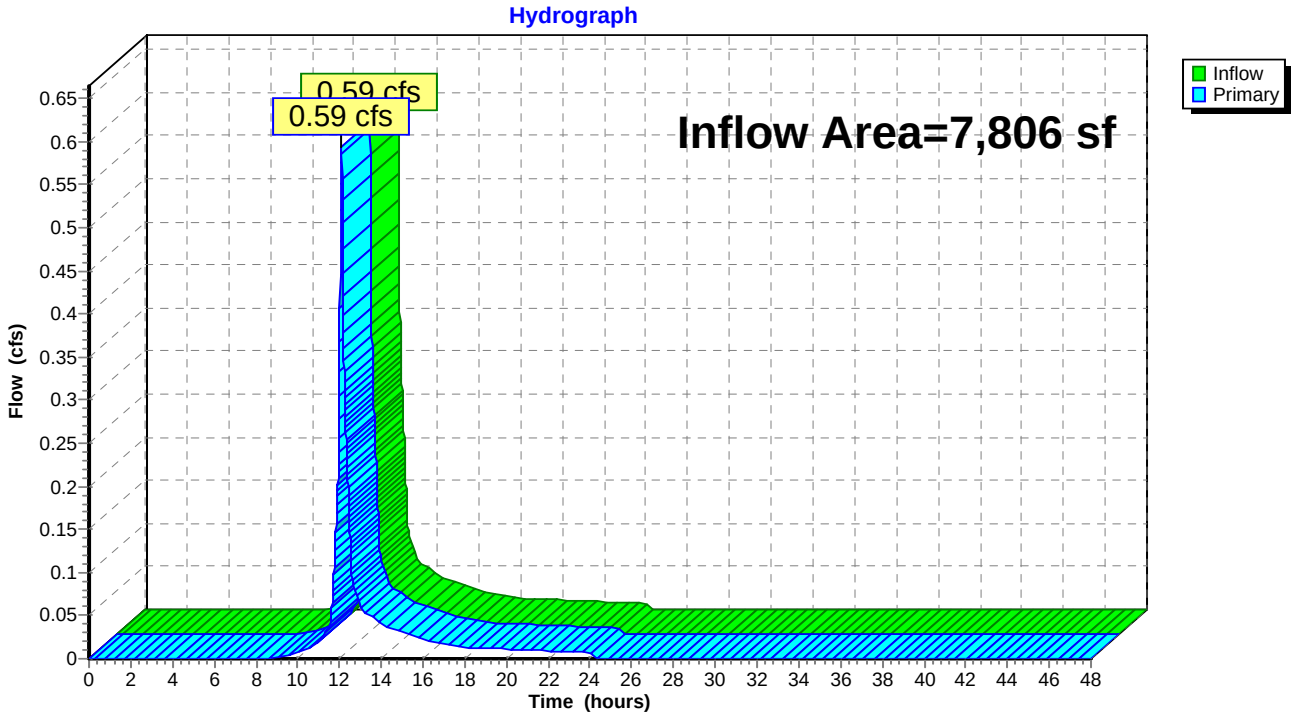


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

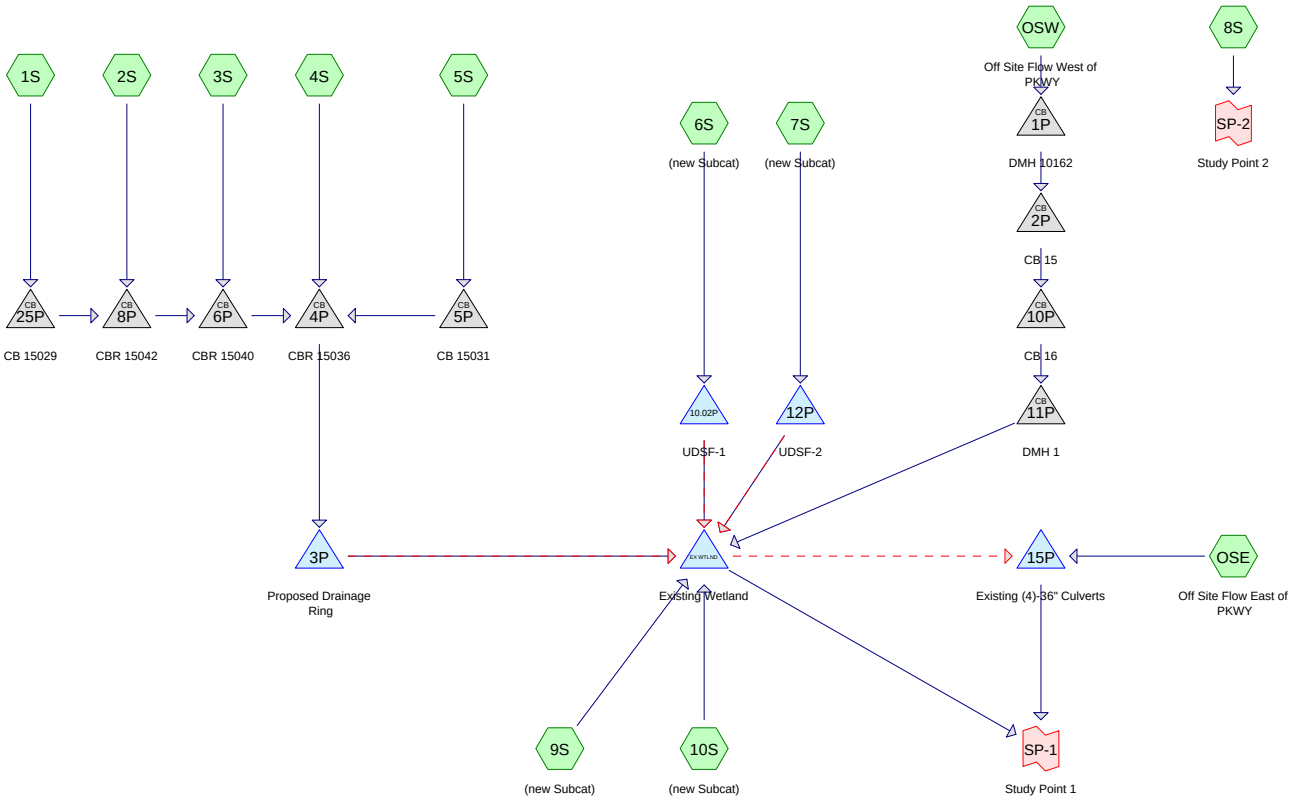
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment C

Preload-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Preload
Prepared by Sebago Techincs, Printed 9/13/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
399,539	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S, OSE)
60,585	80	>75% Grass cover, Good, HSG D (9S)
21,406	96	Gravel surface, HSG B (6S, 7S)
104,657	96	Gravel surface, HSG D (6S, 7S)
591,443	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 10S, OSE, OSW)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 9S, 10S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
1,729,428	**87**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S, 9S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.44 cfs 4,788 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.08 cfs 7,029 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.93 cfs 9,276 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=231' Tc=6.1 min CN=96 Runoff=3.68 cfs 12,252 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=2.55"
Flow Length=439' Tc=6.0 min CN=95 Runoff=4.76 cfs 15,564 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.24 cfs 7,365 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: DMH 10162 Peak Elev=11.28' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=19.88 cfs 118,098 cf

Pond 2P: CB 15 Peak Elev=10.58' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 3P: Proposed Drainage Ring Peak Elev=15.80' Storage=4,125 cf Inflow=9.49 cfs 30,941 cf
Outflow=6.96 cfs 30,918 cf

Pond 4P: CBR 15036 Peak Elev=17.30' Inflow=9.49 cfs 30,941 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=9.49 cfs 30,941 cf

Pond 5P: CB 15031 Peak Elev=21.18' Inflow=2.93 cfs 9,276 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.93 cfs 9,276 cf

Pond 6P: CBR 15040 Peak Elev=17.51' Inflow=4.48 cfs 14,635 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.48 cfs 14,635 cf

Pond 8P: CBR 15042 Peak Elev=17.81' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 10.02P: UDSF-1 Peak Elev=14.33' Storage=4,875 cf Inflow=3.68 cfs 12,252 cf
Primary=0.33 cfs 12,252 cf Secondary=0.00 cfs 0 cf Outflow=0.33 cfs 12,252 cf

Pond 10P: CB 16 Peak Elev=9.65' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 11P: DMH 1 Peak Elev=8.19' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 12P: UDSF-2 Peak Elev=14.28' Storage=6,293 cf Inflow=4.76 cfs 15,564 cf
Primary=0.44 cfs 15,564 cf Secondary=0.00 cfs 0 cf Outflow=0.44 cfs 15,564 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=5.85' Storage=2,144 cf Inflow=16.55 cfs 85,129 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=16.52 cfs 84,412 cf

Pond 25P: CB 15029 Peak Elev=23.55' Inflow=1.80 cfs 5,805 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.80 cfs 5,805 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.17' Storage=2,866 cf Inflow=25.82 cfs 189,669 cf
Primary=23.22 cfs 187,440 cf Secondary=2.19 cfs 2,228 cf Outflow=25.41 cfs 189,668 cf

Link SP-1: Study Point 1 Inflow=39.59 cfs 271,852 cf
Primary=39.59 cfs 271,852 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 273,157 cf Average Runoff Depth = 1.90"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.20 cfs 7,470 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.13 cfs 10,830 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.69 cfs 15,212 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=4.14"
Flow Length=231' Tc=6.1 min CN=96 Runoff=5.60 cfs 19,114 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=4.02"
Flow Length=439' Tc=6.0 min CN=95 Runoff=7.33 cfs 24,587 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.97 cfs 15,526 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: DMH 10162 Peak Elev=12.09' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=31.45 cfs 191,269 cf

Pond 2P: CB 15 Peak Elev=11.36' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 3P: Proposed Drainage Ring Peak Elev=17.06' Storage=6,526 cf Inflow=14.72 cfs 49,183 cf
Outflow=8.77 cfs 49,161 cf

Pond 4P: CBR 15036 Peak Elev=20.53' Inflow=14.72 cfs 49,183 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=14.72 cfs 49,183 cf

Pond 5P: CB 15031 Peak Elev=21.56' Inflow=4.69 cfs 15,212 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.69 cfs 15,212 cf

Pond 6P: CBR 15040 Peak Elev=21.05' Inflow=6.90 cfs 23,140 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.90 cfs 23,140 cf

Pond 8P: CBR 15042 Peak Elev=21.49' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 10.02P: UDSF-1 Peak Elev=15.11' Storage=7,896 cf Inflow=5.60 cfs 19,114 cf
Primary=0.77 cfs 19,114 cf Secondary=0.00 cfs 0 cf Outflow=0.77 cfs 19,114 cf

Pond 10P: CB 16 Peak Elev=10.35' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 11P: DMH 1 Peak Elev=8.81' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 12P: UDSF-2 Peak Elev=15.10' Storage=10,450 cf Inflow=7.33 cfs 24,587 cf
Primary=0.82 cfs 24,587 cf Secondary=0.00 cfs 0 cf Outflow=0.82 cfs 24,587 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=6.46' Storage=3,344 cf Inflow=41.14 cfs 179,687 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=41.05 cfs 178,970 cf

Pond 25P: CB 15029 Peak Elev=23.79' Inflow=2.80 cfs 9,284 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.80 cfs 9,284 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.53' Storage=4,490 cf Inflow=42.18 cfs 309,094 cf
Primary=28.79 cfs 286,450 cf Secondary=13.29 cfs 22,641 cf Outflow=42.08 cfs 309,091 cf

Link SP-1: Study Point 1 Inflow=69.82 cfs 465,421 cf
Primary=69.82 cfs 465,421 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 467,396 cf Average Runoff Depth = 3.24"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.79 cfs 9,626 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.97 cfs 13,879 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.08 cfs 20,039 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=5.33"
Flow Length=231' Tc=6.1 min CN=96 Runoff=7.12 cfs 24,629 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=5.21"
Flow Length=439' Tc=6.0 min CN=95 Runoff=9.36 cfs 31,855 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.38 cfs 22,858 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: DMH 10162 Peak Elev=12.88' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=40.62 cfs 250,553 cf

Pond 2P: CB 15 Peak Elev=12.12' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 3P: Proposed Drainage Ring Peak Elev=18.30' Storage=8,898 cf Inflow=18.87 cfs 63,912 cf
Outflow=10.20 cfs 63,890 cf

Pond 4P: CBR 15036 Peak Elev=24.00' Inflow=18.87 cfs 63,912 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=18.87 cfs 63,912 cf

Pond 5P: CB 15031 Peak Elev=24.60' Inflow=6.08 cfs 20,039 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.08 cfs 20,039 cf

Pond 6P: CBR 15040 Peak Elev=24.88' Inflow=8.82 cfs 29,994 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.82 cfs 29,994 cf

Pond 8P: CBR 15042 Peak Elev=25.58' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 10.02P: UDSF-1 Peak Elev=15.33' Storage=8,871 cf Inflow=7.12 cfs 24,629 cf
Primary=2.37 cfs 24,629 cf Secondary=0.00 cfs 0 cf Outflow=2.37 cfs 24,629 cf

Pond 10P: CB 16 Peak Elev=10.88' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 11P: DMH 1 Peak Elev=9.26' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 12P: UDSF-2 Peak Elev=15.37' Storage=11,917 cf Inflow=9.36 cfs 31,855 cf
Primary=2.79 cfs 31,855 cf Secondary=0.00 cfs 0 cf Outflow=2.79 cfs 31,855 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=6.93' Storage=4,651 cf Inflow=64.62 cfs 271,093 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=64.48 cfs 270,376 cf

Pond 25P: CB 15029 Peak Elev=26.12' Inflow=3.60 cfs 12,095 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.60 cfs 12,095 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.82' Storage=6,007 cf Inflow=58.21 cfs 406,501 cf
Primary=32.28 cfs 356,060 cf Secondary=25.64 cfs 50,435 cf Outflow=57.93 cfs 406,496 cf

Link SP-1: Study Point 1 Inflow=96.74 cfs 626,436 cf
Primary=96.74 cfs 626,436 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 629,022 cf Average Runoff Depth = 4.36"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Summary for Subcatchment 1S:

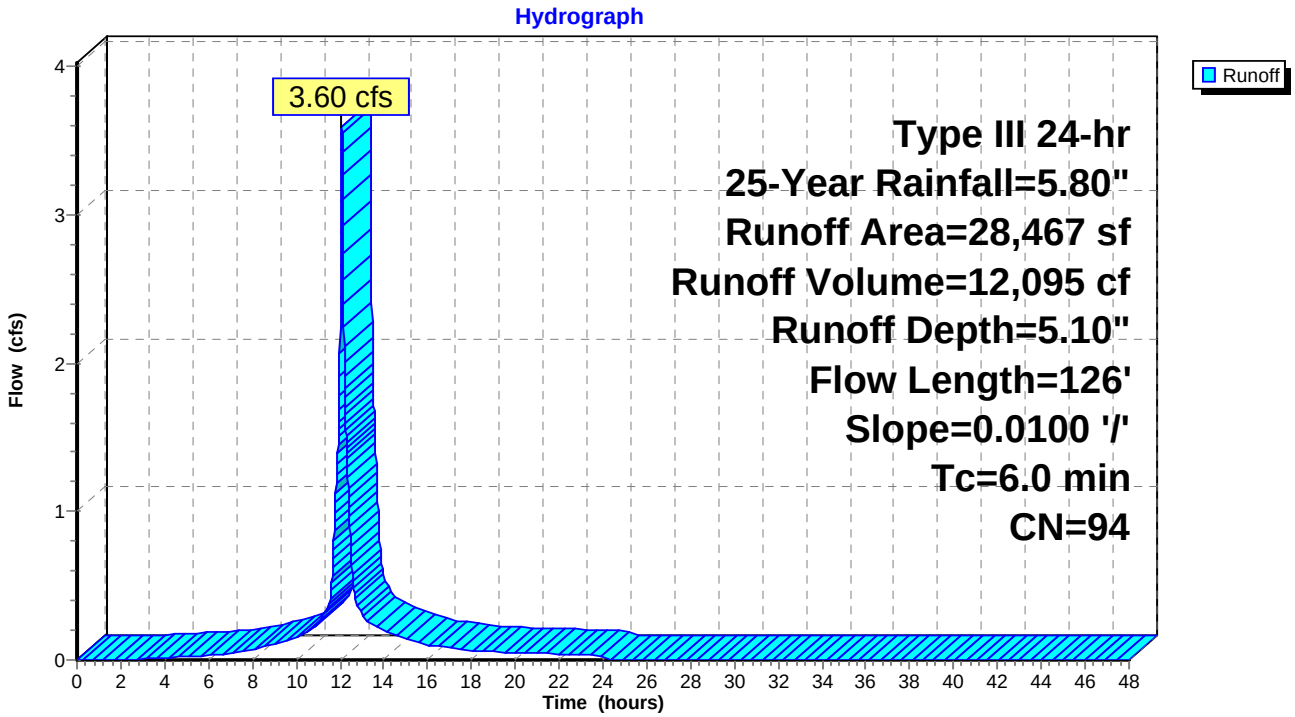
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

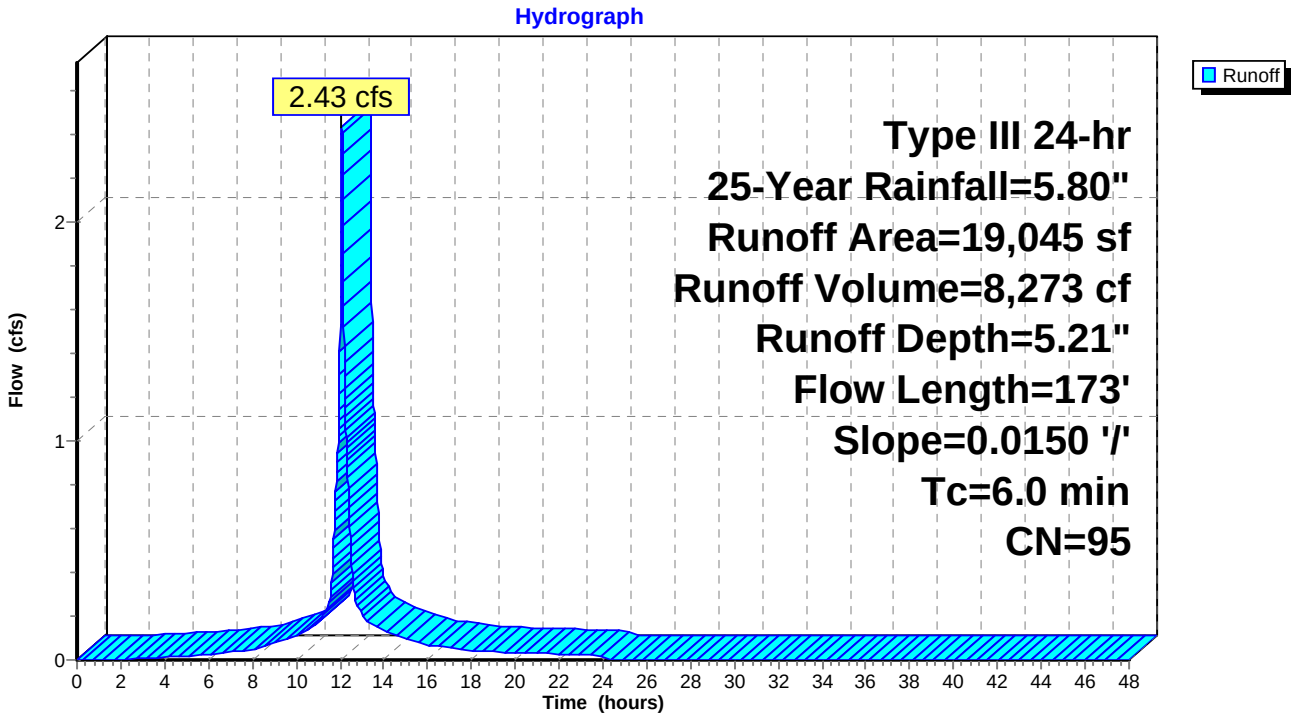
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

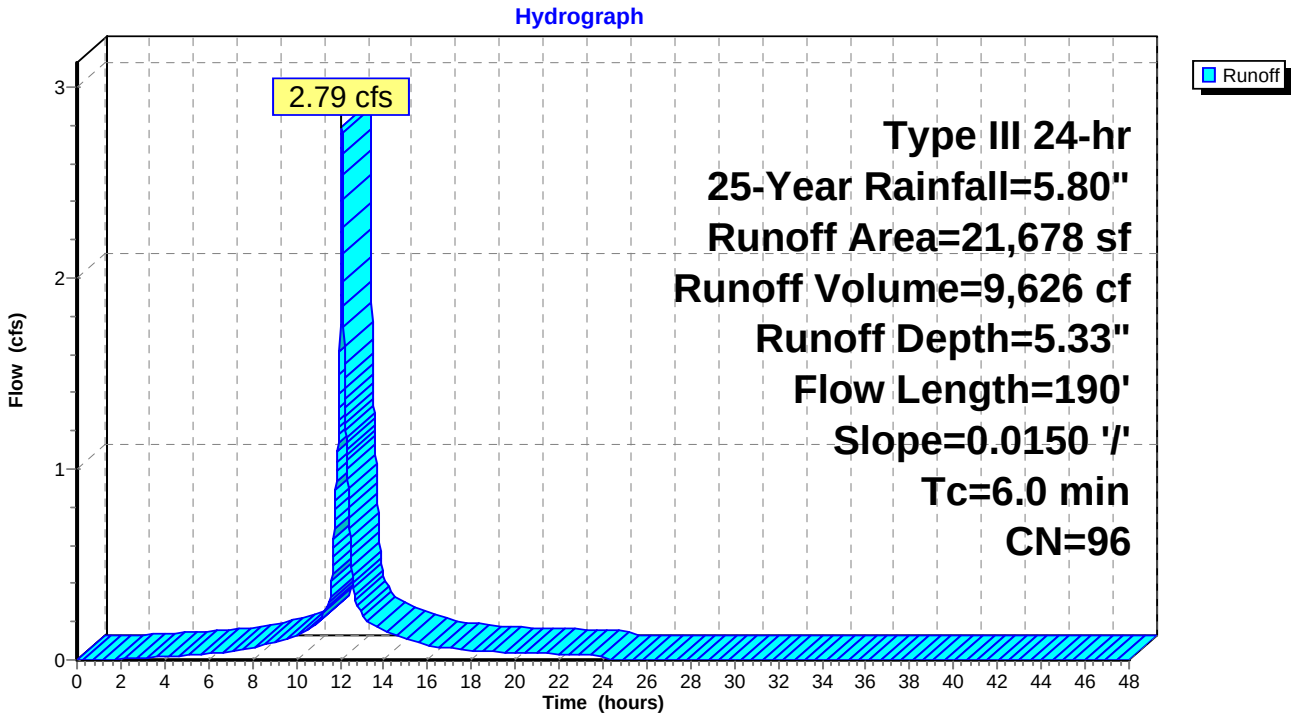
Runoff = 2.79 cfs @ 12.08 hrs, Volume= 9,626 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
324	98	Roofs, HSG B
20,004	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,678	96	Weighted Average
1,350		6.23% Pervious Area
20,328		93.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

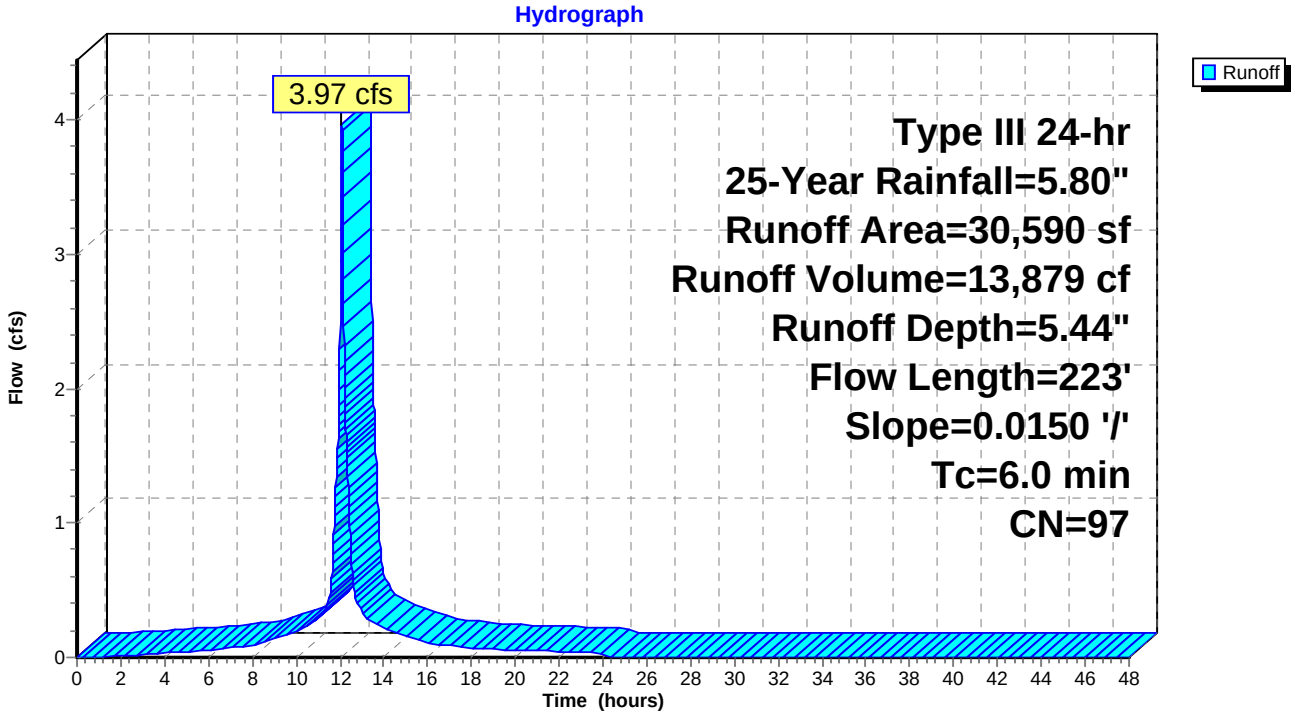
Runoff = 3.97 cfs @ 12.08 hrs, Volume= 13,879 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
29,610	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
30,590	97	Weighted Average
980		3.20% Pervious Area
29,610		96.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

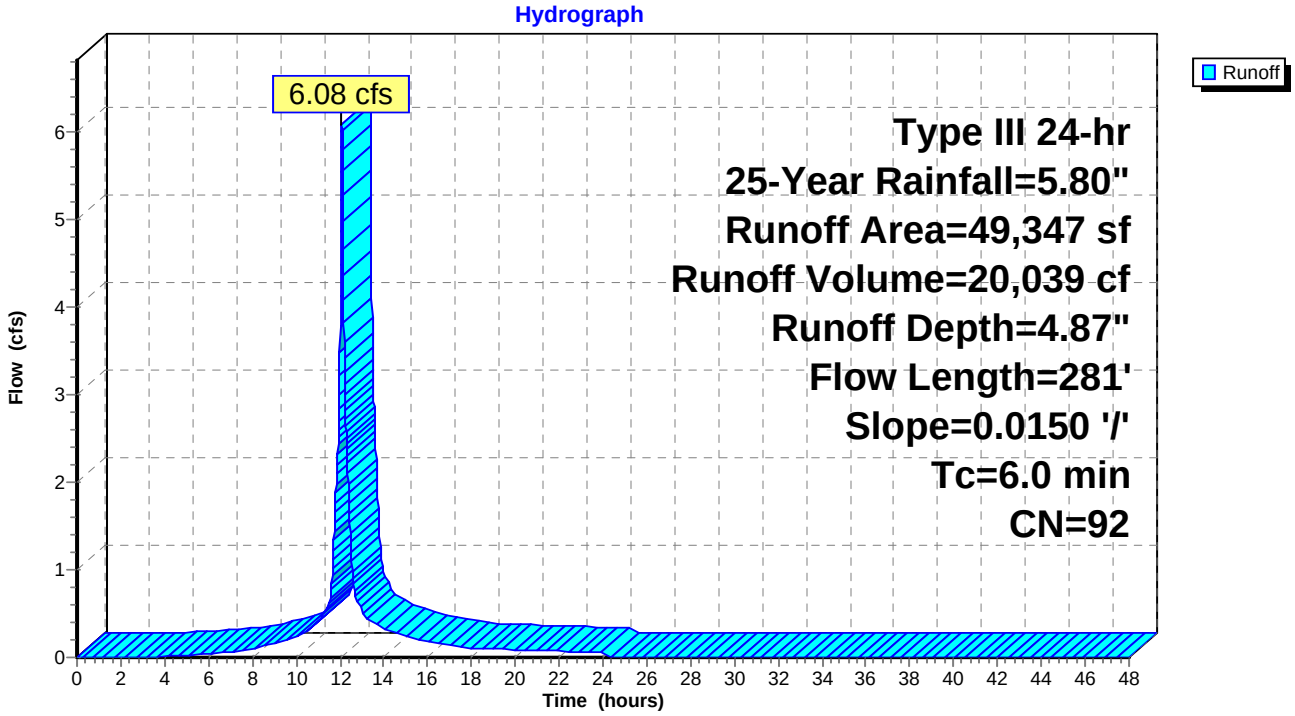
Runoff = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,901	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,347	92	Weighted Average
8,446		17.12% Pervious Area
40,901		82.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S:



Summary for Subcatchment 6S: (new Subcat)

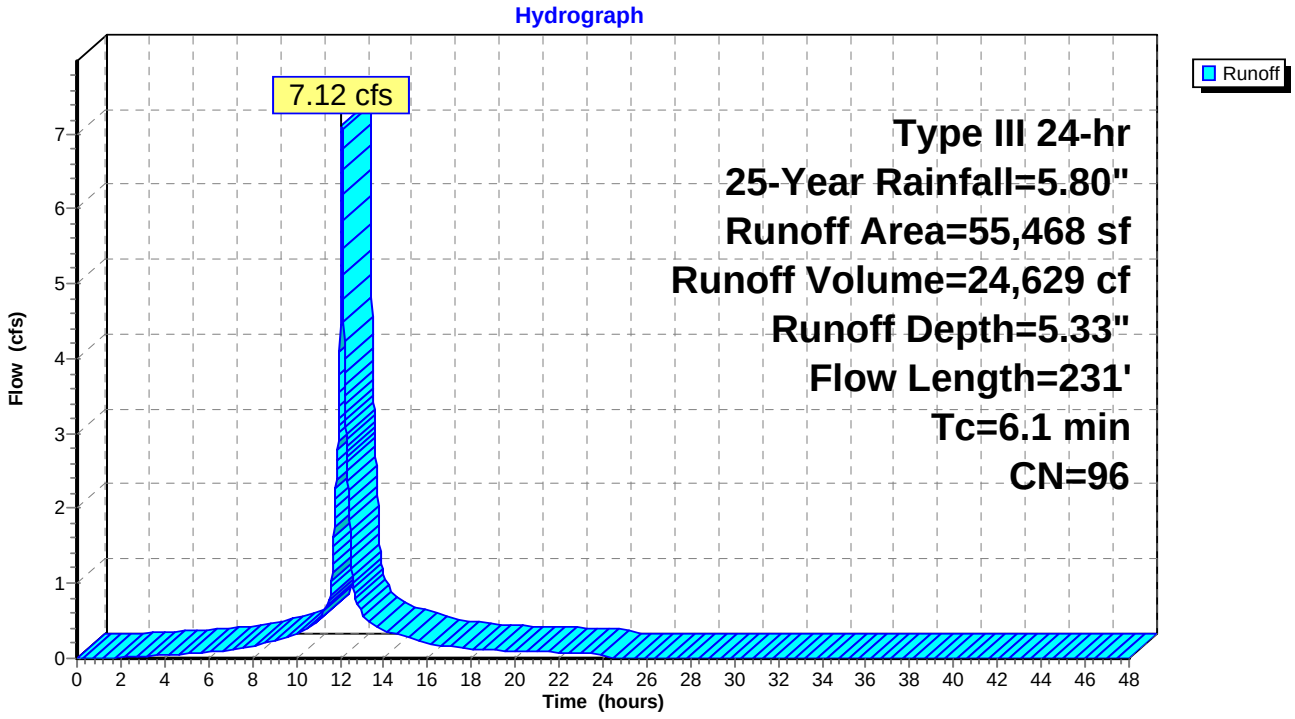
Runoff = 7.12 cfs @ 12.08 hrs, Volume= 24,629 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
7,858	96	Gravel surface, HSG B
47,610	96	Gravel surface, HSG D
55,468	96	Weighted Average
55,468		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

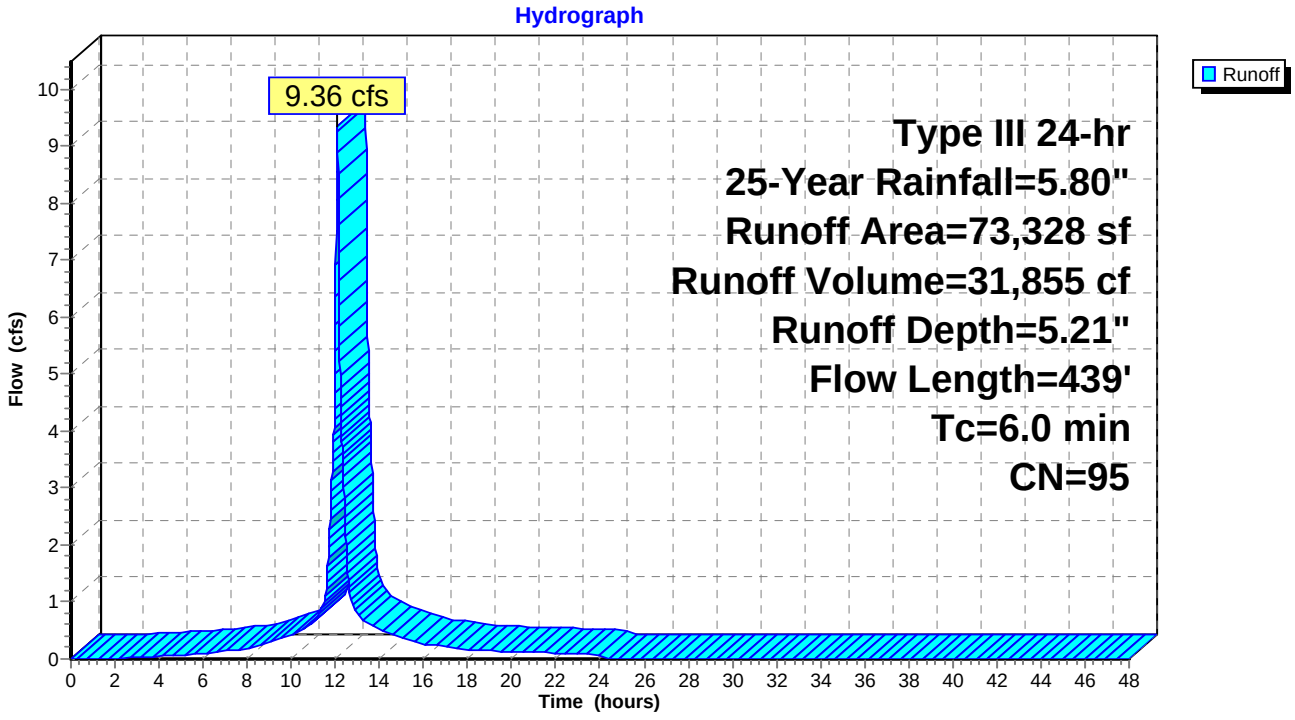
Runoff = 9.36 cfs @ 12.08 hrs, Volume= 31,855 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
13,548	96	Gravel surface, HSG B
57,047	96	Gravel surface, HSG D
2,733	61	>75% Grass cover, Good, HSG B
73,328	95	Weighted Average
73,328		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	265	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	74	0.0260	4.66	8.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 3.0 '/' Top.W=5.00' n= 0.025 Earth, clean & winding
2.6					**Direct Entry,**
6.0	439	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S:

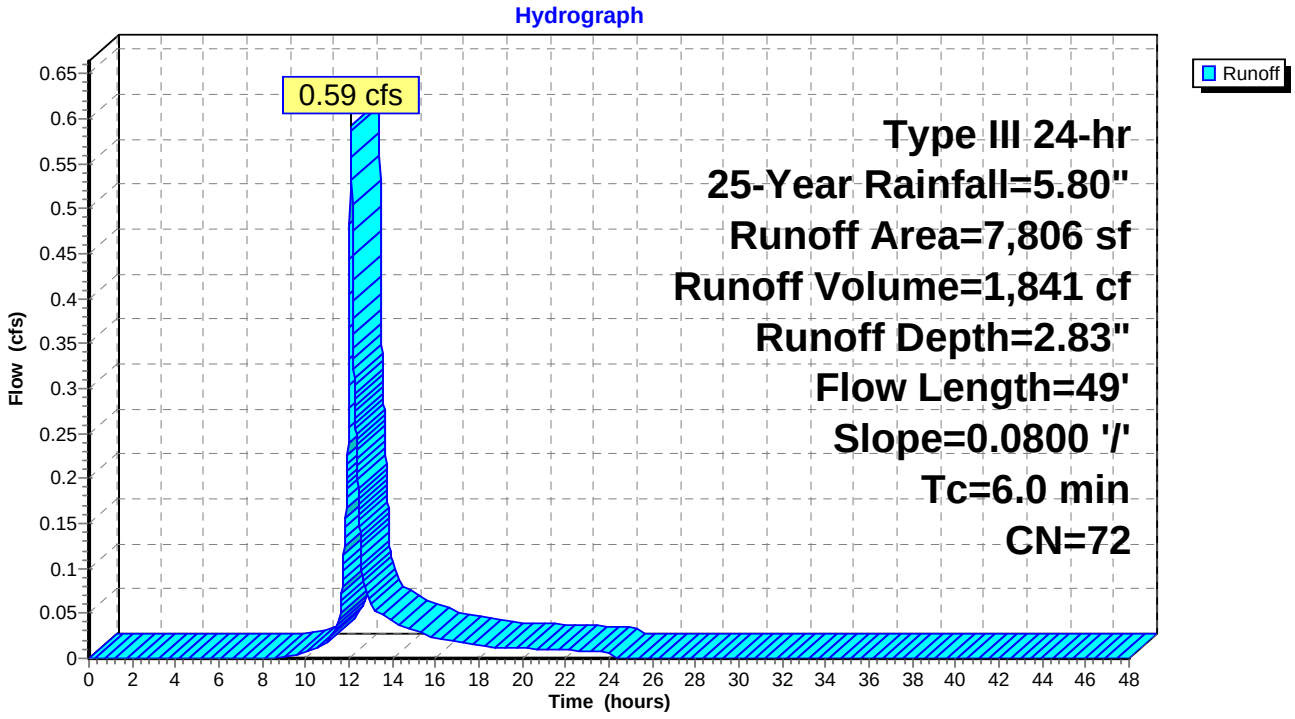
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S:



Summary for Subcatchment 9S: (new Subcat)

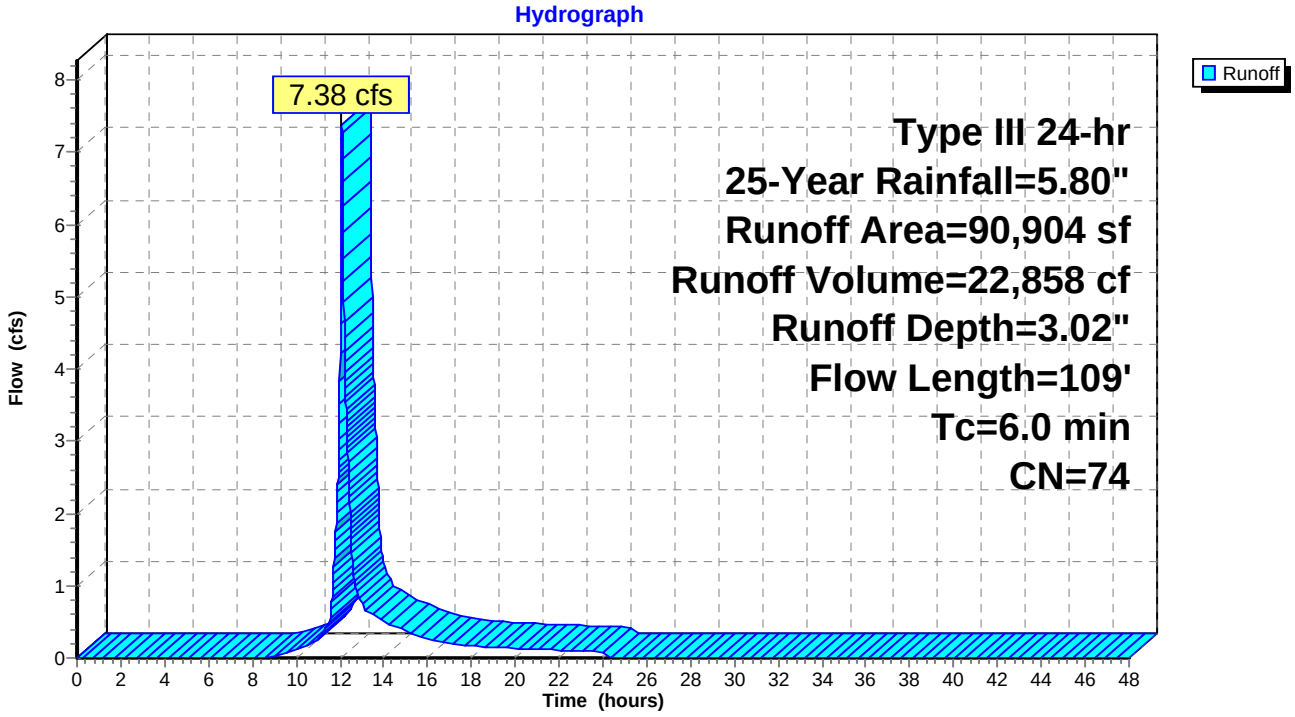
Runoff = 7.38 cfs @ 12.09 hrs, Volume= 22,858 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,585	80	>75% Grass cover, Good, HSG D
90,904	74	Weighted Average
90,012		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

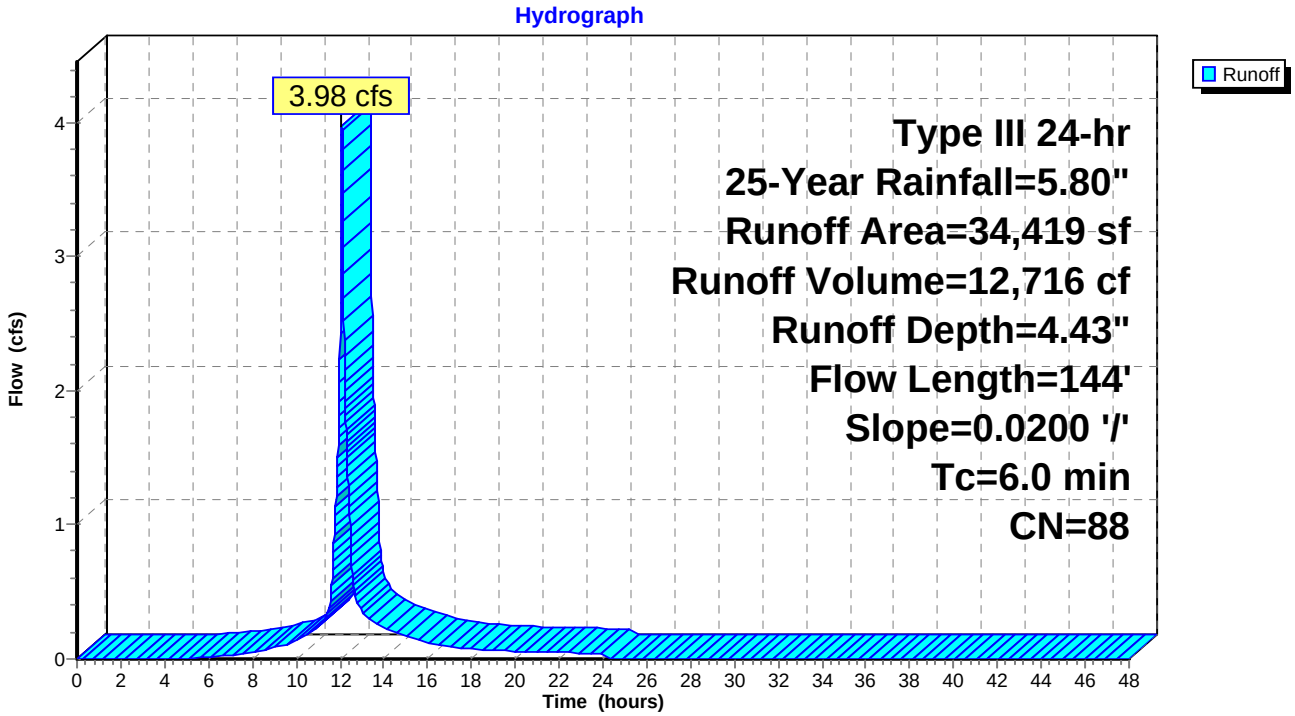
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment OSE: Off Site Flow East of PKWY

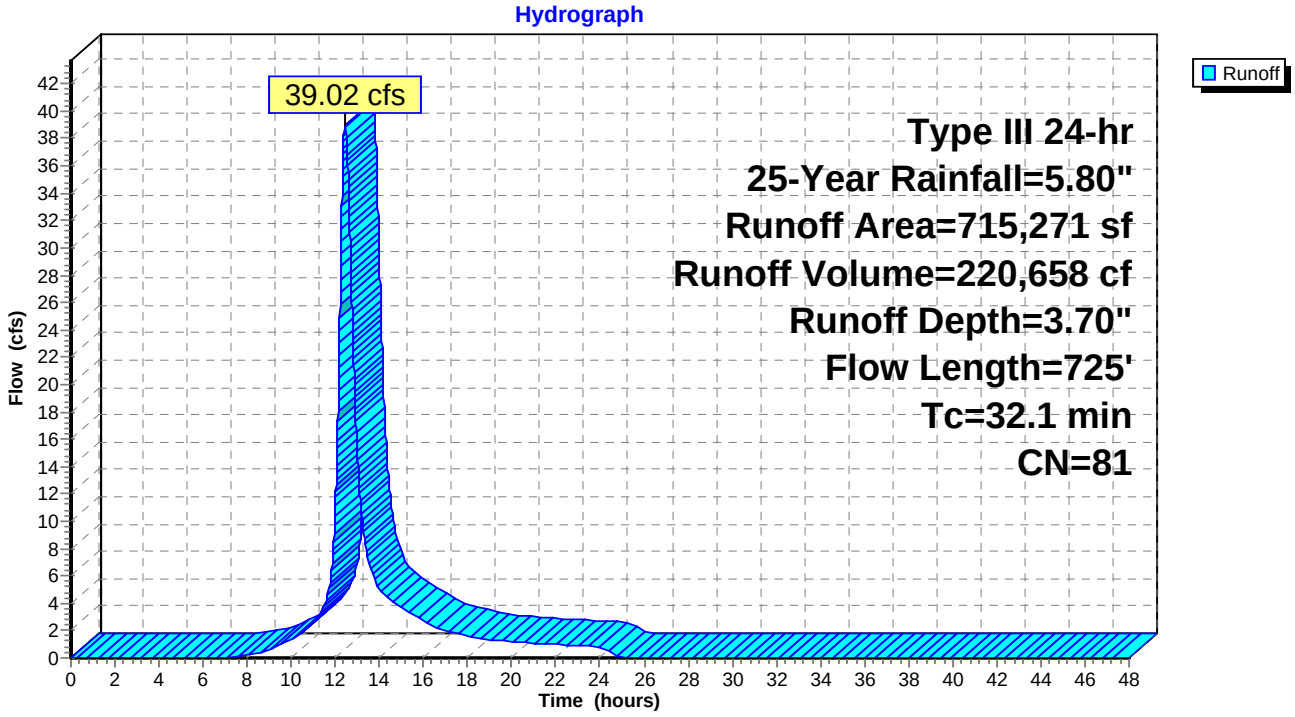
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

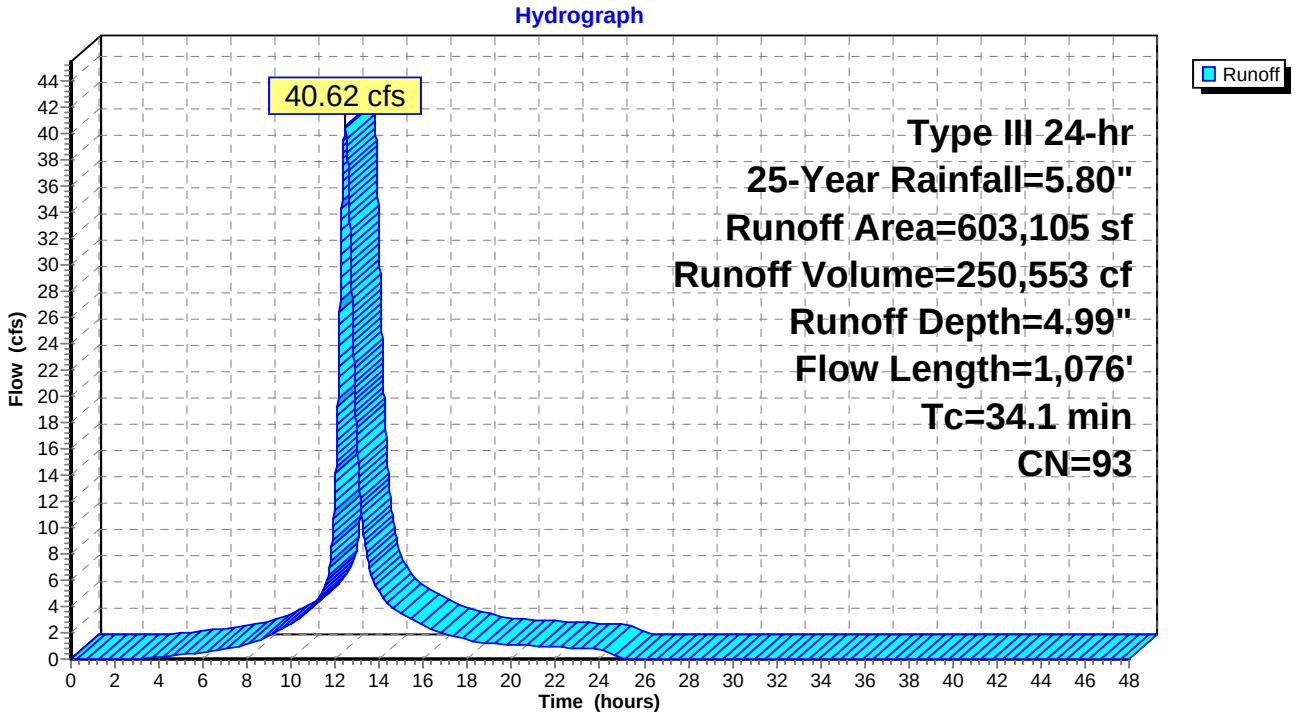
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: DMH 10162

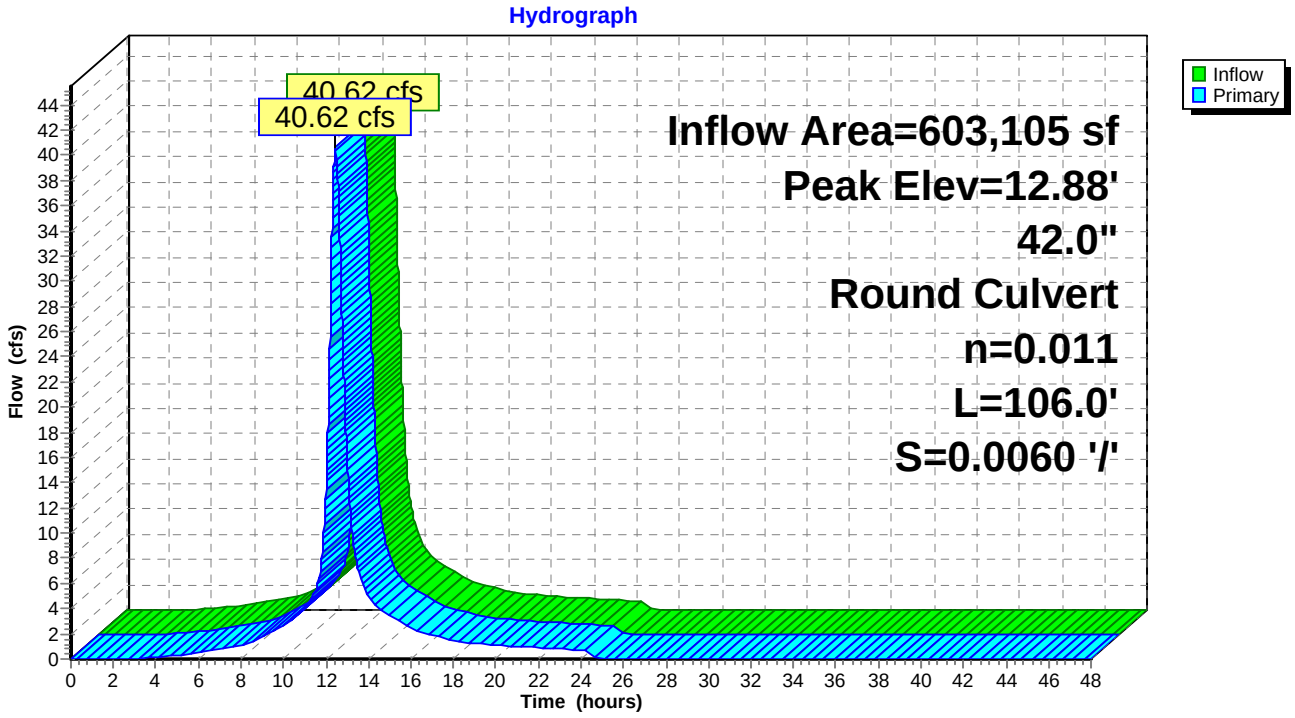
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.88' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 106.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0060 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.57 cfs @ 12.46 hrs HW=12.88' TW=12.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.57 cfs @ 4.22 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB 15

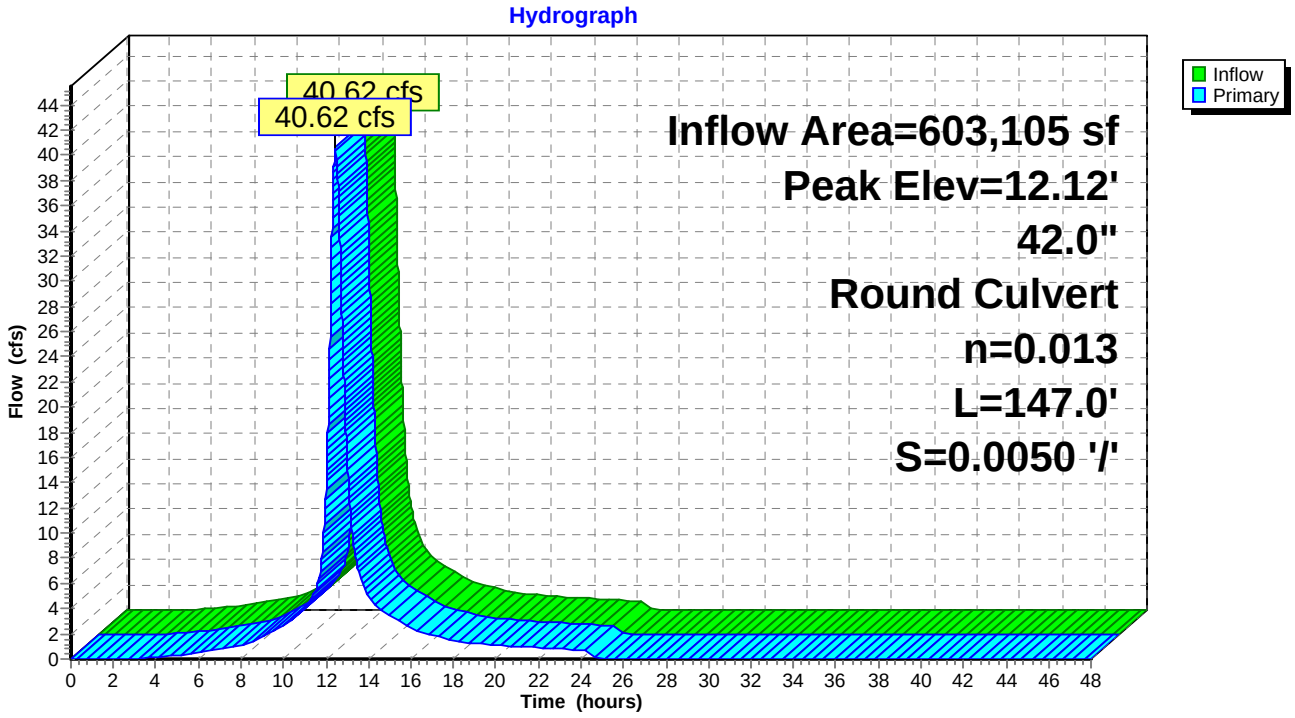
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.12' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**42.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.60 cfs @ 12.46 hrs HW=12.12' TW=10.88' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.60 cfs @ 4.22 fps)

Pond 2P: CB 15



Summary for Pond 3P: Proposed Drainage Ring

Inflow Area = 149,127 sf, 89.96% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf
Outflow = 10.20 cfs @ 12.21 hrs, Volume= 63,890 cf, Atten= 46%, Lag= 7.4 min
Primary = 10.20 cfs @ 12.21 hrs, Volume= 63,890 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.30' @ 12.21 hrs Surf.Area= 4,707 sf Storage= 8,898 cf
Flood Elev= 24.50' Surf.Area= 4,707 sf Storage= 17,821 cf

Plug-Flow detention time= 21.8 min calculated for 63,890 cf (100% of inflow)
Center-of-Mass det. time= 21.5 min (787.9 - 766.3)

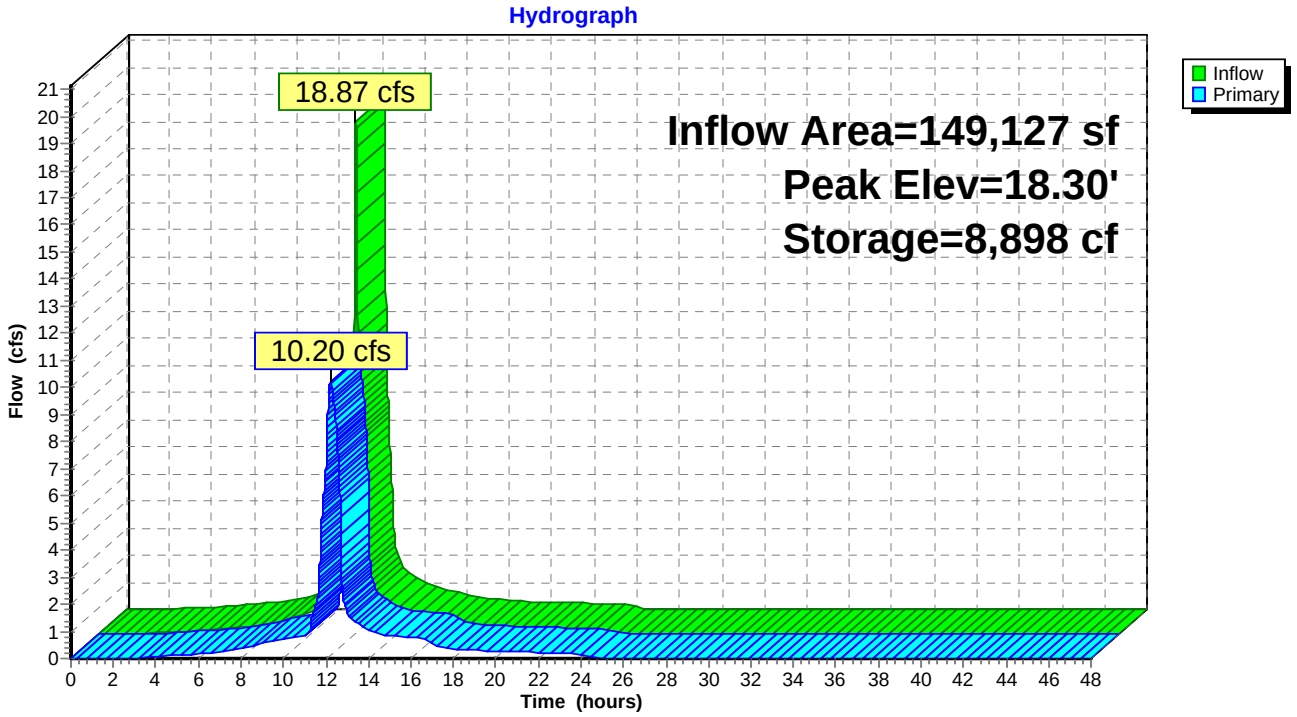
Volume	Invert	Avail.Storage	Storage Description
#1	12.90'	17,520 cf	**Drainage Ring with Stone (Prismatic)**Listed below (Recalc) 44,181 cf Overall - 382 cf Embedded = 43,799 cf x 40.0% Voids
#2	15.65'	302 cf	**8.00'D x 6.00'H Drainage Ring** Inside #1 382 cf Overall - 6.0" Wall Thickness = 302 cf
		17,821 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
12.90	2,613	0	0
12.91	2,613	26	26
14.00	3,290	3,217	3,243
15.00	3,990	3,640	6,883
16.00	4,707	4,349	11,232
16.10	4,707	471	11,702
20.00	4,707	18,357	30,060
23.00	4,707	14,121	44,181

Device	Routing	Invert	Outlet Devices
#1	Primary	12.90'	**24.0" Round Culvert** L= 222.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.90' / 8.00' S= 0.0221 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	12.90'	**15.0" Round Header Pipe** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.90' / 12.90' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	12.90'	**10.000 in/hr Filtration over Surface area**
#4	Device 2	14.56'	**12.0" Vert. 12" Pipes X 3.00** C= 0.600

Primary OutFlow Max=10.20 cfs @ 12.21 hrs HW=18.30' TW=7.57' (Dynamic Tailwater)
- **1=Culvert** (Passes 10.20 cfs of 25.06 cfs potential flow)
  - **2=Header Pipe** (Inlet Controls 10.20 cfs @ 8.31 fps)
    - **3=Filtration** (Passes < 1.09 cfs potential flow)
    - **4=12" Pipes** (Passes < 20.43 cfs potential flow)

Pond 3P: Proposed Drainage Ring



Summary for Pond 4P: CBR 15036

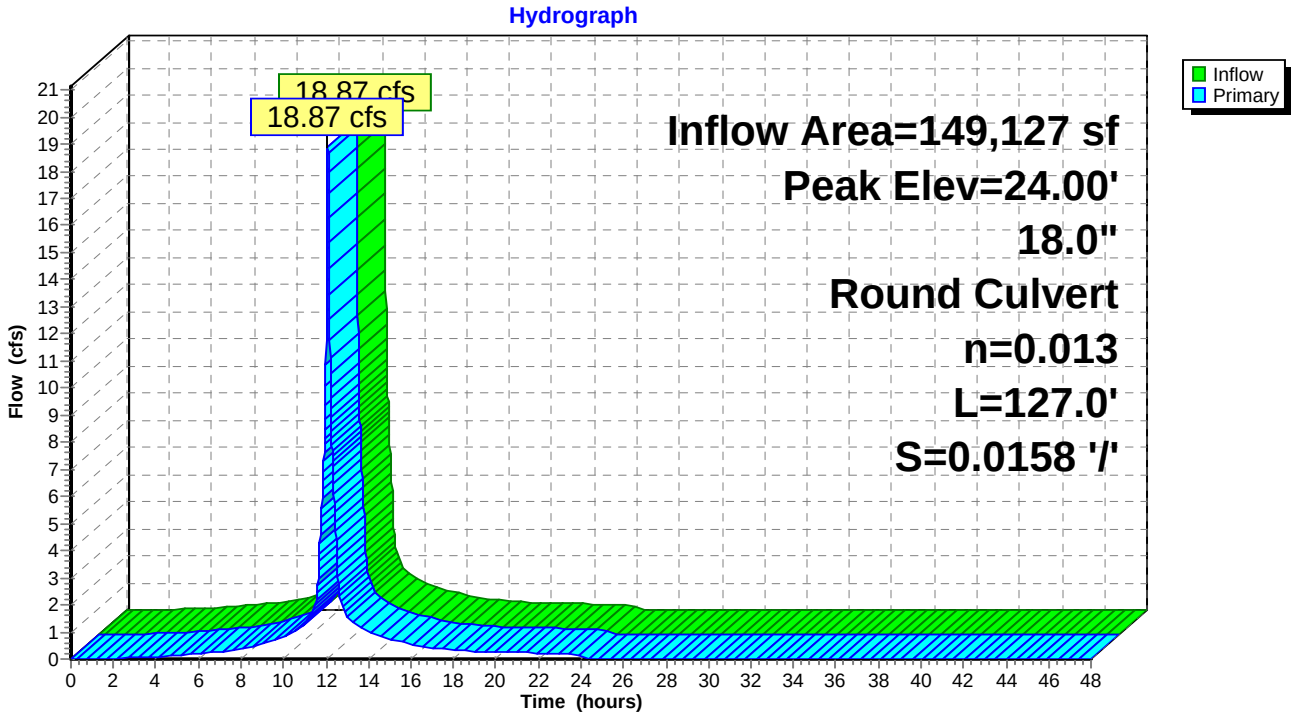
Inflow Area = 149,127 sf, 89.96% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf
Outflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.00' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 127.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 12.90' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=18.84 cfs @ 12.08 hrs HW=23.89' TW=17.14' (Dynamic Tailwater)
1=Culvert (Outlet Controls 18.84 cfs @ 10.66 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

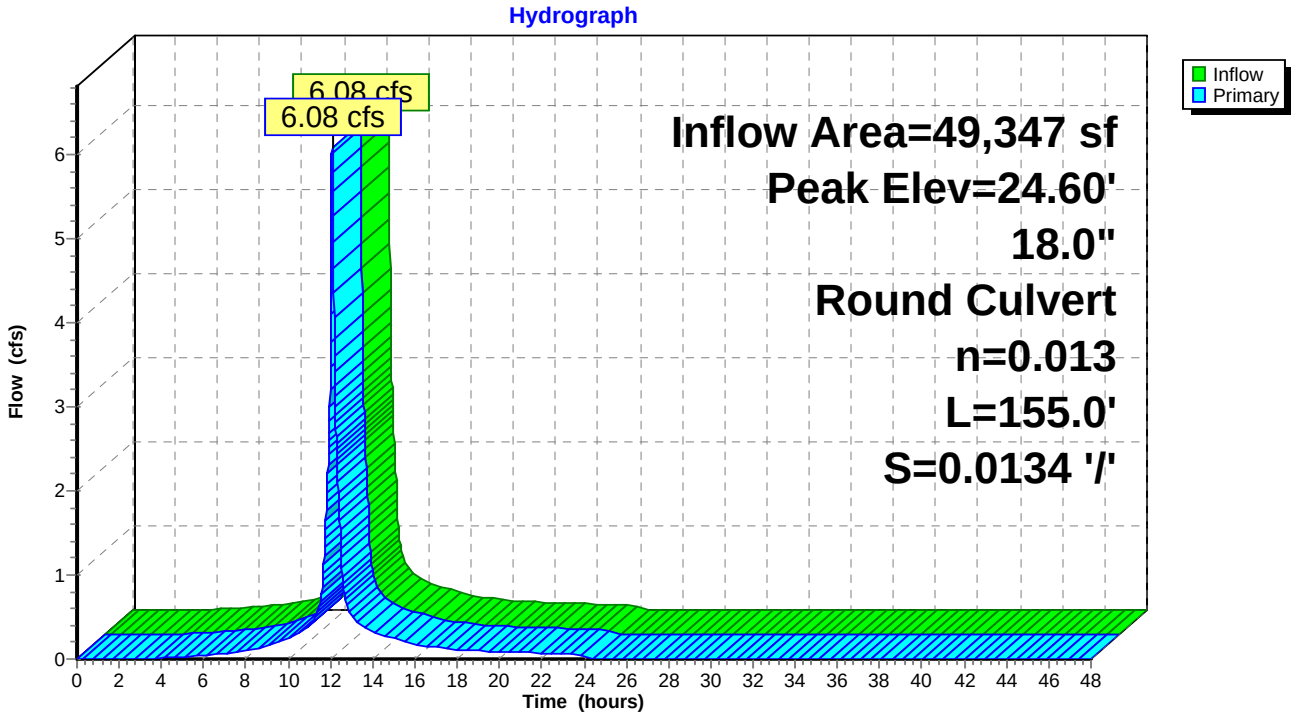
Inflow Area = 49,347 sf, 82.88% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf
Outflow = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.60' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.30 cfs @ 12.08 hrs HW=24.50' TW=23.90' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.30 cfs @ 3.00 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

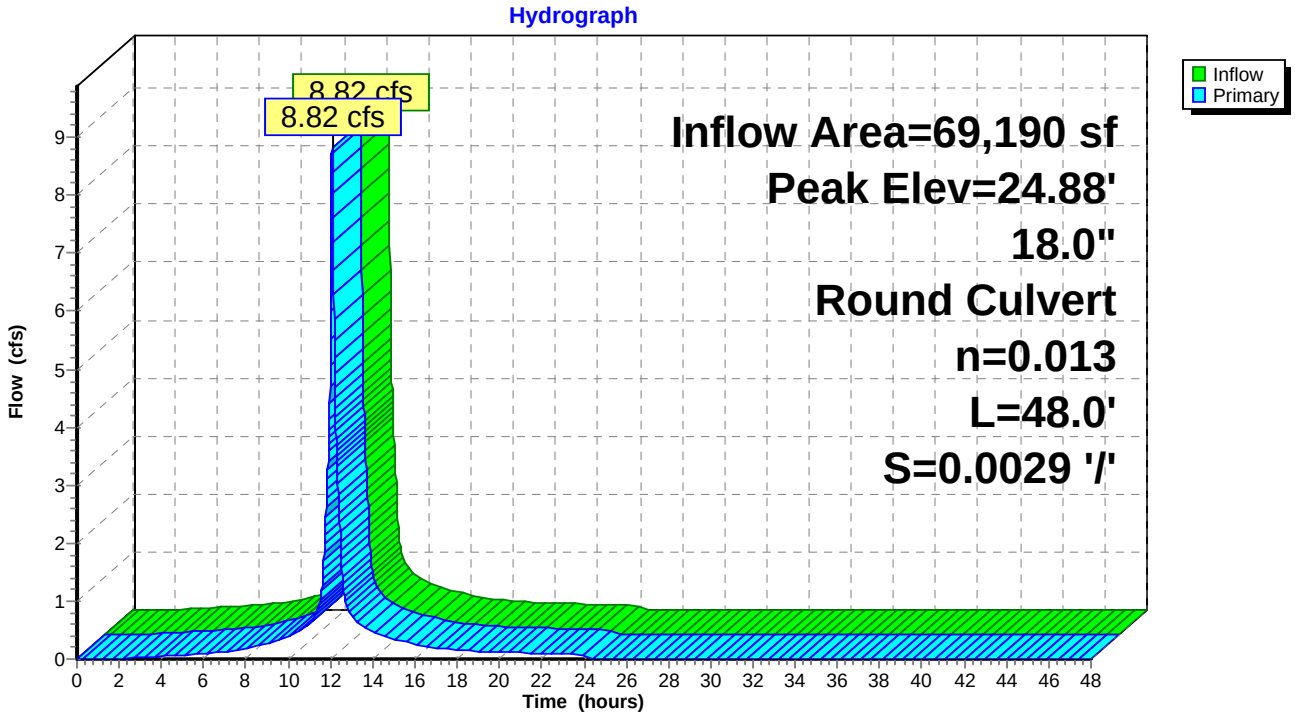
Inflow Area = 69,190 sf, 91.99% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf
Outflow = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.88' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.99 cfs @ 12.08 hrs HW=24.77' TW=23.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 7.99 cfs @ 4.52 fps)

Pond 6P: CBR 15040



Summary for Pond 8P: CBR 15042

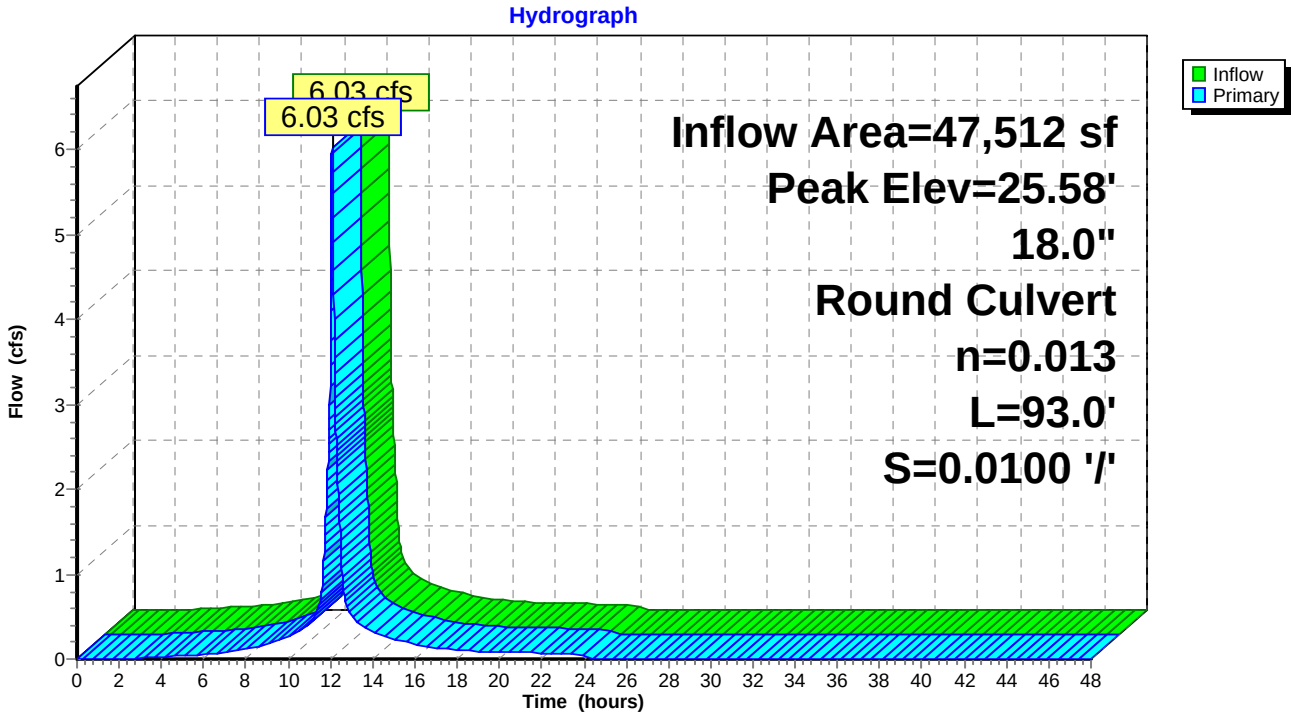
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.58' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.47 cfs @ 12.08 hrs HW=25.25' TW=24.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.47 cfs @ 3.09 fps)

Pond 8P: CBR 15042



Summary for Pond 10.02P: UDSF-1

Inflow Area = 55,468 sf, 0.00% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 7.12 cfs @ 12.08 hrs, Volume= 24,629 cf
Outflow = 2.37 cfs @ 12.37 hrs, Volume= 24,629 cf, Atten= 67%, Lag= 16.8 min
Primary = 2.37 cfs @ 12.37 hrs, Volume= 24,629 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.33' @ 12.37 hrs Surf.Area= 4,611 sf Storage= 8,871 cf
Flood Elev= 17.00' Surf.Area= 4,882 sf Storage= 9,680 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 158.6 min (917.7 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1	11.16'	9,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

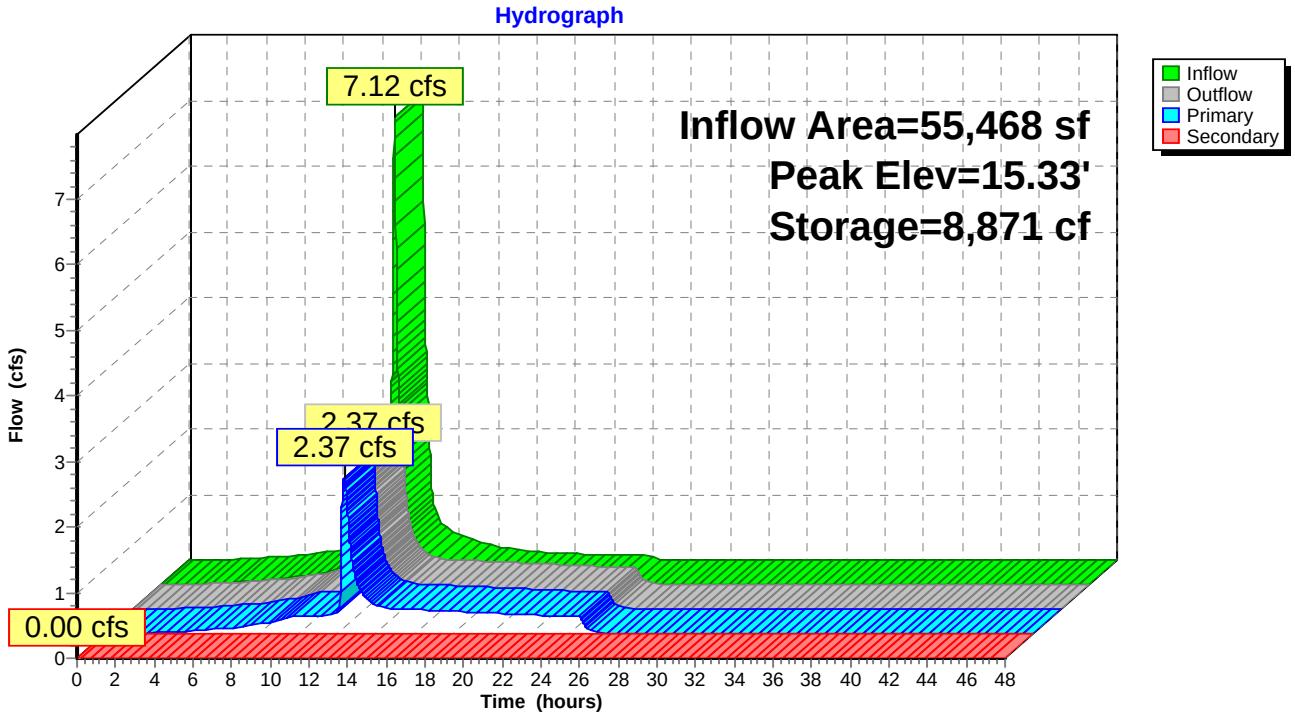
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.16	3,003	0.0	0	0
11.17	3,003	30.0	9	9
13.49	3,003	30.0	2,090	2,099
13.50	3,003	100.0	30	2,129
14.00	3,351	100.0	1,589	3,718
15.00	4,088	100.0	3,720	7,437
15.50	4,882	100.0	2,243	9,680

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**15.0" Round Outfall** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 8.50' S= 0.0893 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	11.05'	**6.0" Round UD Header** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.05' / 11.03' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	11.16'	**4.000 in/hr Filtration over Surface area**
#4	Device 1	15.00'	**12.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	15.50'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.37 cfs @ 12.37 hrs HW=15.33' TW=7.79' (Dynamic Tailwater)
└─**1=Outfall** (Passes 2.37 cfs of 8.98 cfs potential flow)
  └─**2=UD Header** (Passes 0.43 cfs of 1.50 cfs potential flow)
    └─**3=Filtration** (Exfiltration Controls 0.43 cfs)
  └─**4=Grate** (Weir Controls 1.94 cfs @ 1.88 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.16' TW=6.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10.02P: UDSF-1



Summary for Pond 10P: CB 16

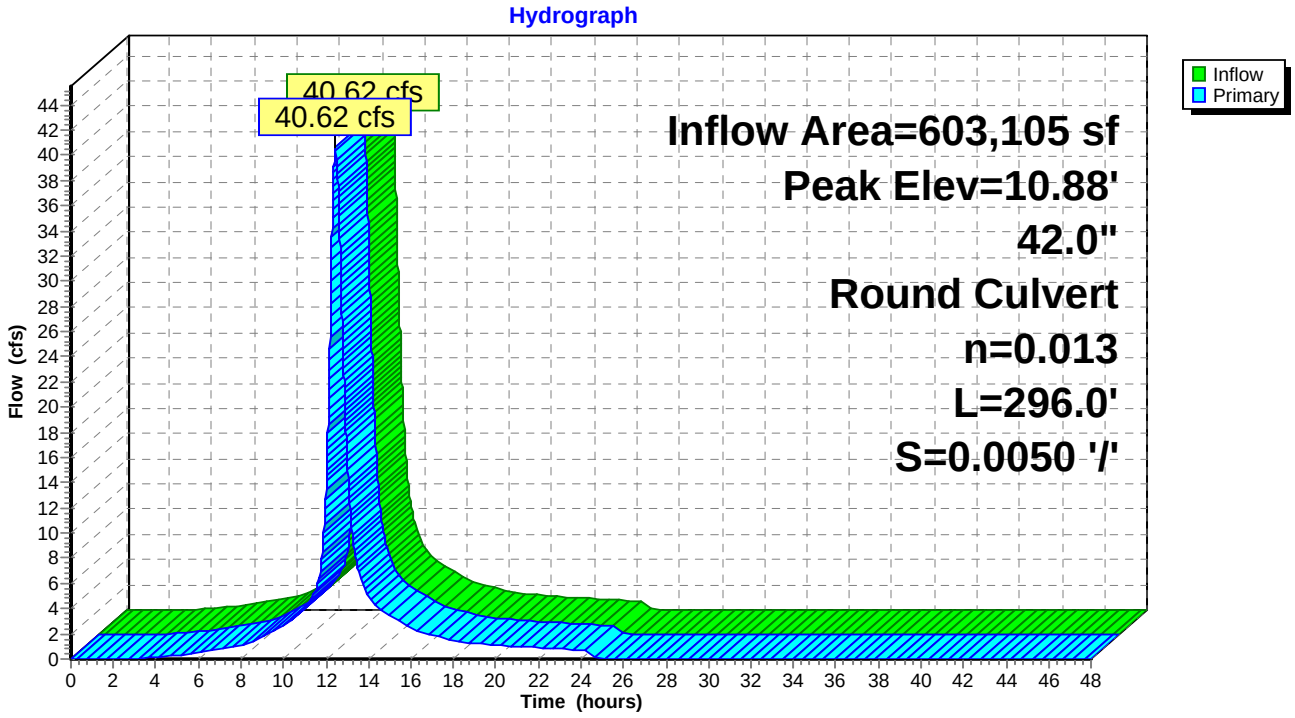
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.88' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**42.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.62 cfs @ 12.46 hrs HW=10.88' TW=9.26' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.62 cfs @ 5.63 fps)

Pond 10P: CB 16



Summary for Pond 11P: DMH 1

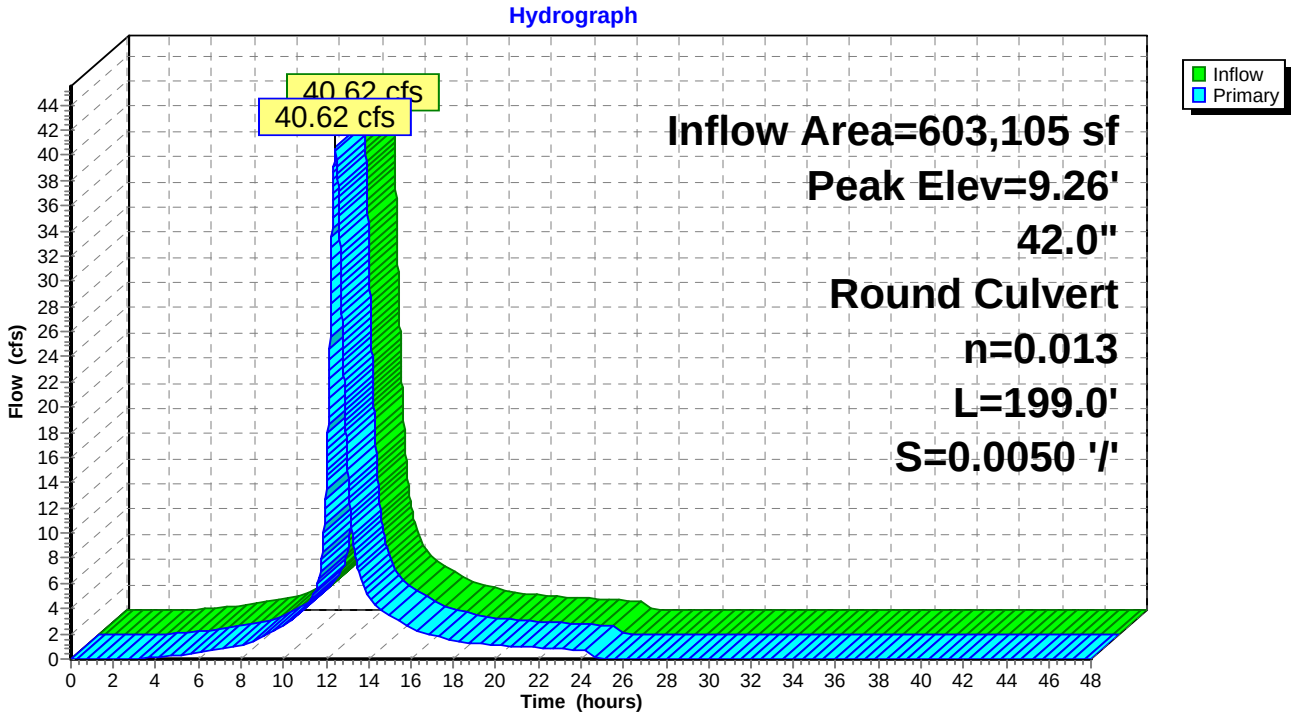
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 9.26' @ 12.46 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**42.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=9.26' TW=7.81' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.61 cfs @ 5.73 fps)

Pond 11P: DMH 1



Summary for Pond 12P: UDSF-2

Inflow Area = 73,328 sf, 0.00% Impervious, Inflow Depth = 5.21" for 25-Year event
Inflow = 9.36 cfs @ 12.08 hrs, Volume= 31,855 cf
Outflow = 2.79 cfs @ 12.40 hrs, Volume= 31,855 cf, Atten= 70%, Lag= 19.0 min
Primary = 2.79 cfs @ 12.40 hrs, Volume= 31,855 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.37' @ 12.40 hrs Surf.Area= 5,634 sf Storage= 11,917 cf
Flood Elev= 17.00' Surf.Area= 6,200 sf Storage= 15,673 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 165.9 min (930.3 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1	11.16'	15,673 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

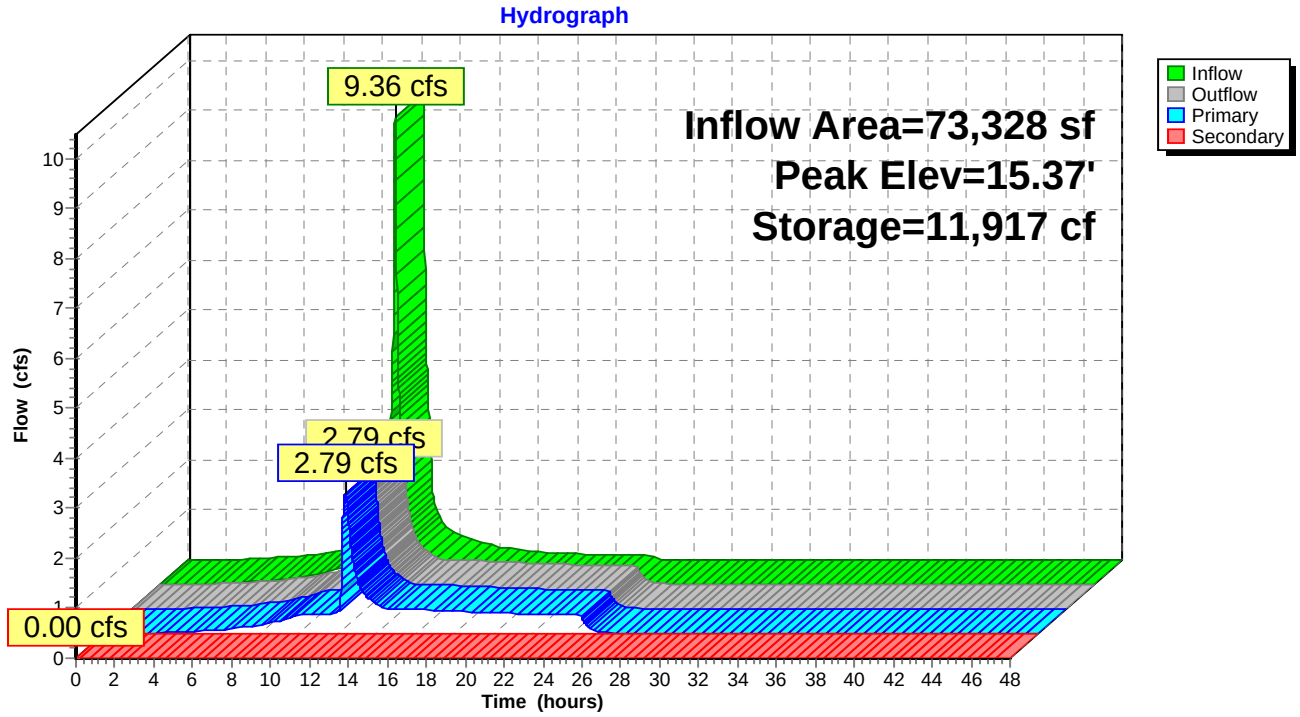
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.16	4,077	0.0	0	0
11.17	4,077	30.0	12	12
13.49	4,077	30.0	2,838	2,850
13.50	4,077	100.0	41	2,891
14.00	4,473	100.0	2,138	5,028
15.00	5,308	100.0	4,891	9,919
16.00	6,200	100.0	5,754	15,673

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**15.0" Round Outfall** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 8.50' S= 0.0962 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	11.05'	**6.0" Round UD Header** L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.05' / 11.03' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	11.16'	**4.000 in/hr Filtration over Surface area**
#4	Device 1	15.00'	**12.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	15.50'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.79 cfs @ 12.40 hrs HW=15.37' TW=7.81' (Dynamic Tailwater)
└─**1=Outfall** (Passes 2.79 cfs of 9.02 cfs potential flow)
  └─**2=UD Header** (Passes 0.52 cfs of 1.50 cfs potential flow)
    └─**3=Filtration** (Exfiltration Controls 0.52 cfs)
  └─**4=Grate** (Weir Controls 2.27 cfs @ 1.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.16' TW=6.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: UDSF-2



Summary for Pond 15P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.55" for 25-Year event
Inflow = 64.62 cfs @ 12.44 hrs, Volume= 271,093 cf
Outflow = 64.48 cfs @ 12.45 hrs, Volume= 270,376 cf, Atten= 0%, Lag= 0.8 min
Primary = 64.48 cfs @ 12.45 hrs, Volume= 270,376 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.93' @ 12.45 hrs Surf.Area= 3,135 sf Storage= 4,651 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 4.9 min calculated for 270,376 cf (100% of inflow)
Center-of-Mass det. time= 3.1 min (823.4 - 820.3)

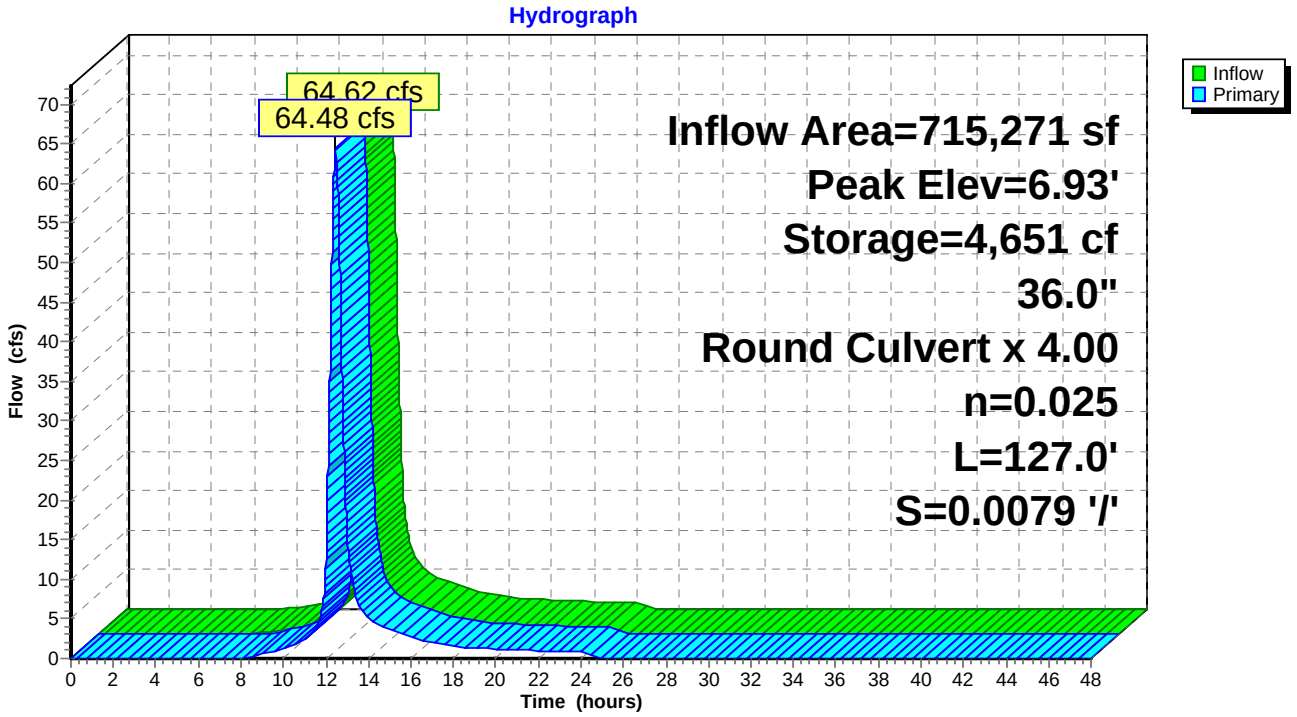
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=64.47 cfs @ 12.45 hrs HW=6.93' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 64.47 cfs @ 4.34 fps)

Pond 15P: Existing (4)-36" Culverts



Summary for Pond 25P: CB 15029

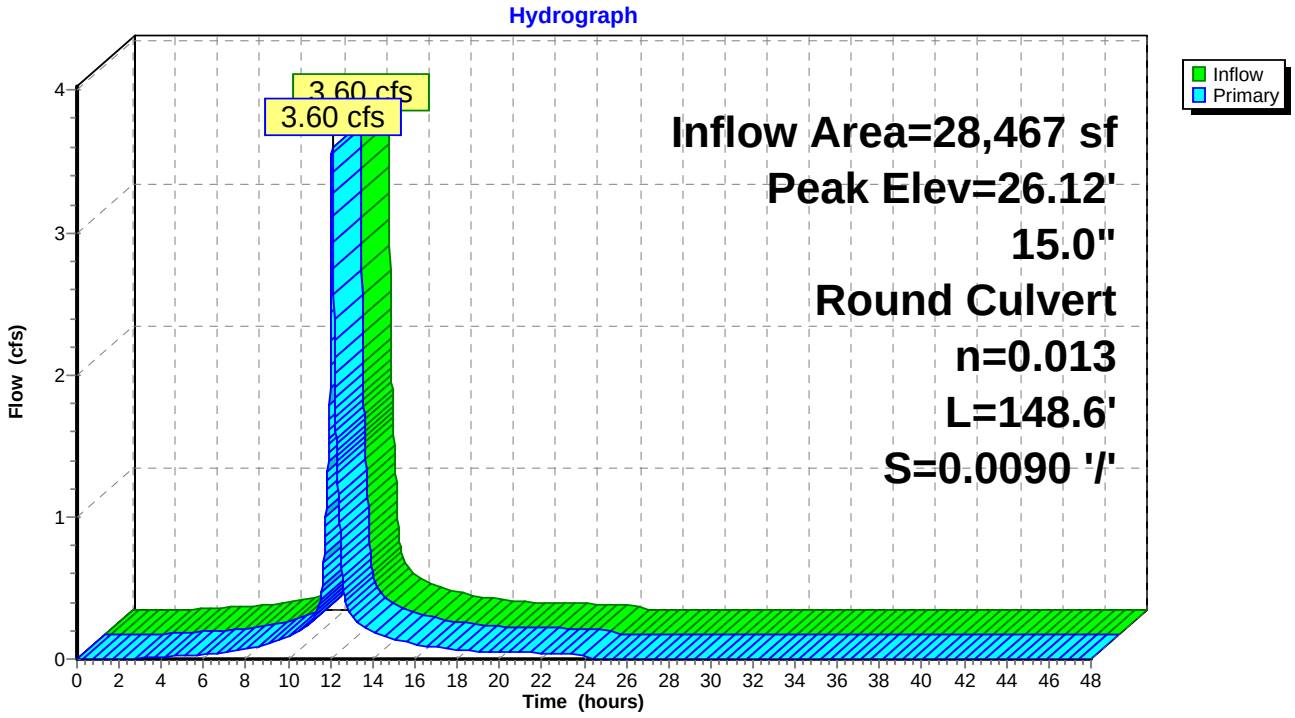
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.12' @ 12.10 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.04 cfs @ 12.08 hrs HW=25.76' TW=25.25' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.04 cfs @ 2.47 fps)

Pond 25P: CB 15029



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,351 sf, 67.87% Impervious, Inflow Depth = 4.85" for 25-Year event
Inflow = 58.21 cfs @ 12.39 hrs, Volume= 406,501 cf
Outflow = 57.93 cfs @ 12.43 hrs, Volume= 406,496 cf, Atten= 0%, Lag= 2.3 min
Primary = 32.28 cfs @ 12.43 hrs, Volume= 356,060 cf
Secondary = 25.64 cfs @ 12.43 hrs, Volume= 50,435 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.82' @ 12.43 hrs Surf.Area= 5,711 sf Storage= 6,007 cf
Flood Elev= 9.00' Surf.Area= 8,965 sf Storage= 14,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (817.8 - 816.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	14,683 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

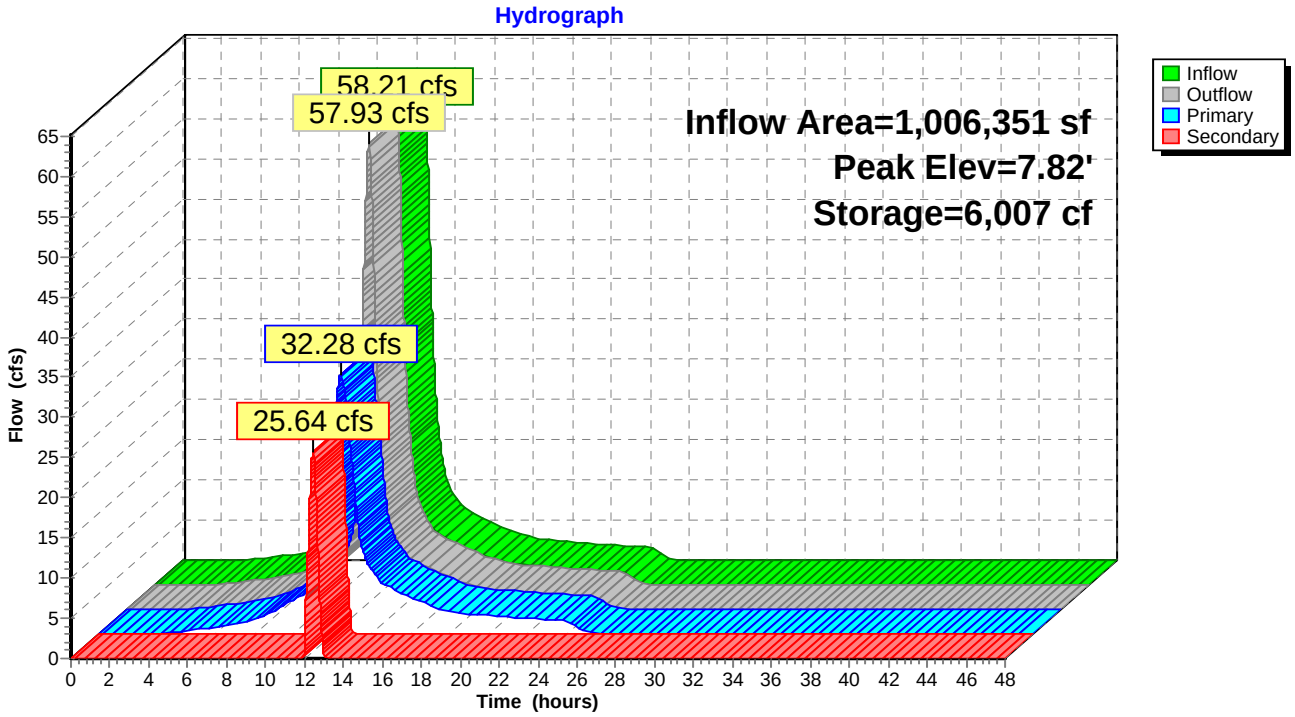
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	3,601	2,211	2,211
8.00	6,189	4,895	7,106
9.00	8,965	7,577	14,683

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=32.28 cfs @ 12.43 hrs HW=7.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 32.28 cfs @ 4.60 fps)

Secondary OutFlow Max=25.64 cfs @ 12.43 hrs HW=7.82' TW=6.93' (Dynamic Tailwater)
2=Overflow (Weir Controls 25.64 cfs @ 2.42 fps)

Pond EX WTLND: Existing Wetland

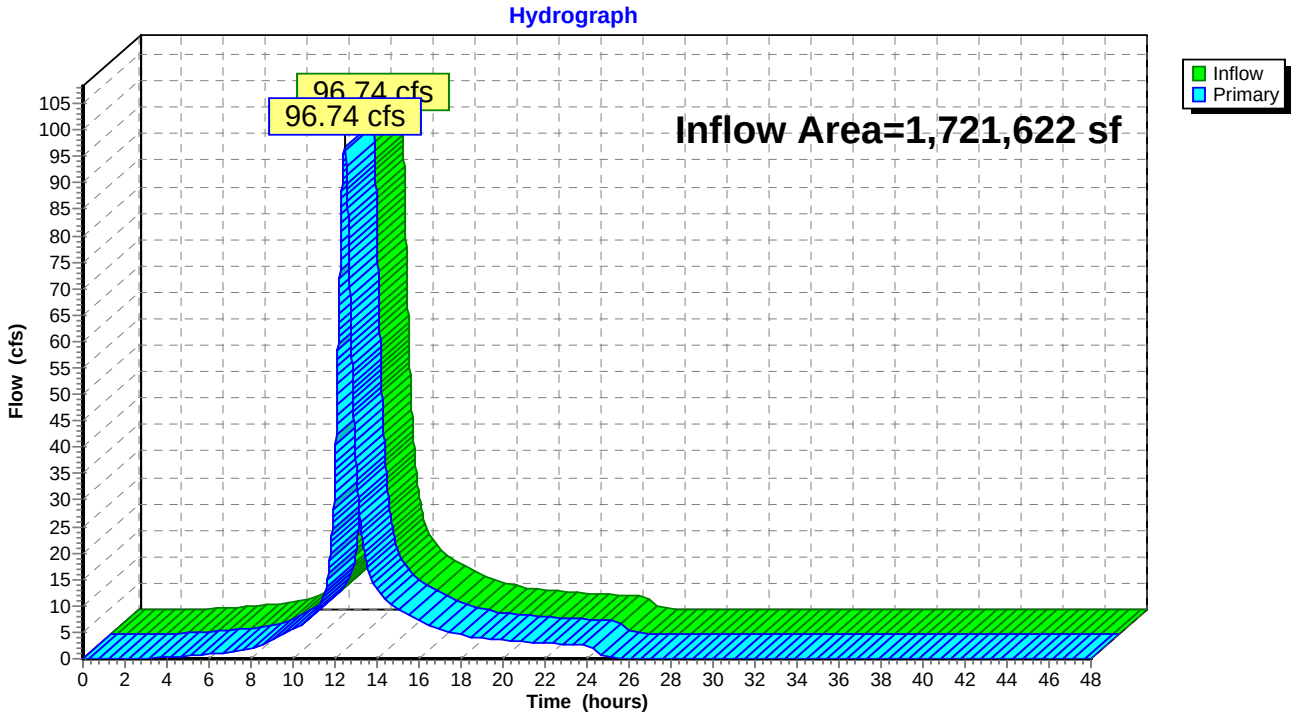


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,622 sf, 61.60% Impervious, Inflow Depth = 4.37" for 25-Year event
Inflow = 96.74 cfs @ 12.45 hrs, Volume= 626,436 cf
Primary = 96.74 cfs @ 12.45 hrs, Volume= 626,436 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

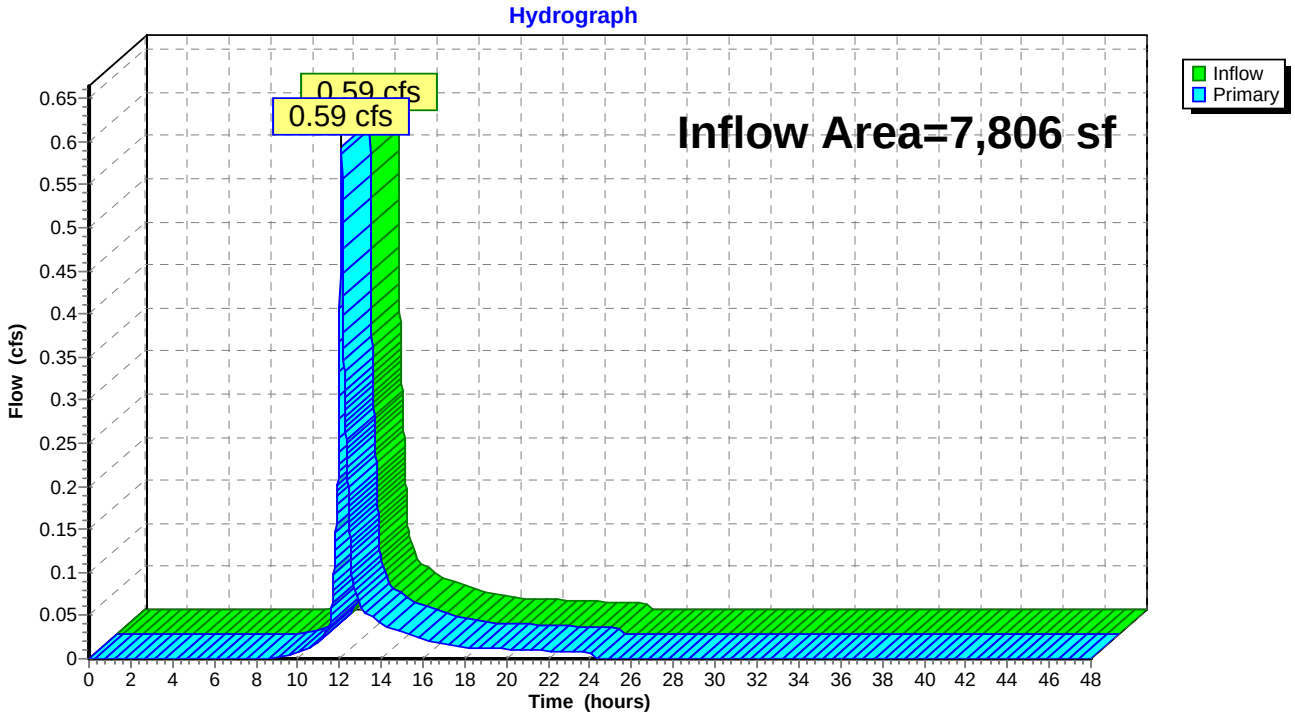


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

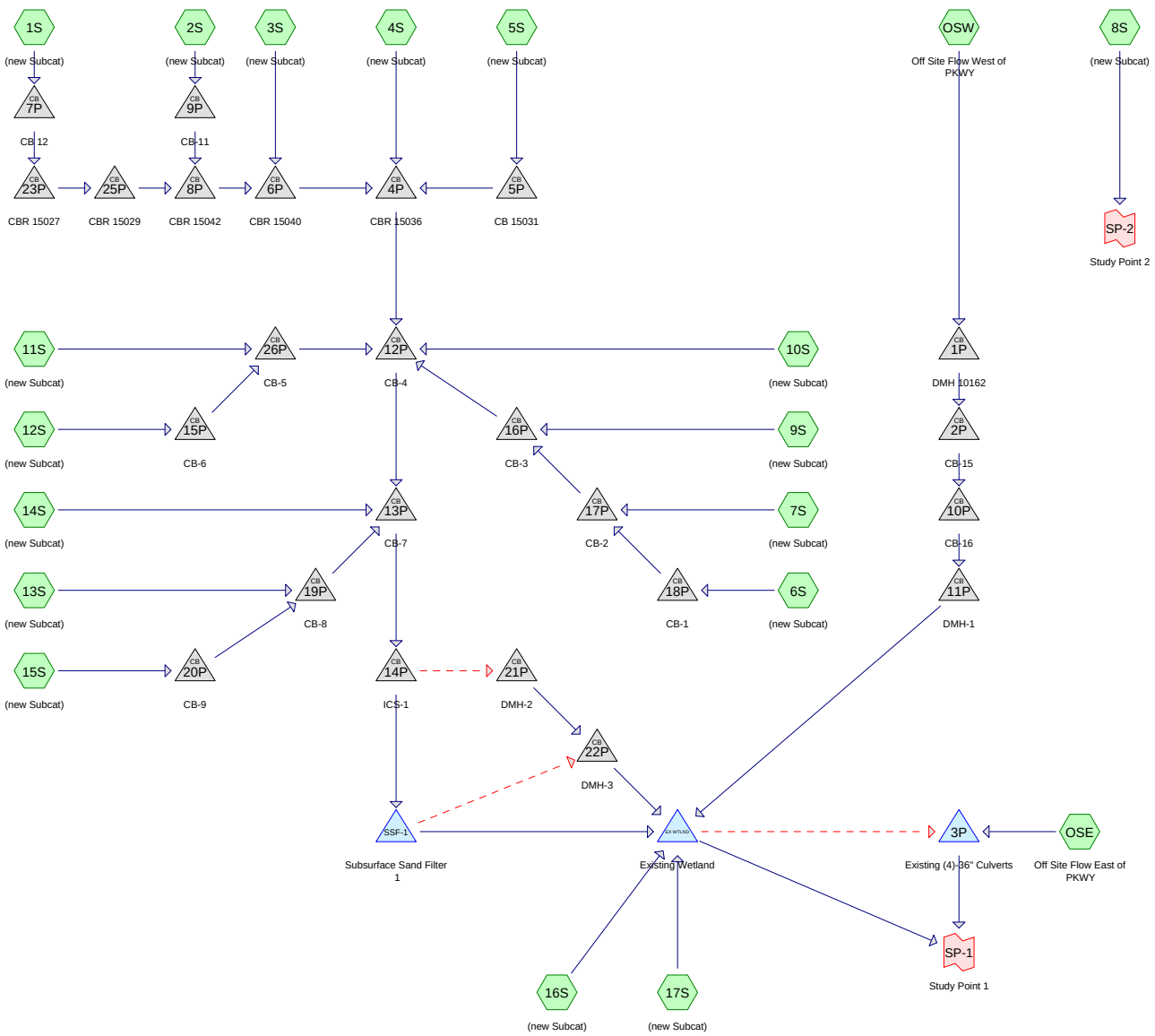
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment D

Post-Development Stormwater Modeling



Routing Diagram for 99607 Post

Prepared by Sebago Techincs, Printed 9/13/2018

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
406,625	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 16S, 17S, OSE)
66,656	80	>75% Grass cover, Good, HSG D (6S, 7S, 10S, 11S, 13S, 14S, 15S, 16S)
605,763	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 17S, OSE, OSW)
98,586	98	Paved parking, HSG D (6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
14,924	98	Roofs, HSG B (1S, 2S, 16S, 17S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
1,729,428	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 16S, 17S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=2.16"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=1.66 cfs 5,201 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=2.45"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=1.72 cfs 5,543 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=2.16"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 2,744 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=2.76"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=1.96 cfs 6,627 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=2.16"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.84 cfs 8,915 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=2.08"
Flow Length=231' Tc=6.1 min CN=90 Runoff=0.88 cfs 2,747 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=2.65"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.51 cfs 1,688 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=0.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.17 cfs 570 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=2.76"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=0.87 cfs 2,958 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=2.76"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.12 cfs 3,774 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=2.76"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.99 cfs 3,337 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=0.67 cfs 2,310 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=2.65"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=0.81 cfs 2,678 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=2.76"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.60 cfs 2,044 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=2.76"
Flow Length=331' Tc=6.0 min CN=97 Runoff=2.06 cfs 6,985 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.25 cfs 7,395 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: DMH 10162 Peak Elev=11.31' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=19.88 cfs 118,098 cf

Pond 2P: CB-15 Peak Elev=10.58' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=5.82' Storage=2,107 cf Inflow=15.83 cfs 83,772 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=15.79 cfs 83,055 cf

Pond 4P: CBR 15036 Peak Elev=17.27' Inflow=9.04 cfs 29,030 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=9.04 cfs 29,030 cf

Pond 5P: CB 15031 Peak Elev=21.17' Inflow=2.84 cfs 8,915 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.84 cfs 8,915 cf

Pond 6P: CBR 15040 Peak Elev=17.52' Inflow=4.25 cfs 13,488 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.25 cfs 13,488 cf

Pond 7P: CB 12 Peak Elev=25.48' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=1.66 cfs 5,201 cf

Pond 8P: CBR 15042 Peak Elev=17.82' Inflow=3.37 cfs 10,744 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.37 cfs 10,744 cf

Pond 9P: CB-11 Peak Elev=22.40' Inflow=1.72 cfs 5,543 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=1.72 cfs 5,543 cf

Pond 10P: CB-16 Peak Elev=9.64' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 11P: DMH-1 Peak Elev=8.17' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 12P: CB-4 Peak Elev=16.12' Inflow=14.07 cfs 45,845 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=14.07 cfs 45,845 cf

Pond 13P: CB-7 Peak Elev=13.87' Inflow=17.54 cfs 57,552 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=17.54 cfs 57,552 cf

Pond 14P: ICS-1 Peak Elev=13.18' Inflow=17.54 cfs 57,552 cf
Primary=17.54 cfs 52,367 cf Secondary=1.44 cfs 5,185 cf Outflow=17.54 cfs 57,552 cf

Pond 15P: CB-6 Peak Elev=16.47' Inflow=0.67 cfs 2,310 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=0.67 cfs 2,310 cf

Pond 16P: CB-3 Peak Elev=16.38' Inflow=2.26 cfs 7,394 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=2.26 cfs 7,394 cf

Pond 17P: CB-2 Peak Elev=16.97' Inflow=1.38 cfs 4,435 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=1.38 cfs 4,435 cf

Pond 18P: CB-1 Peak Elev=17.51' Inflow=0.88 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=0.88 cfs 2,747 cf

Pond 19P: CB-8 Peak Elev=13.93' Inflow=2.87 cfs 9,663 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.87 cfs 9,663 cf

Pond 20P: CB-9 Peak Elev=14.18' Inflow=2.06 cfs 6,985 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=2.06 cfs 6,985 cf

Pond 21P: DMH-2 Peak Elev=11.52' Inflow=1.44 cfs 5,185 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=1.44 cfs 5,185 cf

Pond 22P: DMH-3 Peak Elev=8.68' Inflow=1.94 cfs 52,489 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=1.94 cfs 52,489 cf

Pond 23P: CBR 15027 Peak Elev=24.46' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=1.66 cfs 5,201 cf

Pond 25P: CBR 15029 Peak Elev=23.52' Inflow=1.66 cfs 5,201 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.66 cfs 5,201 cf

Pond 26P: CB-5 Peak Elev=16.42' Inflow=1.65 cfs 5,647 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=1.65 cfs 5,647 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.13' Storage=2,692 cf Inflow=24.25 cfs 188,520 cf
Primary=22.53 cfs 187,648 cf Secondary=1.41 cfs 871 cf Outflow=23.94 cfs 188,519 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.17' Storage=26,505 cf Inflow=17.54 cfs 52,367 cf
Primary=1.42 cfs 5,066 cf Secondary=0.51 cfs 47,304 cf Outflow=1.92 cfs 52,371 cf

Link SP-1: Study Point 1 Inflow=38.32 cfs 270,703 cf
Primary=38.32 cfs 270,703 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 570 cf
Primary=0.17 cfs 570 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 271,987 cf Average Runoff Depth = 1.89"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=3.59"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.69 cfs 8,638 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=3.91"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=2.68 cfs 8,865 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=3.59"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.42 cfs 4,557 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=4.25"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=2.95 cfs 10,211 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=3.59"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=4.60 cfs 14,805 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=3.49"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.44 cfs 4,620 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=4.14"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.77 cfs 2,634 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=1.97"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.39 cfs 1,222 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=4.25"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.32 cfs 4,558 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=4.25"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.68 cfs 5,815 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=4.25"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.49 cfs 5,141 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.00 cfs 3,515 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=4.14"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.23 cfs 4,178 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=4.25"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.91 cfs 3,150 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=4.25"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.11 cfs 10,762 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.99 cfs 15,589 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: DMH 10162 Peak Elev=12.12' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=31.45 cfs 191,269 cf

Pond 2P: CB-15 Peak Elev=11.36' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=6.49' Storage=3,422 cf Inflow=42.61 cfs 183,755 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=42.54 cfs 183,039 cf

Pond 4P: CBR 15036 Peak Elev=18.36' Inflow=14.33 cfs 47,076 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=14.33 cfs 47,076 cf

Pond 5P: CB 15031 Peak Elev=21.43' Inflow=4.60 cfs 14,805 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.60 cfs 14,805 cf

Pond 6P: CBR 15040 Peak Elev=18.97' Inflow=6.78 cfs 22,060 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.78 cfs 22,060 cf

Pond 7P: CB 12 Peak Elev=25.81' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=2.69 cfs 8,638 cf

Pond 8P: CBR 15042 Peak Elev=19.44' Inflow=5.36 cfs 17,503 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=5.36 cfs 17,503 cf

Pond 9P: CB-11 Peak Elev=22.82' Inflow=2.68 cfs 8,865 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=2.68 cfs 8,865 cf

Pond 10P: CB-16 Peak Elev=10.35' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 11P: DMH-1 Peak Elev=8.82' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 12P: CB-4 Peak Elev=16.92' Inflow=22.03 cfs 73,359 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=22.03 cfs 73,359 cf

Pond 13P: CB-7 Peak Elev=14.54' Inflow=27.28 cfs 91,449 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=27.28 cfs 91,449 cf

Pond 14P: ICS-1 Peak Elev=13.62' Inflow=27.28 cfs 91,449 cf
Primary=21.65 cfs 71,885 cf Secondary=7.24 cfs 19,565 cf Outflow=27.28 cfs 91,449 cf

Pond 15P: CB-6 Peak Elev=17.72' Inflow=1.00 cfs 3,515 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.00 cfs 3,515 cf

Pond 16P: CB-3 Peak Elev=17.50' Inflow=3.53 cfs 11,812 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=3.53 cfs 11,812 cf

Pond 17P: CB-2 Peak Elev=18.04' Inflow=2.22 cfs 7,254 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.22 cfs 7,254 cf

Pond 18P: CB-1 Peak Elev=18.28' Inflow=1.44 cfs 4,620 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.44 cfs 4,620 cf

Pond 19P: CB-8 Peak Elev=14.68' Inflow=4.34 cfs 14,940 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.34 cfs 14,940 cf

Pond 20P: CB-9 Peak Elev=14.89' Inflow=3.11 cfs 10,762 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.11 cfs 10,762 cf

Pond 21P: DMH-2 Peak Elev=12.81' Inflow=7.24 cfs 19,565 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=7.24 cfs 19,565 cf

Pond 22P: DMH-3 Peak Elev=10.02' Inflow=7.71 cfs 72,691 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=7.71 cfs 72,691 cf

Pond 23P: CBR 15027 Peak Elev=24.78' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=2.69 cfs 8,638 cf

Pond 25P: CBR 15029 Peak Elev=23.77' Inflow=2.69 cfs 8,638 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.69 cfs 8,638 cf

Pond 26P: CB-5 Peak Elev=17.62' Inflow=2.48 cfs 8,657 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=2.48 cfs 8,657 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.58' Storage=4,716 cf Inflow=44.72 cfs 307,746 cf
Primary=29.41 cfs 281,034 cf Secondary=15.20 cfs 26,709 cf Outflow=44.61 cfs 307,743 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.57' Storage=31,040 cf Inflow=21.65 cfs 71,885 cf
Primary=8.28 cfs 18,759 cf Secondary=0.51 cfs 53,126 cf Outflow=8.75 cfs 71,885 cf

Link SP-1: Study Point 1 Inflow=71.84 cfs 464,073 cf
Primary=71.84 cfs 464,073 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,222 cf
Primary=0.39 cfs 1,222 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 466,013 cf Average Runoff Depth = 3.23"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=4.76"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=3.50 cfs 11,442 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=5.10"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=3.43 cfs 11,549 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=4.76"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.85 cfs 6,037 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=5.44"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=3.74 cfs 13,085 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=4.76"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=6.00 cfs 19,612 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=4.65"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.89 cfs 6,155 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=5.33"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.98 cfs 3,394 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=2.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.58 cfs 1,812 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=5.44"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.67 cfs 5,841 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=5.44"
Flow Length=195' Tc=6.0 min CN=97 Runoff=2.13 cfs 7,452 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=5.44"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.88 cfs 6,589 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.26 cfs 4,481 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=5.33"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.56 cfs 5,383 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=5.44"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.15 cfs 4,037 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=5.44"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.94 cfs 13,792 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.41 cfs 22,951 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: DMH 10162 Peak Elev=12.90' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=40.62 cfs 250,553 cf

Pond 2P: CB-15 Peak Elev=12.13' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=6.97' Storage=4,790 cf Inflow=66.90 cfs 277,970 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=66.78 cfs 277,253 cf

Pond 4P: CBR 15036 Peak Elev=20.42' Inflow=18.53 cfs 61,725 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=18.53 cfs 61,725 cf

Pond 5P: CB 15031 Peak Elev=21.73' Inflow=6.00 cfs 19,612 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.00 cfs 19,612 cf

Pond 6P: CBR 15040 Peak Elev=21.48' Inflow=8.79 cfs 29,027 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,027 cf

Pond 7P: CB 12 Peak Elev=26.28' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=3.50 cfs 11,442 cf

Pond 8P: CBR 15042 Peak Elev=22.20' Inflow=6.94 cfs 22,991 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.94 cfs 22,991 cf

Pond 9P: CB-11 Peak Elev=23.48' Inflow=3.43 cfs 11,549 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=3.43 cfs 11,549 cf

Pond 10P: CB-16 Peak Elev=10.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 11P: DMH-1 Peak Elev=9.28' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 12P: CB-4 Peak Elev=18.10' Inflow=28.35 cfs 95,635 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=28.35 cfs 95,635 cf

Pond 13P: CB-7 Peak Elev=15.81' Inflow=35.01 cfs 118,847 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=35.01 cfs 118,847 cf

Pond 14P: ICS-1 Peak Elev=14.29' Inflow=35.01 cfs 118,847 cf
Primary=27.28 cfs 90,264 cf Secondary=8.34 cfs 28,583 cf Outflow=35.01 cfs 118,847 cf

Pond 15P: CB-6 Peak Elev=19.34' Inflow=1.26 cfs 4,481 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.26 cfs 4,481 cf

Pond 16P: CB-3 Peak Elev=19.00' Inflow=4.55 cfs 15,389 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=4.55 cfs 15,389 cf

Pond 17P: CB-2 Peak Elev=19.93' Inflow=2.88 cfs 9,548 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.88 cfs 9,548 cf

Pond 18P: CB-1 Peak Elev=20.28' Inflow=1.89 cfs 6,155 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.89 cfs 6,155 cf

Pond 19P: CB-8 Peak Elev=16.02' Inflow=5.51 cfs 19,175 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=5.51 cfs 19,175 cf

Pond 20P: CB-9 Peak Elev=16.37' Inflow=3.94 cfs 13,792 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.94 cfs 13,792 cf

Pond 21P: DMH-2 Peak Elev=13.19' Inflow=8.34 cfs 28,583 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=8.34 cfs 28,583 cf

Pond 22P: DMH-3 Peak Elev=10.43' Inflow=8.83 cfs 85,144 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=8.83 cfs 85,144 cf

Pond 23P: CBR 15027 Peak Elev=25.42' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=3.50 cfs 11,442 cf

Pond 25P: CBR 15029 Peak Elev=23.98' Inflow=3.50 cfs 11,442 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.50 cfs 11,442 cf

Pond 26P: CB-5 Peak Elev=19.15' Inflow=3.15 cfs 11,069 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=3.15 cfs 11,069 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.87' Storage=6,314 cf Inflow=61.15 cfs 405,073 cf
Primary=32.76 cfs 347,756 cf Secondary=28.16 cfs 57,312 cf Outflow=60.91 cfs 405,068 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=14.17' Storage=36,342 cf Inflow=27.28 cfs 90,264 cf
Primary=12.93 cfs 33,708 cf Secondary=0.51 cfs 56,561 cf Outflow=13.41 cfs 90,268 cf

Link SP-1: Study Point 1 Inflow=99.49 cfs 625,009 cf
Primary=99.49 cfs 625,009 cf

Link SP-2: Study Point 2 Inflow=0.58 cfs 1,812 cf
Primary=0.58 cfs 1,812 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 627,538 cf Average Runoff Depth = 4.35"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Summary for Subcatchment 1S: (new Subcat)

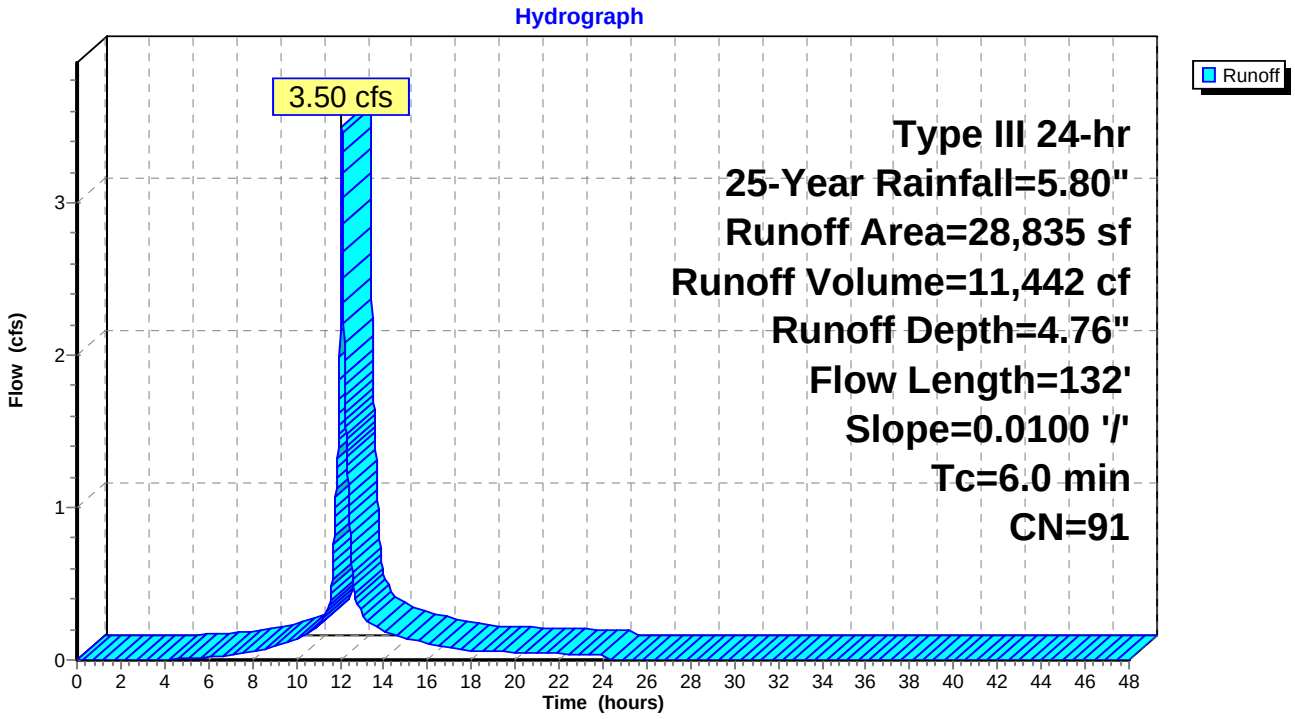
Runoff = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
19,414	98	Paved parking, HSG B
5,131	61	>75% Grass cover, Good, HSG B
28,835	91	Weighted Average
5,131		17.79% Pervious Area
23,704		82.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	58	0.0100	0.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	74	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	132	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

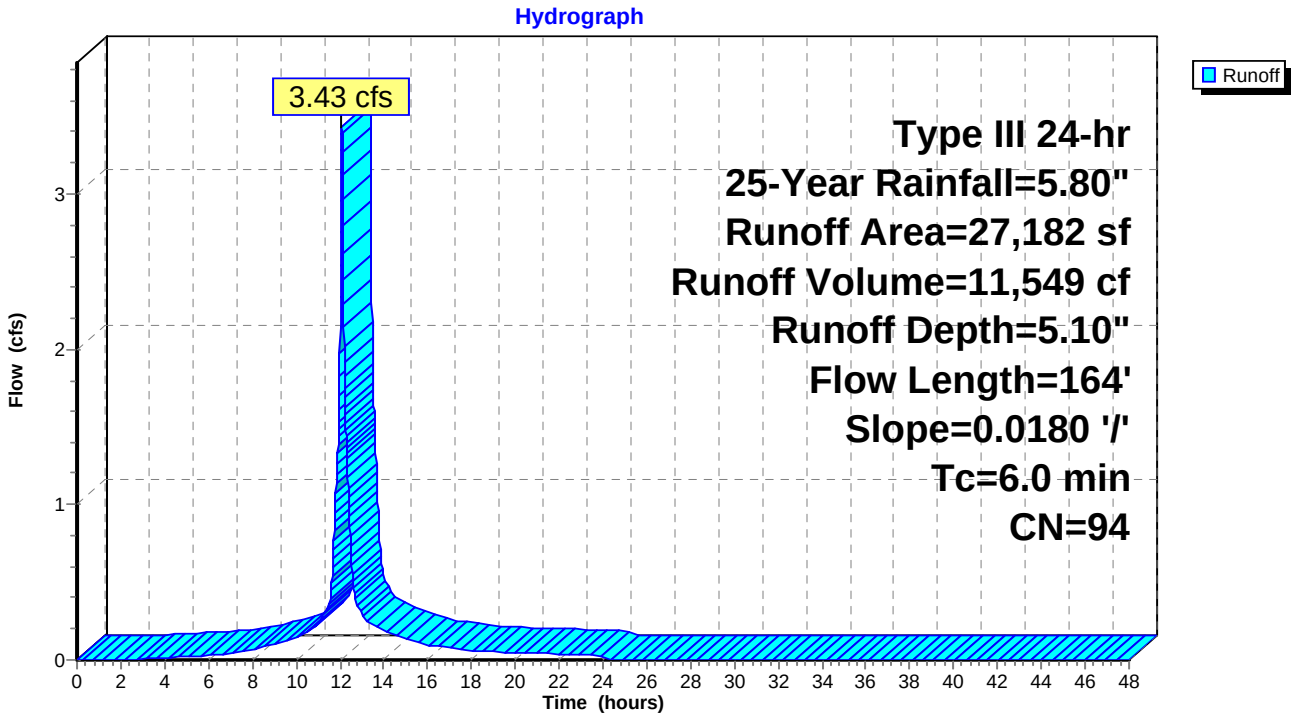
Runoff = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,939	98	Roofs, HSG B
22,074	98	Paved parking, HSG B
3,169	61	>75% Grass cover, Good, HSG B
27,182	94	Weighted Average
3,169		11.66% Pervious Area
24,013		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0180	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	64	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	164	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

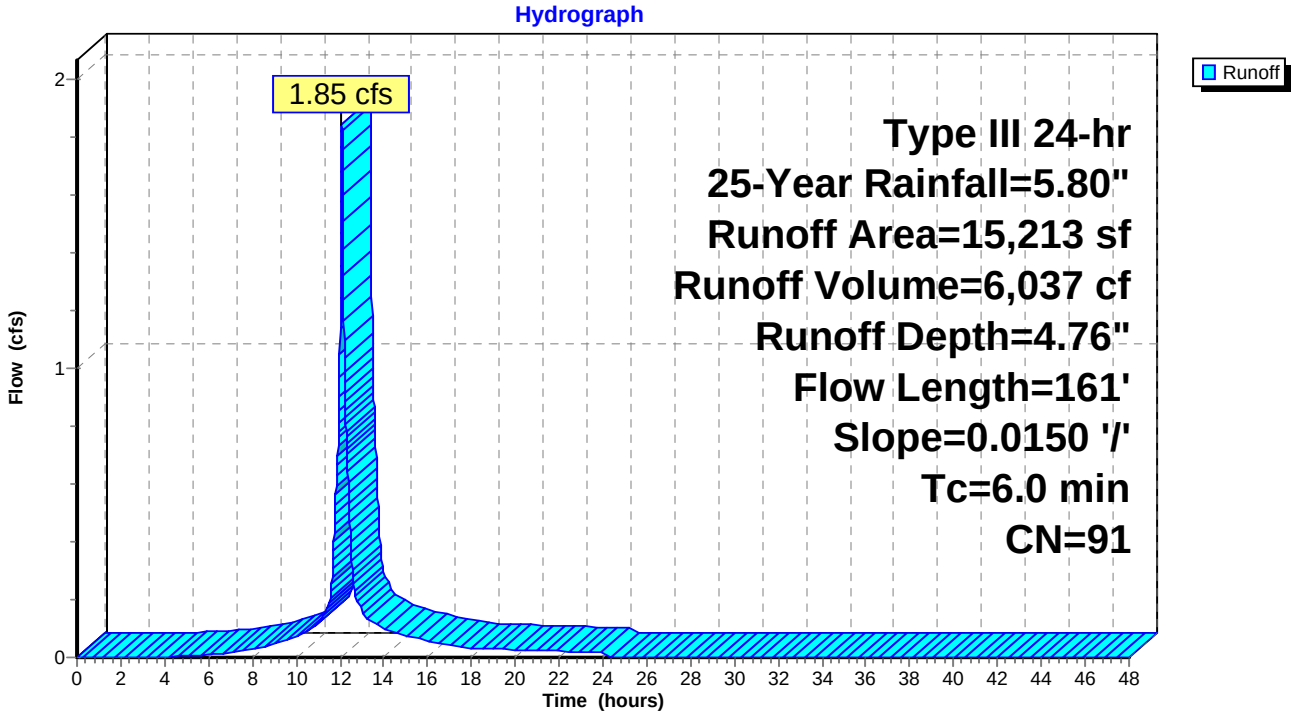
Runoff = 1.85 cfs @ 12.08 hrs, Volume= 6,037 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,202	98	Paved parking, HSG B
3,011	61	>75% Grass cover, Good, HSG B
15,213	91	Weighted Average
3,011		19.79% Pervious Area
12,202		80.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	33	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	128	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5					**Direct Entry,**
6.0	161	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

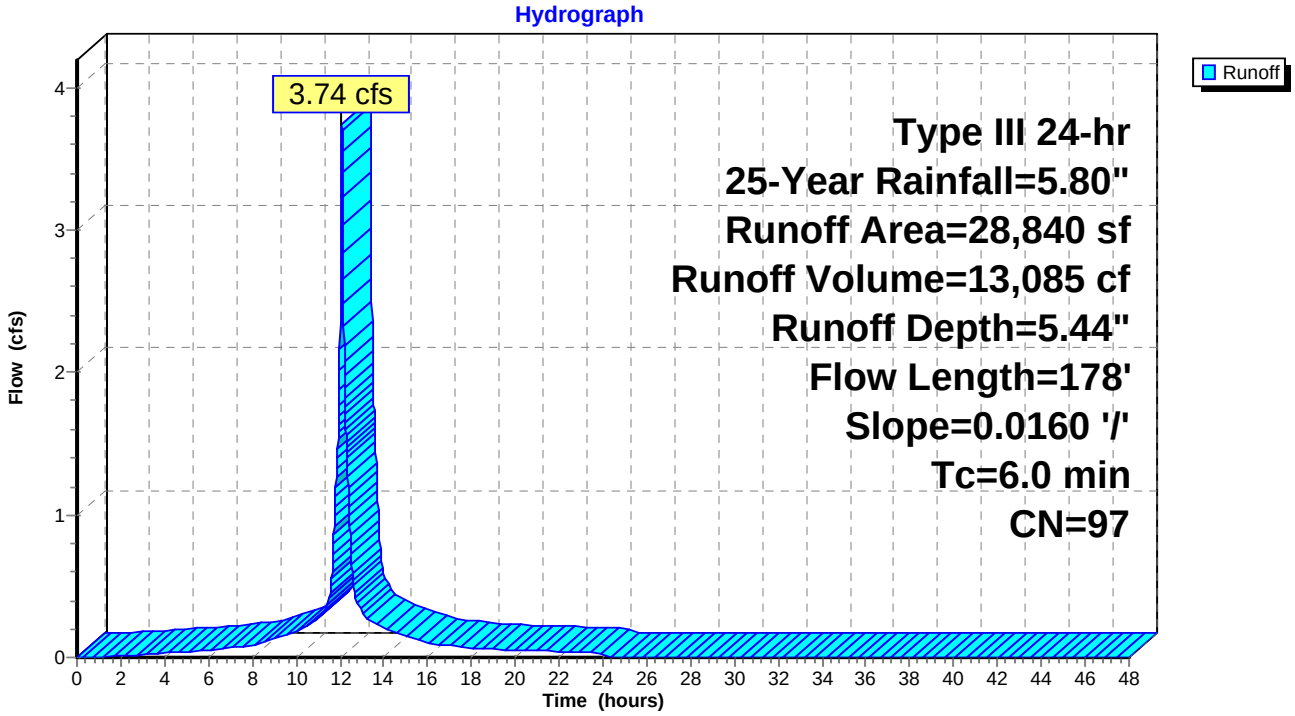
Runoff = 3.74 cfs @ 12.08 hrs, Volume= 13,085 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
27,938	98	Paved parking, HSG B
902	61	>75% Grass cover, Good, HSG B
28,840	97	Weighted Average
902		3.13% Pervious Area
27,938		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	78	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	178	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

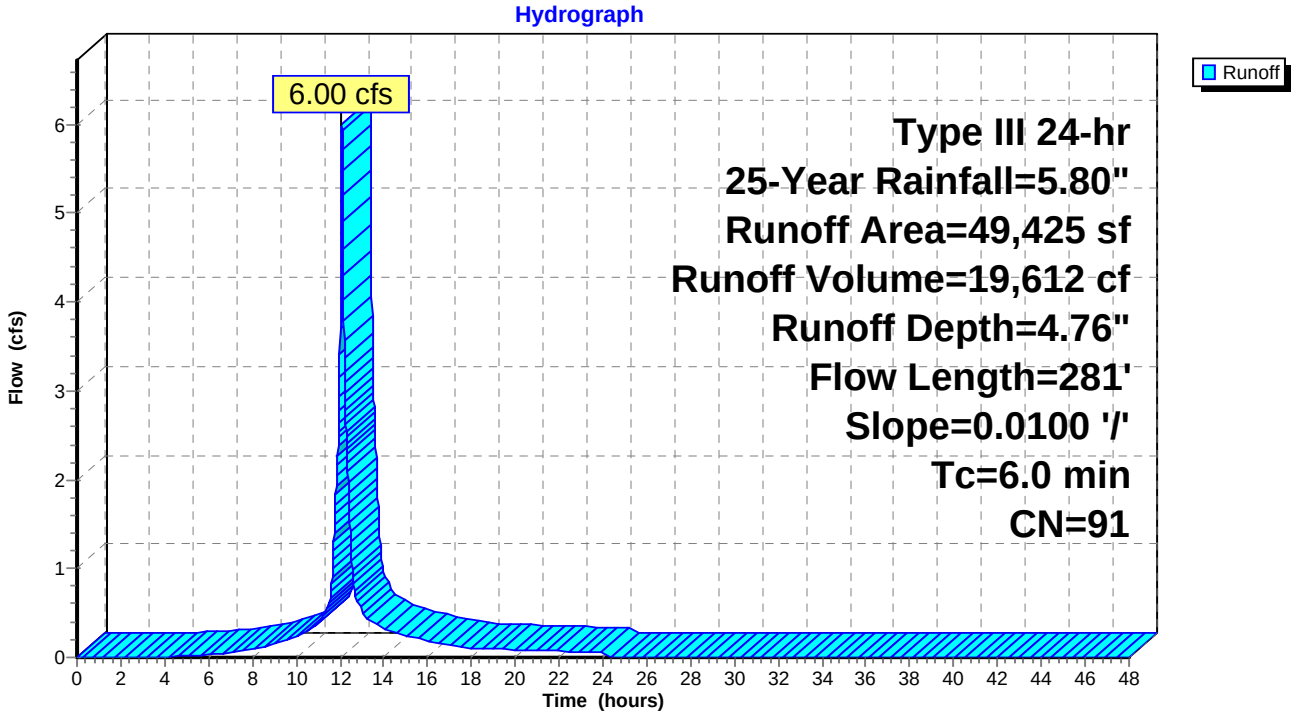
Runoff = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,650	98	Paved parking, HSG B
8,775	61	>75% Grass cover, Good, HSG B
49,425	91	Weighted Average
8,775		17.75% Pervious Area
40,650		82.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.5	181	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

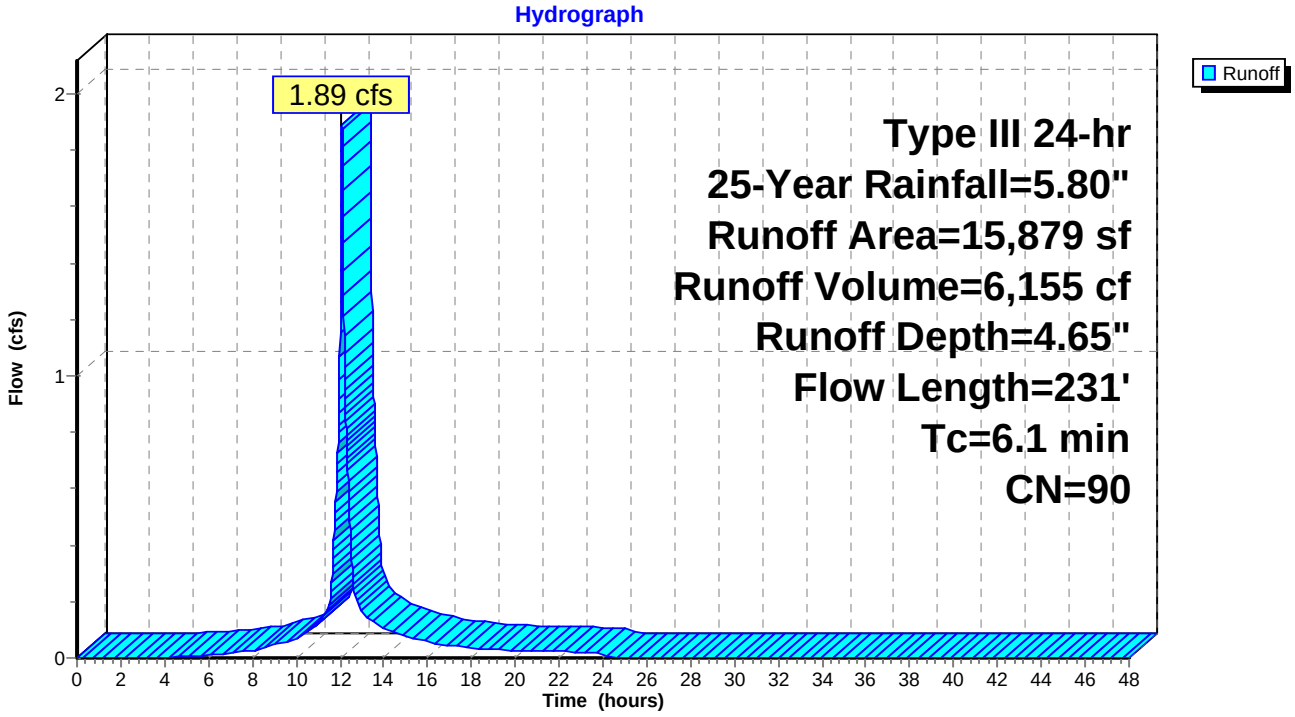
Runoff = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,219	98	Paved parking, HSG B
3,967	98	Paved parking, HSG D
3,328	61	>75% Grass cover, Good, HSG B
365	80	>75% Grass cover, Good, HSG D
15,879	90	Weighted Average
3,693		23.26% Pervious Area
12,186		76.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

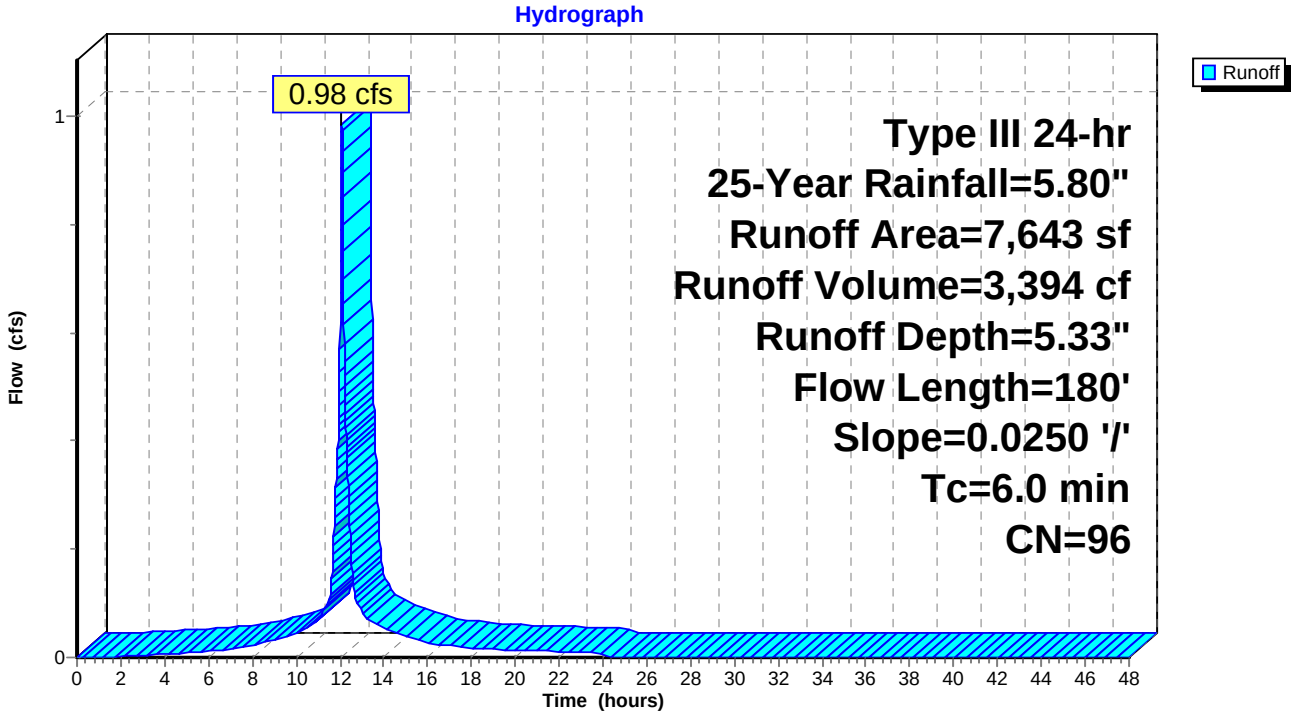
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,394 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,645	98	Paved parking, HSG B
4,421	98	Paved parking, HSG D
183	61	>75% Grass cover, Good, HSG B
394	80	>75% Grass cover, Good, HSG D
7,643	96	Weighted Average
577		7.55% Pervious Area
7,066		92.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5					**Direct Entry,**
6.0	180	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

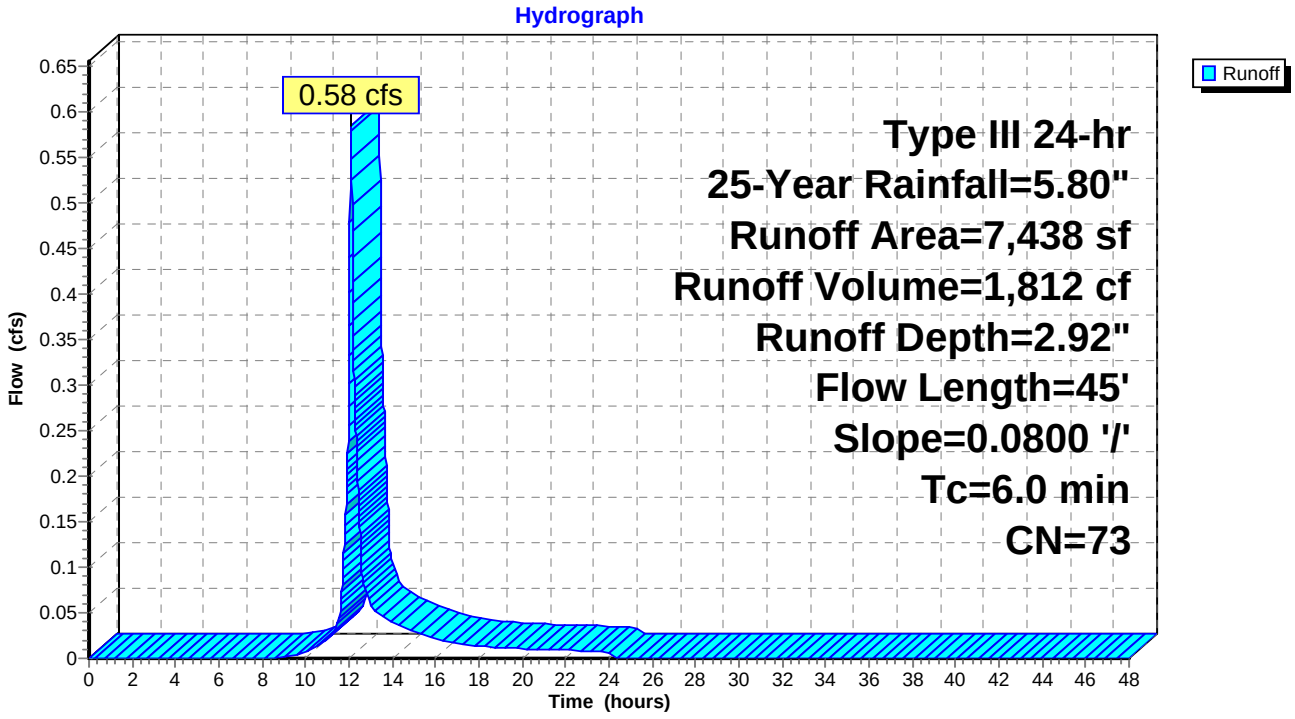
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG B
5,074	61	>75% Grass cover, Good, HSG B
7,438	73	Weighted Average
5,074		68.22% Pervious Area
2,364		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	45	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.0					**Direct Entry,**
6.0	45	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

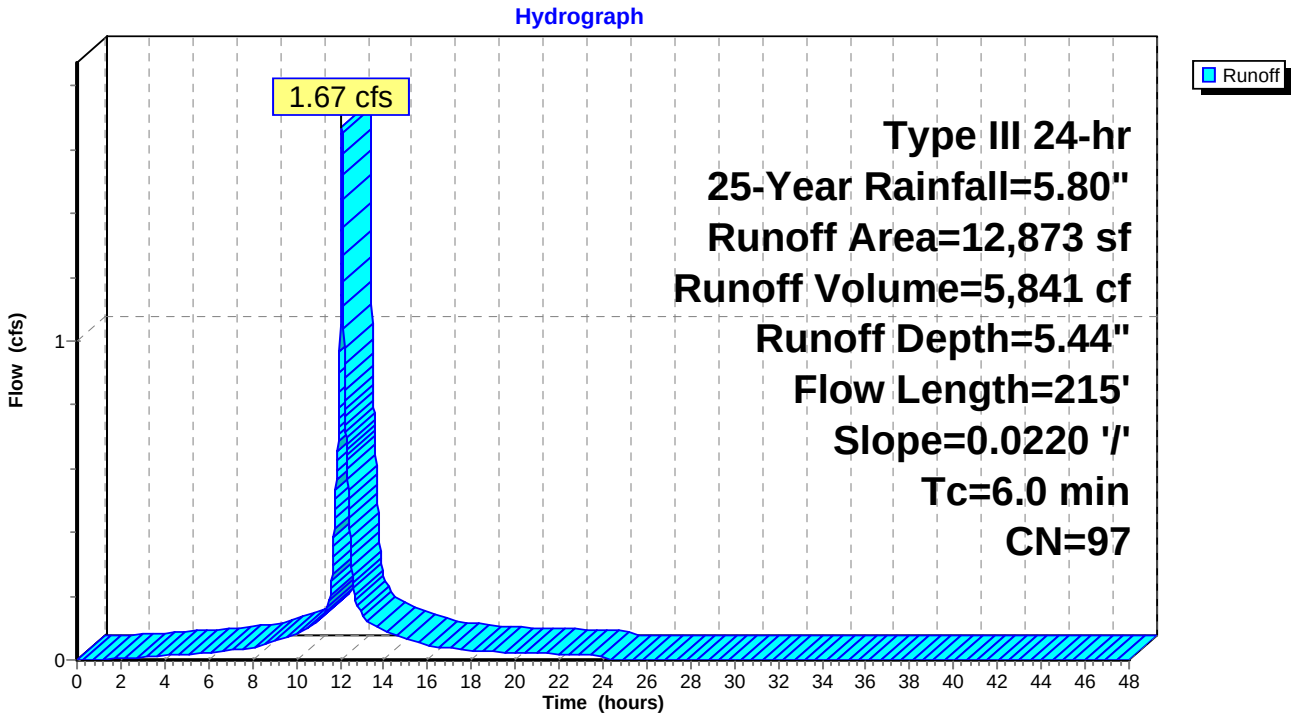
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 5,841 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,193	98	Paved parking, HSG B
10,370	98	Paved parking, HSG D
310	61	>75% Grass cover, Good, HSG B
12,873	97	Weighted Average
310		2.41% Pervious Area
12,563		97.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0220	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	115	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	215	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

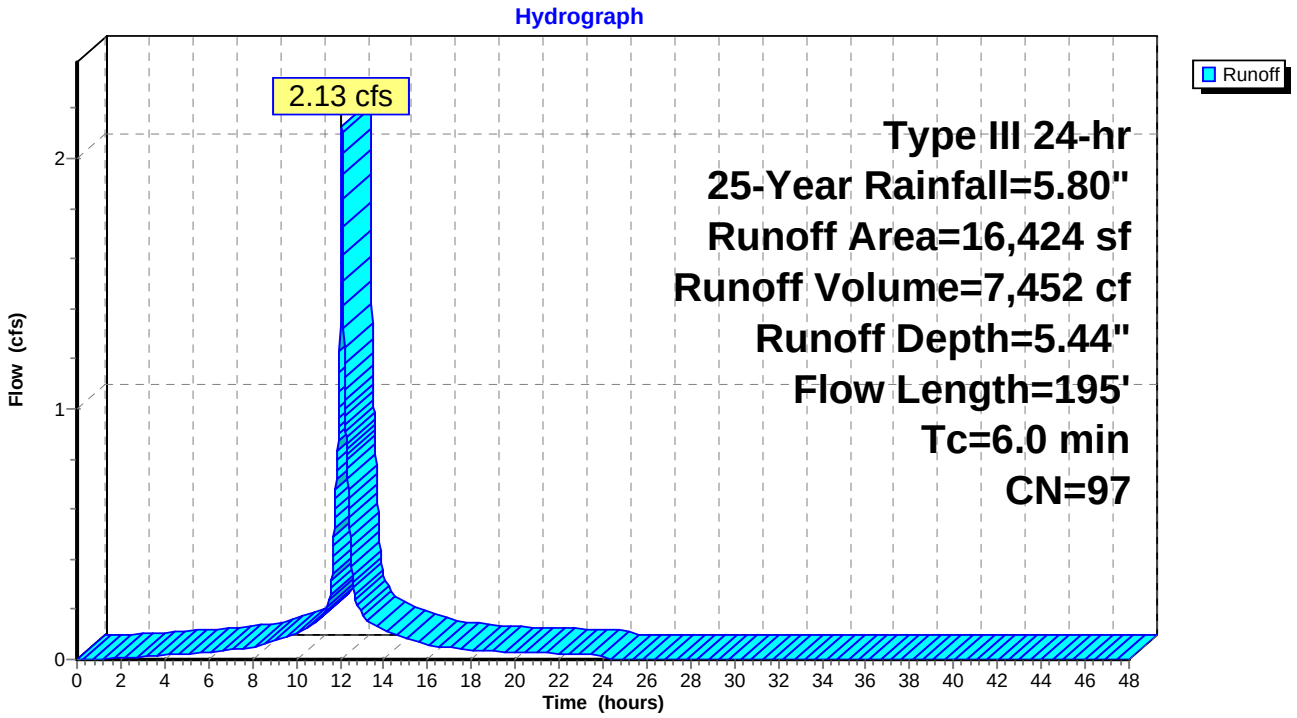
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 7,452 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,869	98	Paved parking, HSG B
13,780	98	Paved parking, HSG D
465	61	>75% Grass cover, Good, HSG B
310	80	>75% Grass cover, Good, HSG D
16,424	97	Weighted Average
775		4.72% Pervious Area
15,649		95.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0226	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	95	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	195	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment 11S: (new Subcat)

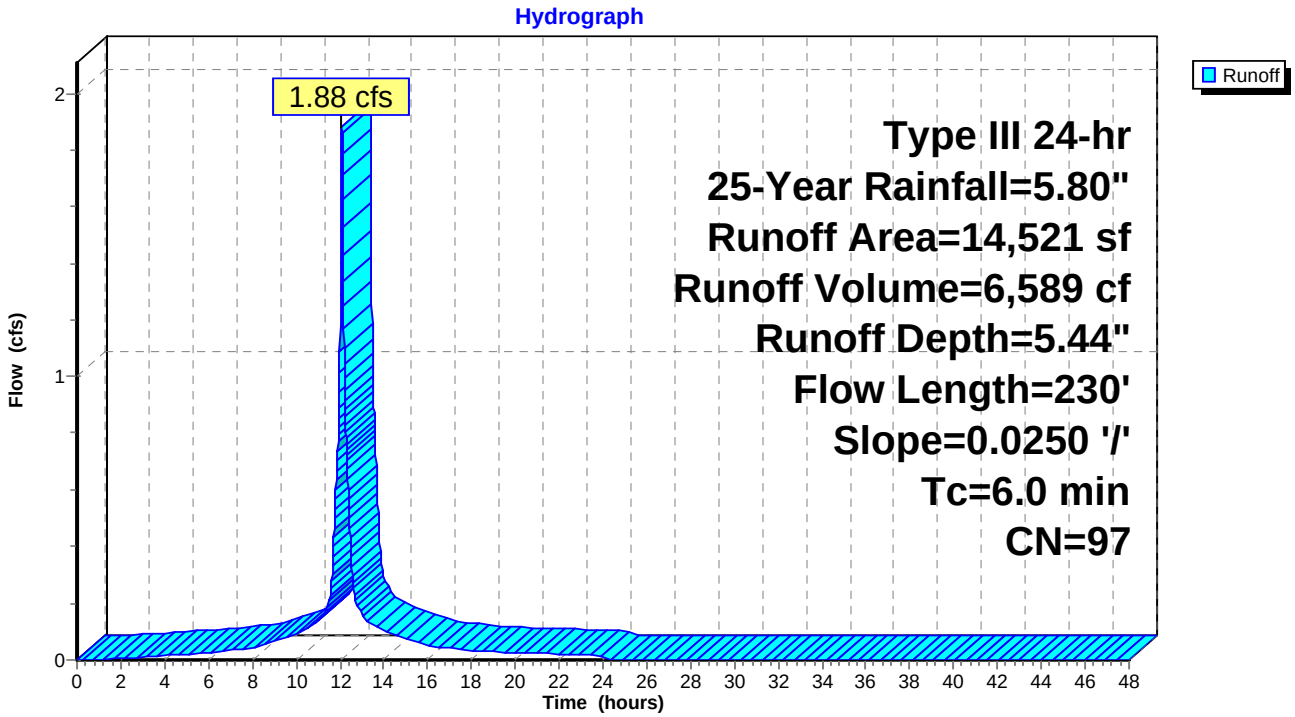
Runoff = 1.88 cfs @ 12.08 hrs, Volume= 6,589 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,962	98	Paved parking, HSG B
11,938	98	Paved parking, HSG D
621	80	>75% Grass cover, Good, HSG D
14,521	97	Weighted Average
621		4.28% Pervious Area
13,900		95.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	130	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	230	Total			

Subcatchment 11S: (new Subcat)



Summary for Subcatchment 12S: (new Subcat)

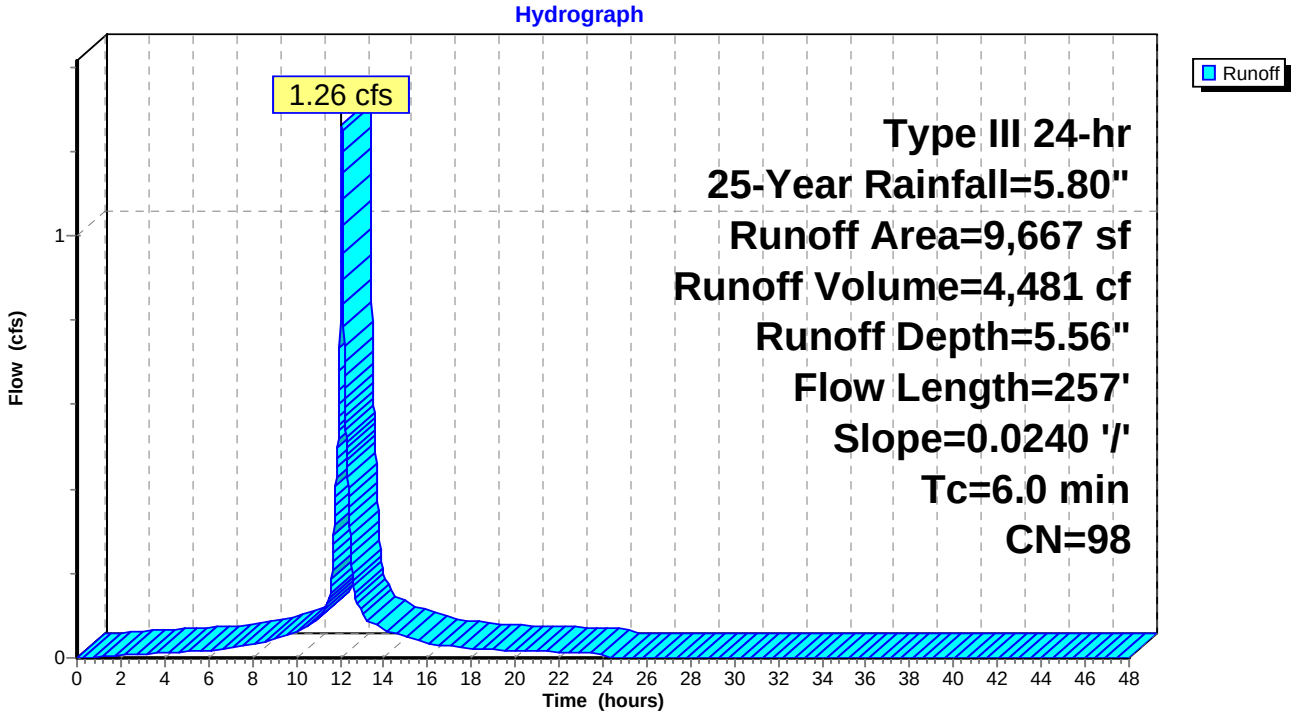
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,861	98	Paved parking, HSG B
6,806	98	Paved parking, HSG D
9,667	98	Weighted Average
9,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0240	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	157	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	257	Total			

Subcatchment 12S: (new Subcat)



Summary for Subcatchment 13S: (new Subcat)

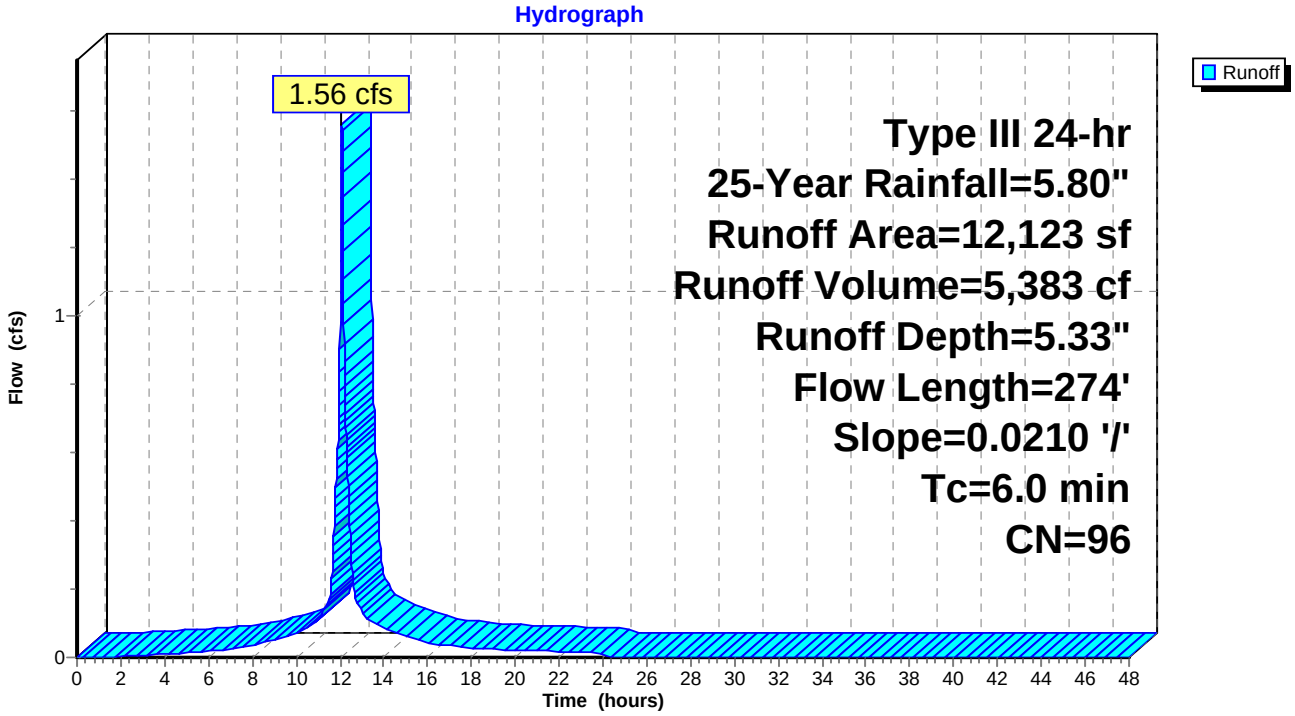
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,383 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
10,776	98	Paved parking, HSG D
1,347	80	>75% Grass cover, Good, HSG D
12,123	96	Weighted Average
1,347		11.11% Pervious Area
10,776		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0210	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.0	174	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	274	Total			

Subcatchment 13S: (new Subcat)



Summary for Subcatchment 14S: (new Subcat)

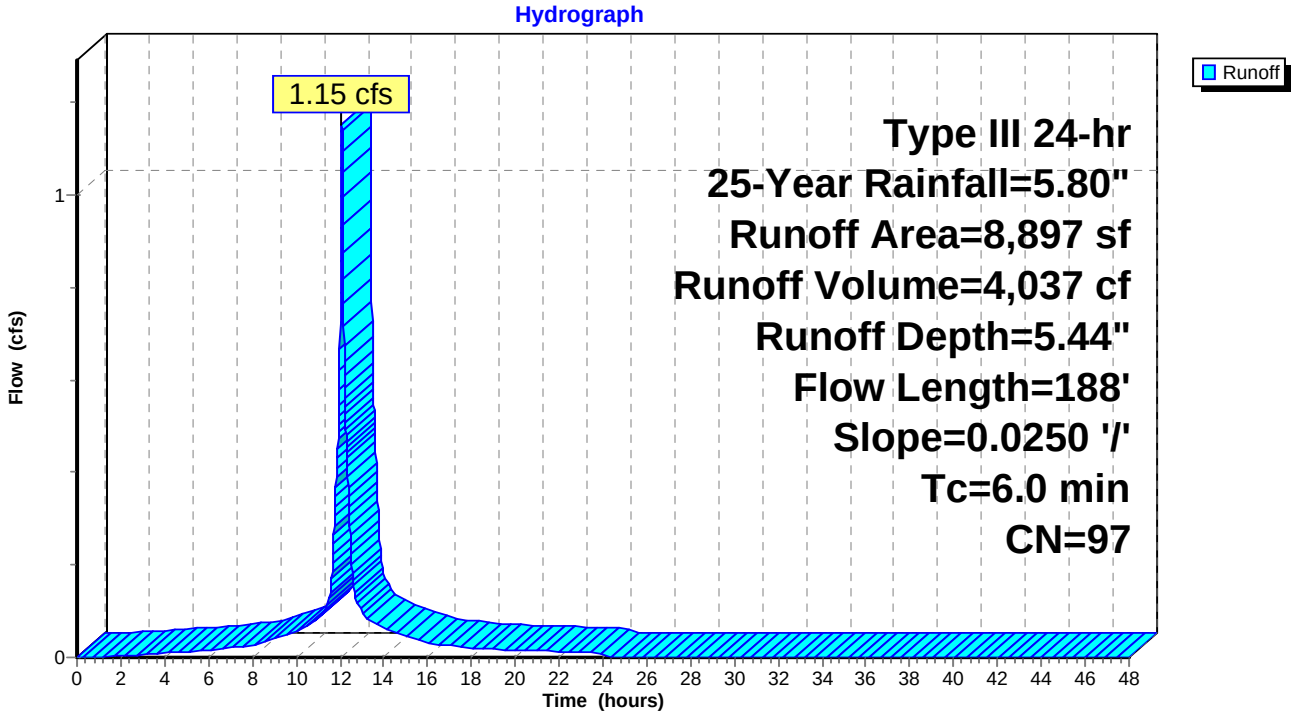
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,037 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,240	98	Paved parking, HSG D
657	80	>75% Grass cover, Good, HSG D
8,897	97	Weighted Average
657		7.38% Pervious Area
8,240		92.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	88	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	188	Total			

Subcatchment 14S: (new Subcat)



Summary for Subcatchment 15S: (new Subcat)

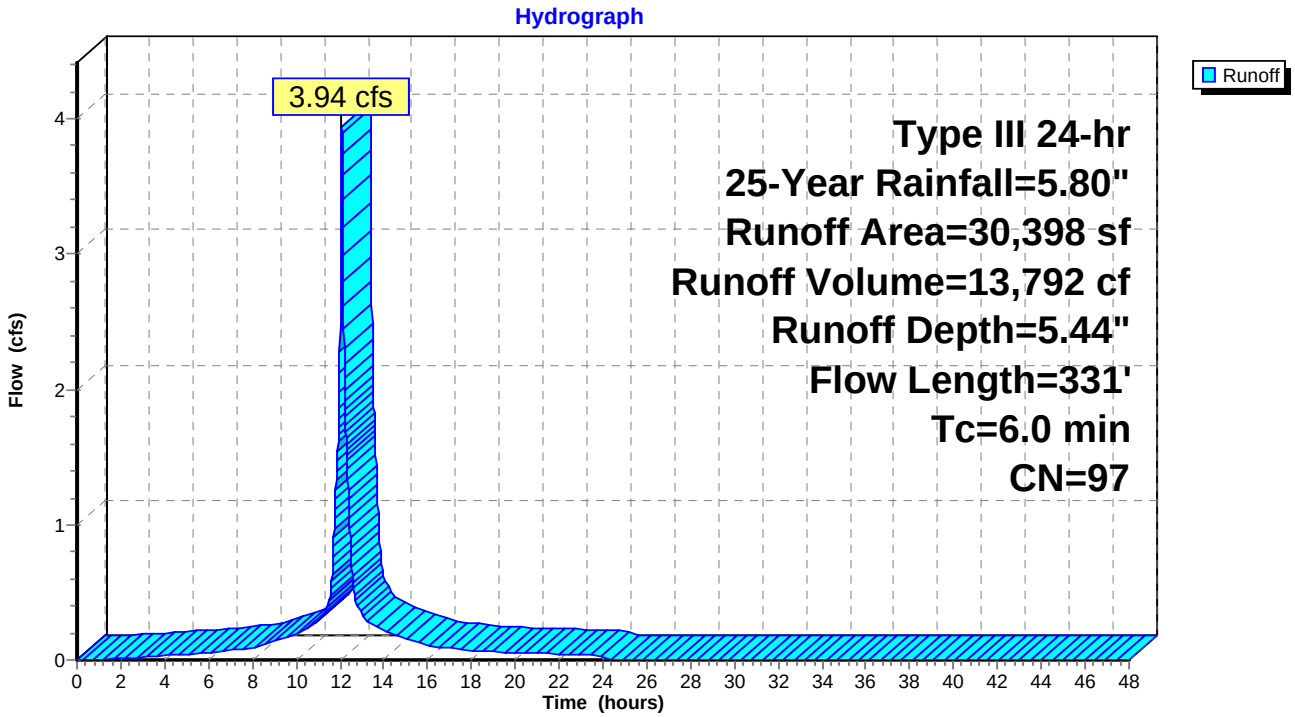
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
104	98	Paved parking, HSG B
28,288	98	Paved parking, HSG D
2,006	80	>75% Grass cover, Good, HSG D
30,398	97	Weighted Average
2,006		6.60% Pervious Area
28,392		93.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0225	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.7	231	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.1					**Direct Entry,**
6.0	331	Total			

Subcatchment 15S: (new Subcat)



Summary for Subcatchment 16S: (new Subcat)

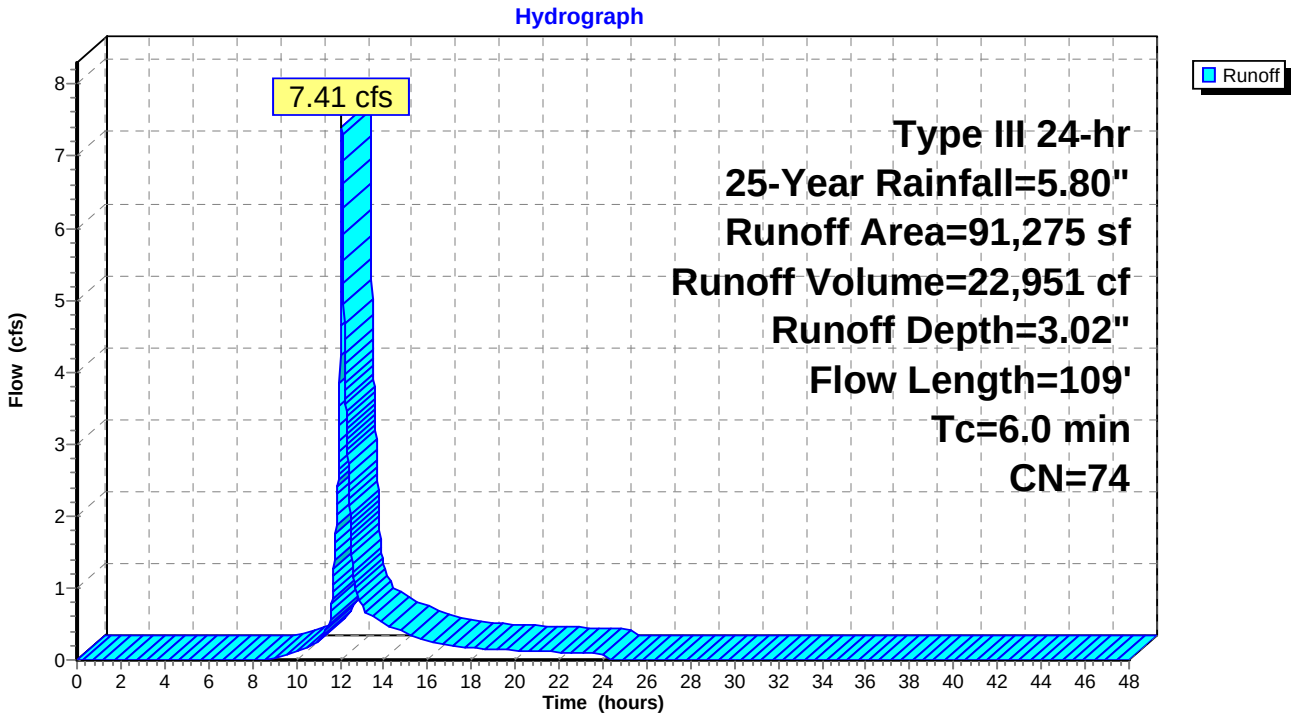
Runoff = 7.41 cfs @ 12.09 hrs, Volume= 22,951 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,956	80	>75% Grass cover, Good, HSG D
91,275	74	Weighted Average
90,383		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 16S: (new Subcat)



Summary for Subcatchment 17S: (new Subcat)

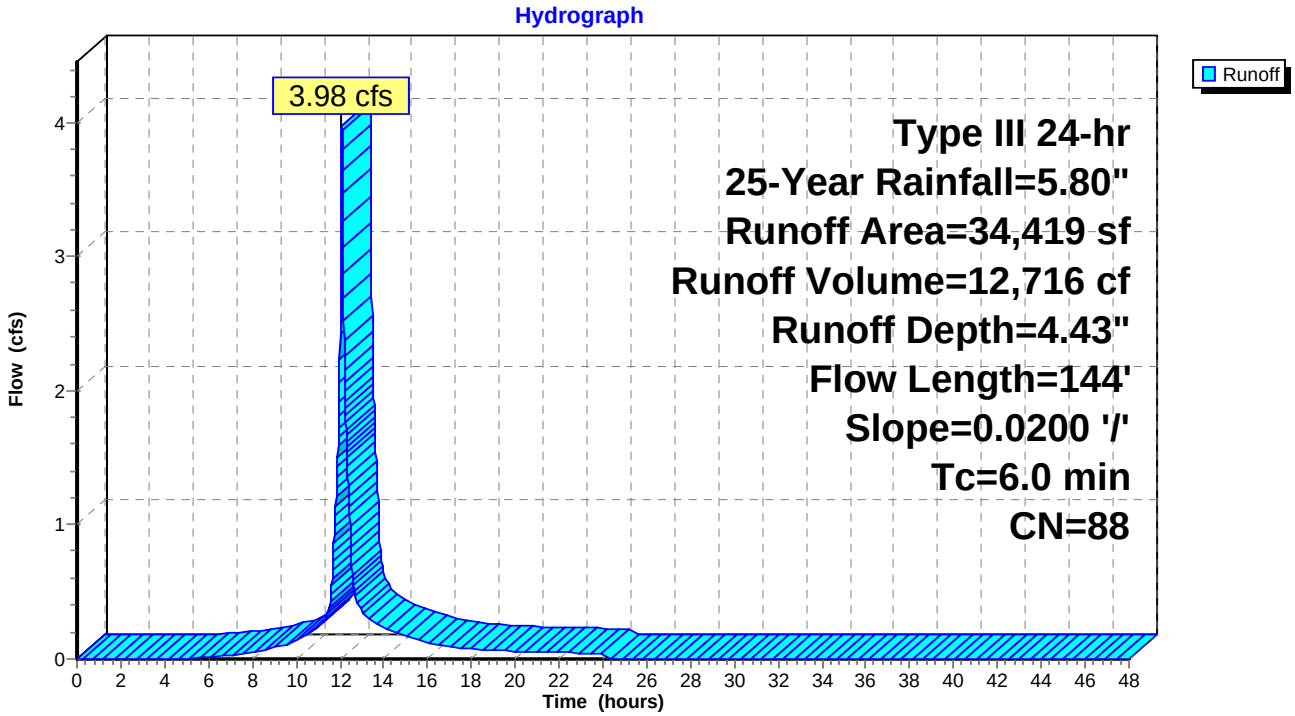
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 17S: (new Subcat)



Summary for Subcatchment OSE: Off Site Flow East of PKWY

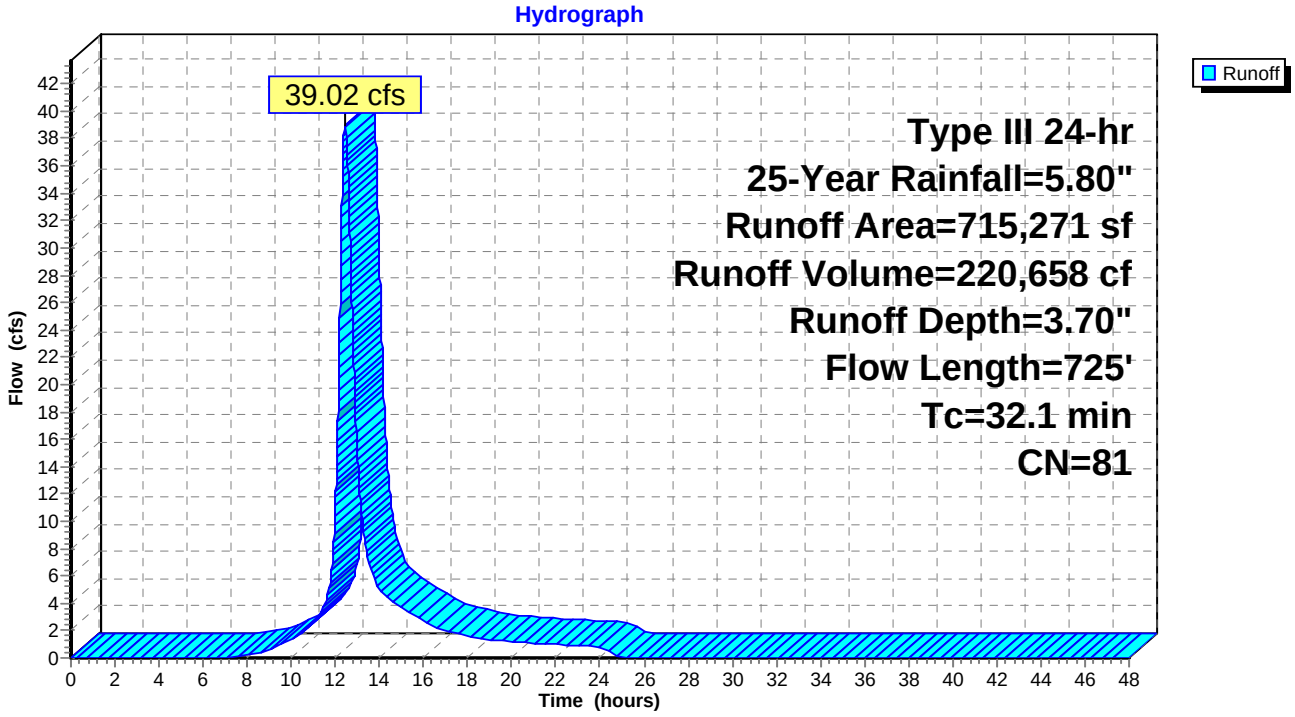
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

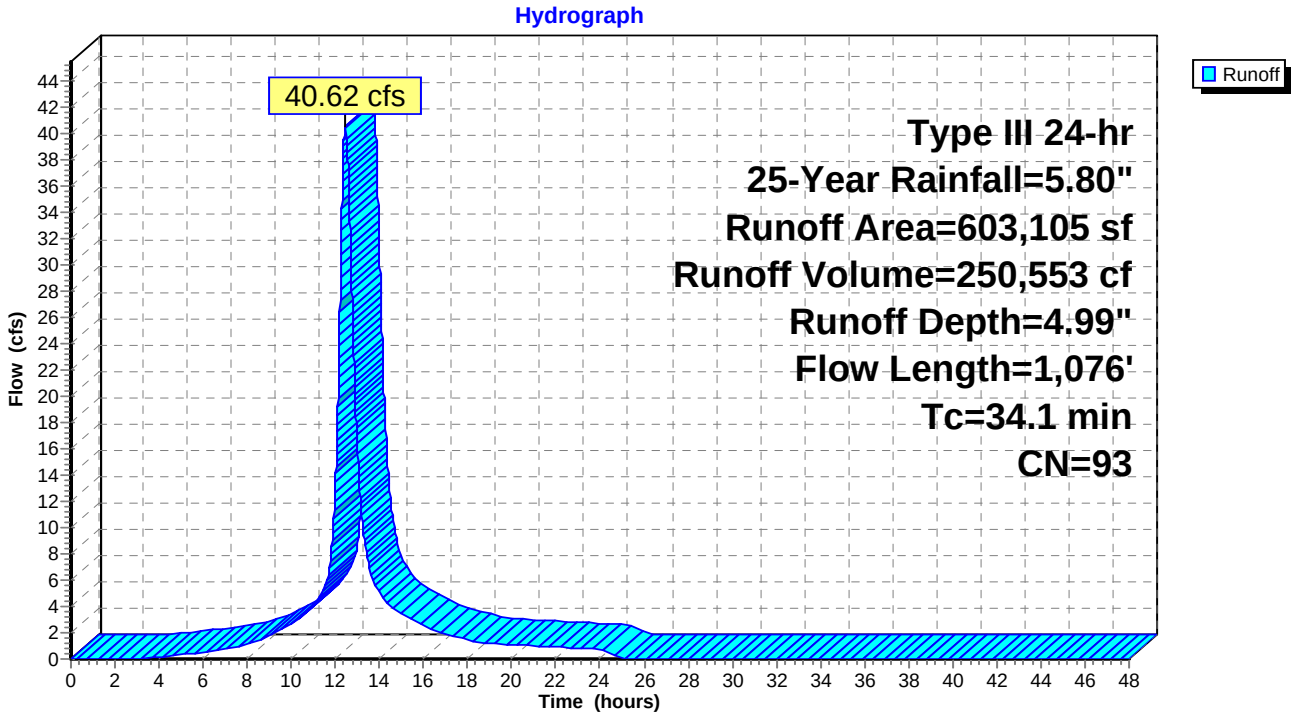
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: DMH 10162

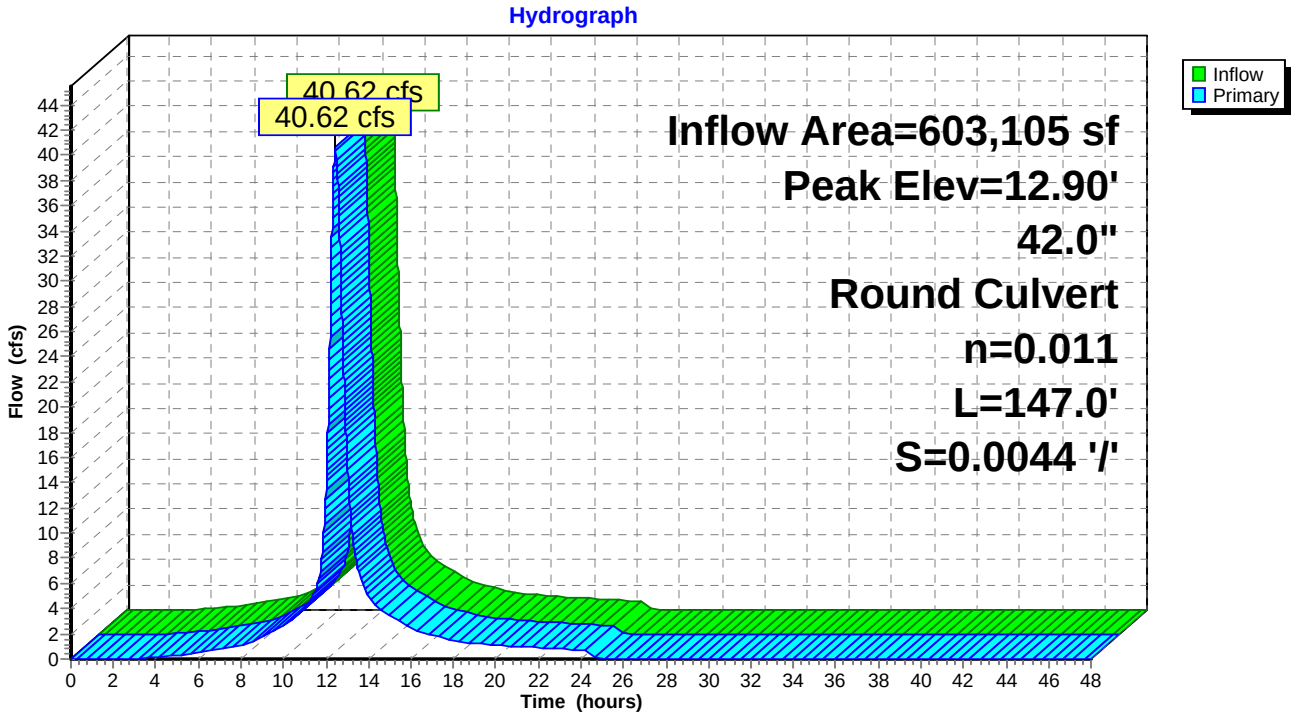
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.90' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 147.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0044 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.59 cfs @ 12.46 hrs HW=12.89' TW=12.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.59 cfs @ 4.22 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB-15

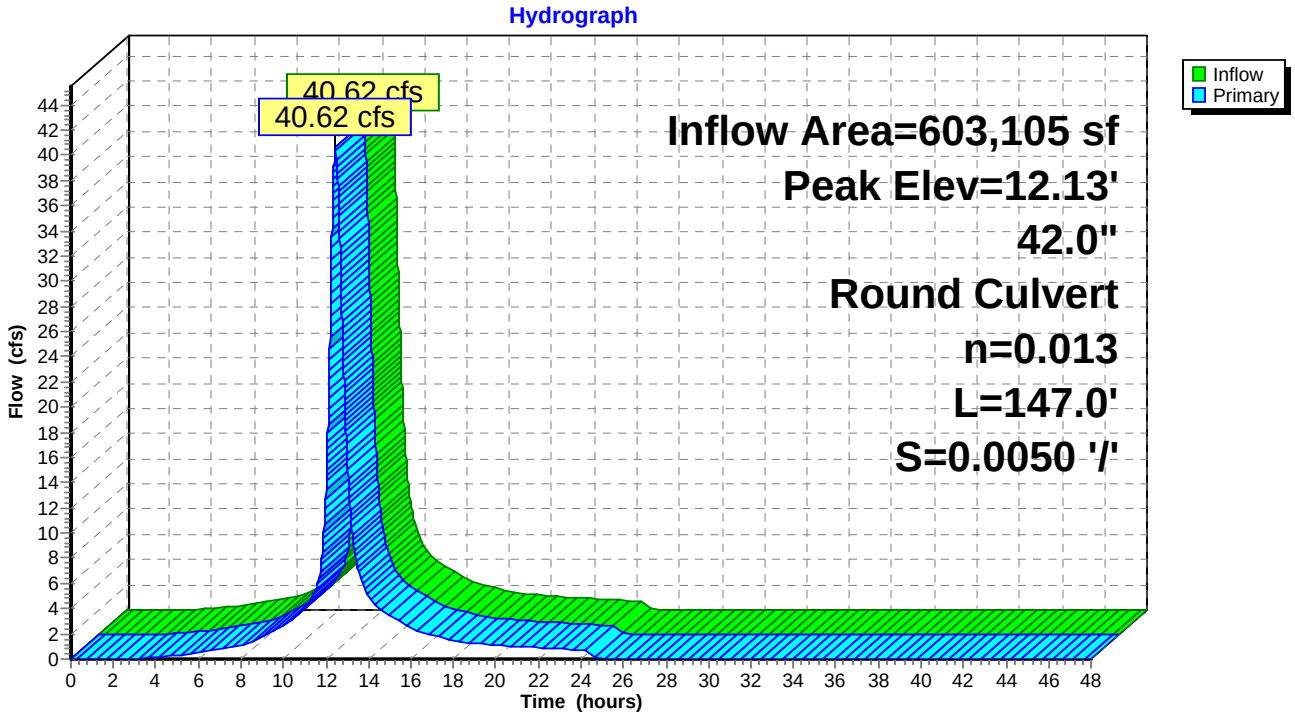
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.13' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**42.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=12.13' TW=10.89' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.61 cfs @ 4.22 fps)

Pond 2P: CB-15



Summary for Pond 3P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 66.90 cfs @ 12.42 hrs, Volume= 277,970 cf
Outflow = 66.78 cfs @ 12.44 hrs, Volume= 277,253 cf, Atten= 0%, Lag= 1.1 min
Primary = 66.78 cfs @ 12.44 hrs, Volume= 277,253 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.97' @ 12.44 hrs Surf.Area= 3,202 sf Storage= 4,790 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 4.8 min calculated for 277,253 cf (100% of inflow)
Center-of-Mass det. time= 3.0 min (821.0 - 818.0)

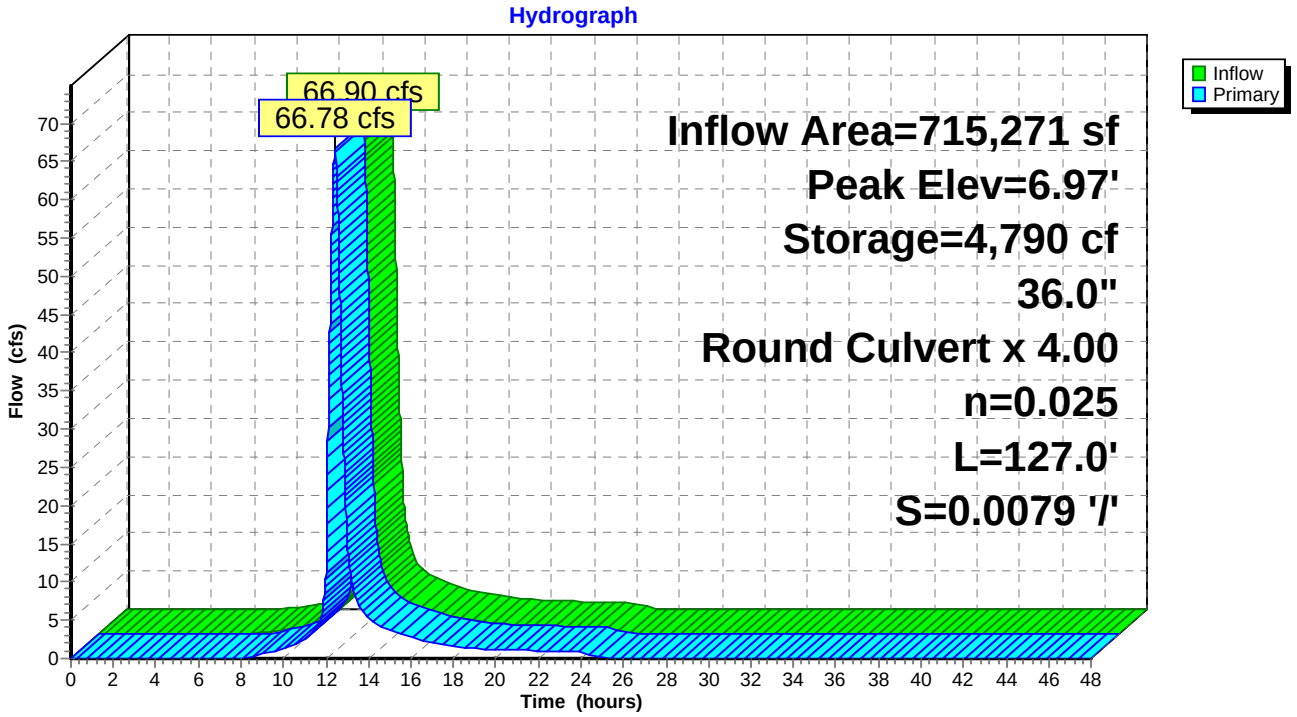
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=66.78 cfs @ 12.44 hrs HW=6.97' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 66.78 cfs @ 4.38 fps)

Pond 3P: Existing (4)-36" Culverts



Summary for Pond 4P: CBR 15036

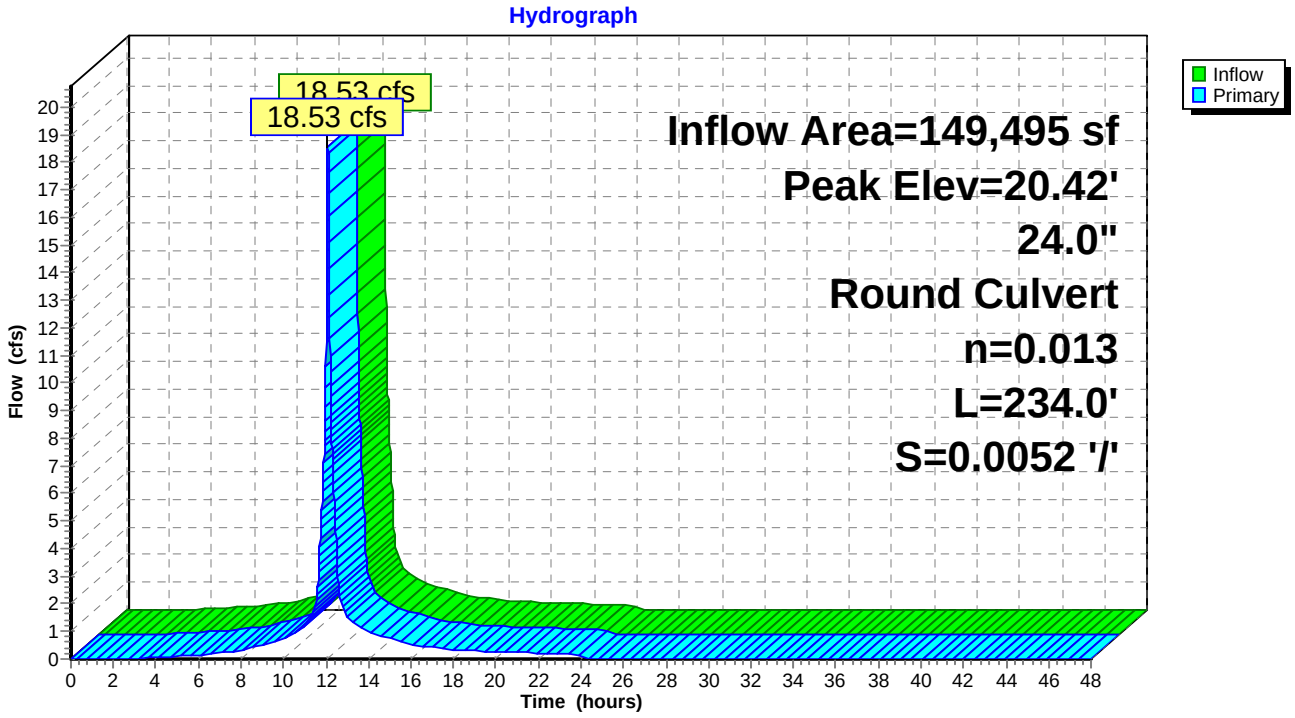
Inflow Area = 149,495 sf, 85.96% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.42' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.59'	**24.0" Round Culvert** L= 234.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.59' / 14.38' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.08 hrs HW=20.36' TW=18.06' (Dynamic Tailwater)
1=Culvert (Outlet Controls 18.20 cfs @ 5.79 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

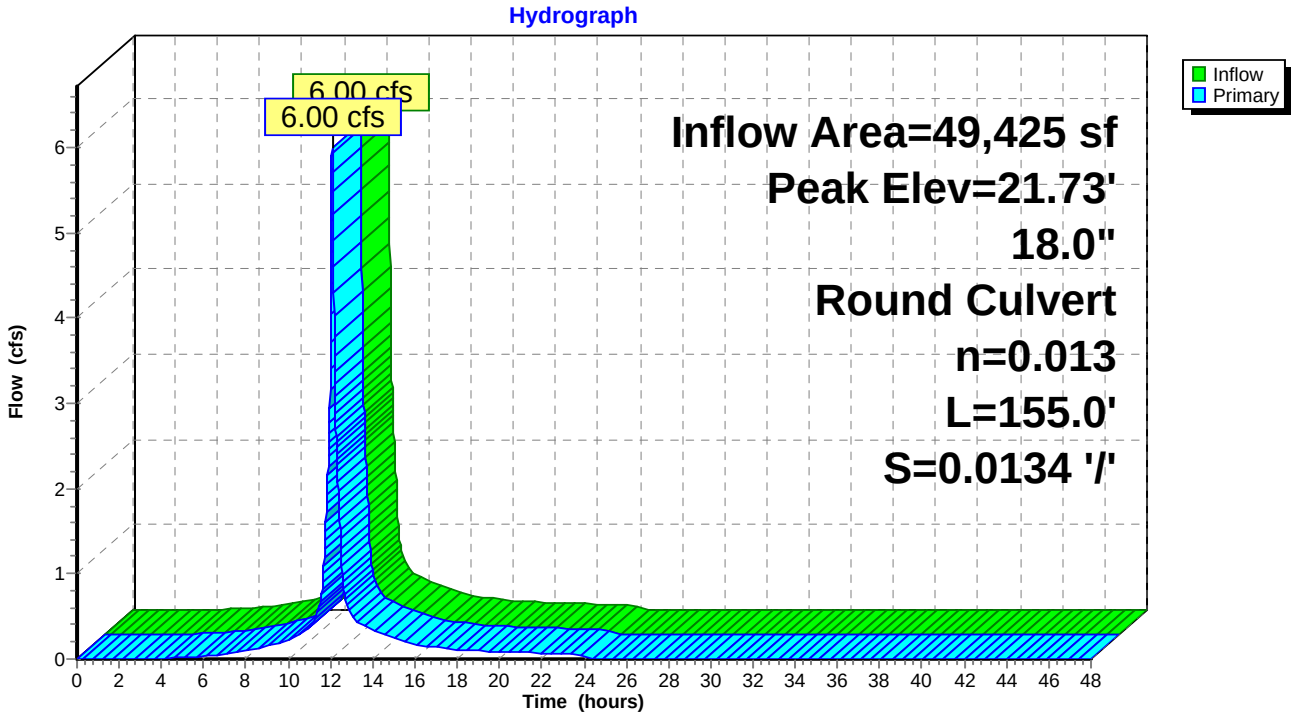
Inflow Area = 49,425 sf, 82.25% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.73' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.88 cfs @ 12.08 hrs HW=21.70' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.88 cfs @ 4.74 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

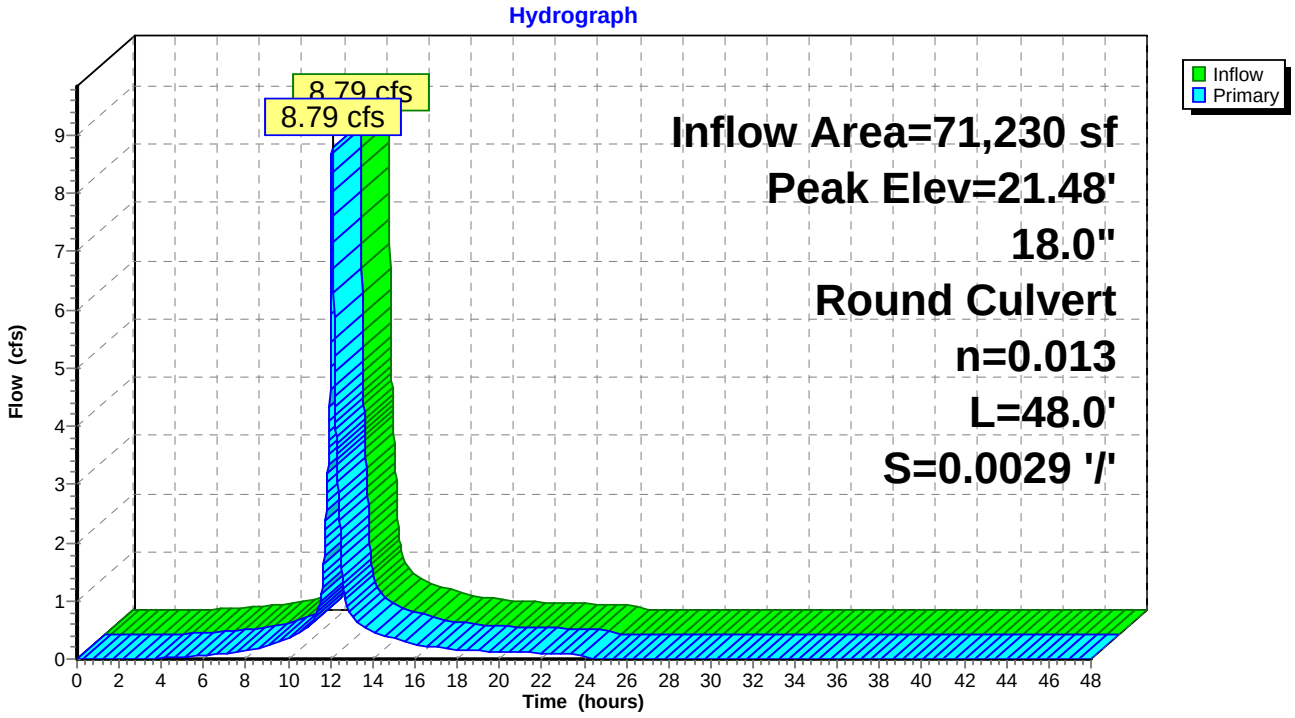
Inflow Area = 71,230 sf, 84.12% Impervious, Inflow Depth = 4.89" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.48' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.08 hrs HW=21.37' TW=20.36' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.53 cfs @ 4.83 fps)

Pond 6P: CBR 15040



Summary for Pond 7P: CB 12

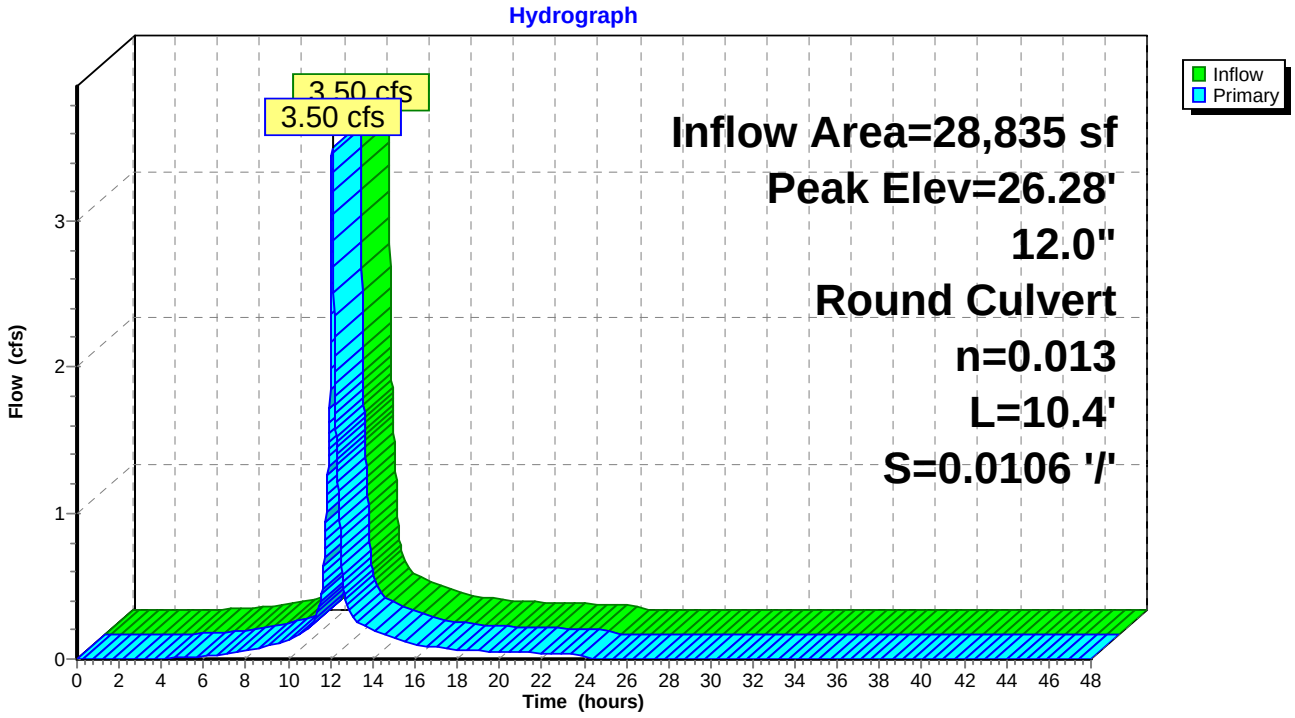
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.28' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.68'	**12.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.68' / 24.57' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=26.27' TW=25.42' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.50 cfs @ 4.45 fps)

Pond 7P: CB 12



Summary for Pond 8P: CBR 15042

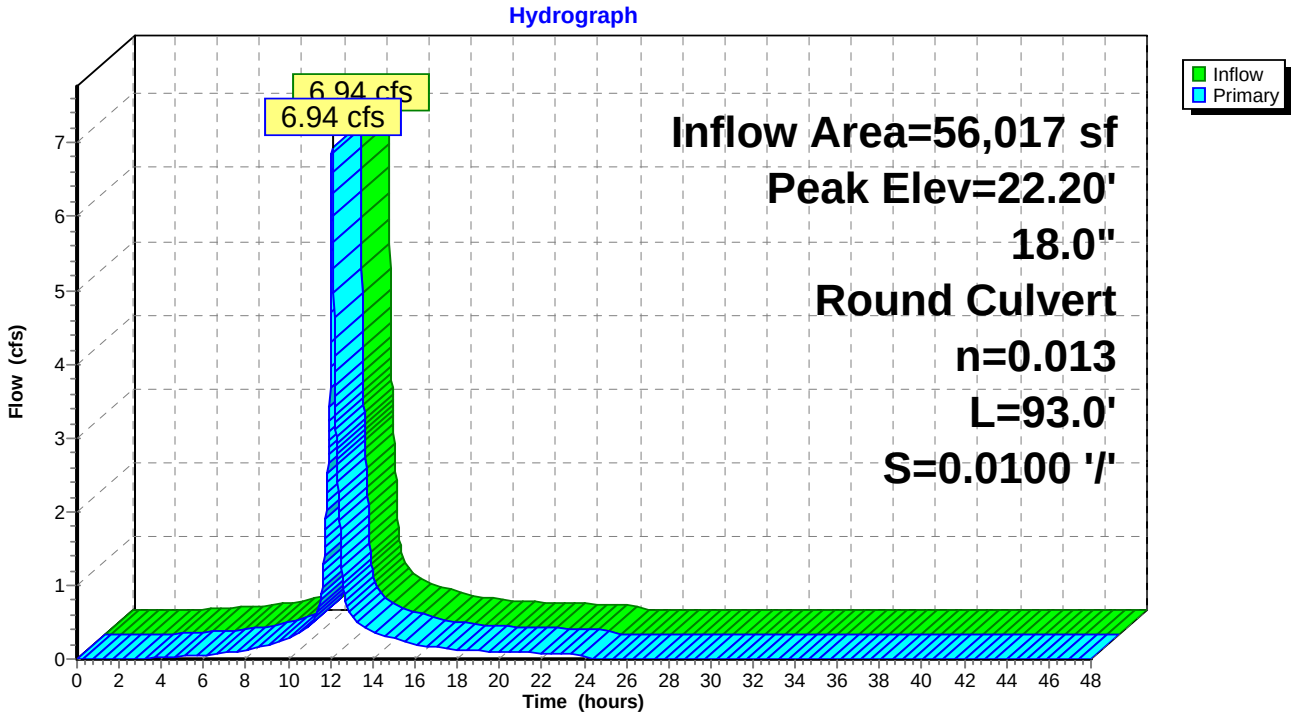
Inflow Area = 56,017 sf, 85.18% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf
Outflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.20' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.35 cfs @ 12.08 hrs HW=22.01' TW=21.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.35 cfs @ 3.60 fps)

Pond 8P: CBR 15042



Summary for Pond 9P: CB-11

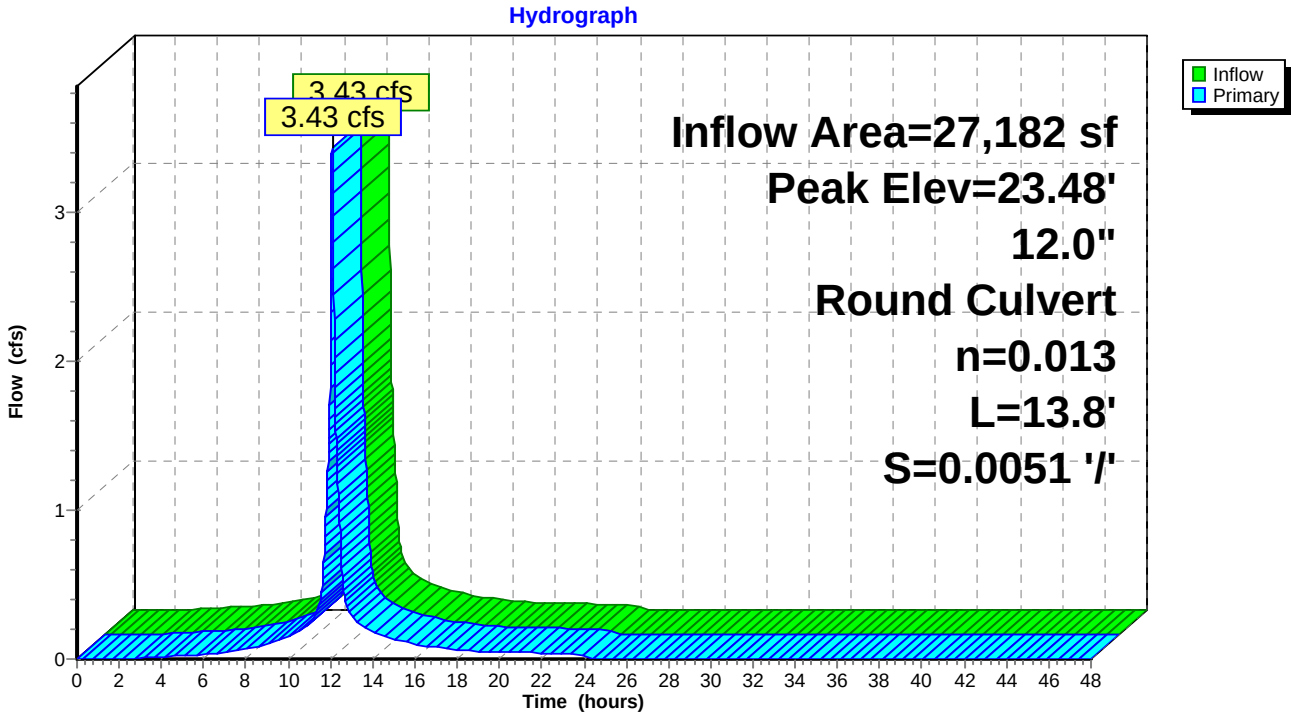
Inflow Area = 27,182 sf, 88.34% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.48' @ 12.10 hrs
Flood Elev= 27.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.47'	**12.0" Round Culvert** L= 13.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.47' / 21.40' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.43 cfs @ 12.08 hrs HW=23.32' TW=22.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.43 cfs @ 4.37 fps)

Pond 9P: CB-11



Summary for Pond 10P: CB-16

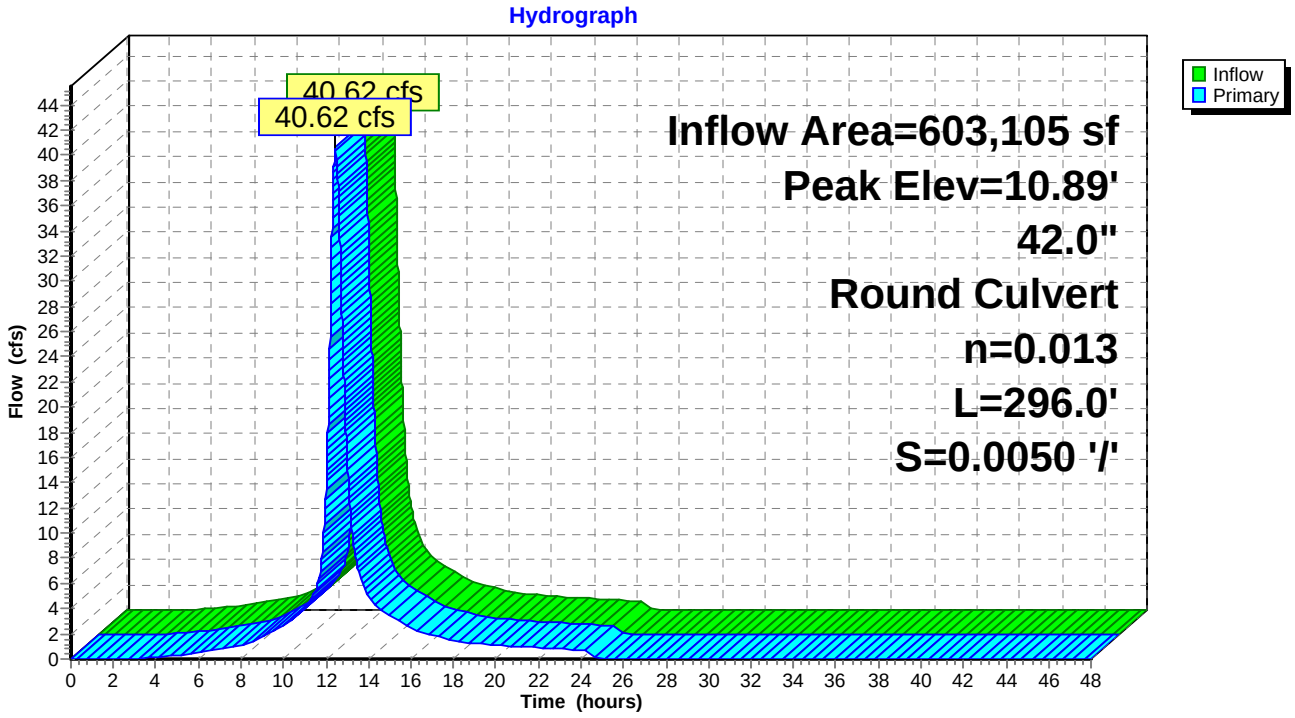
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.89' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**42.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.64 cfs @ 12.46 hrs HW=10.89' TW=9.28' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.64 cfs @ 5.62 fps)

Pond 10P: CB-16



Summary for Pond 11P: DMH-1

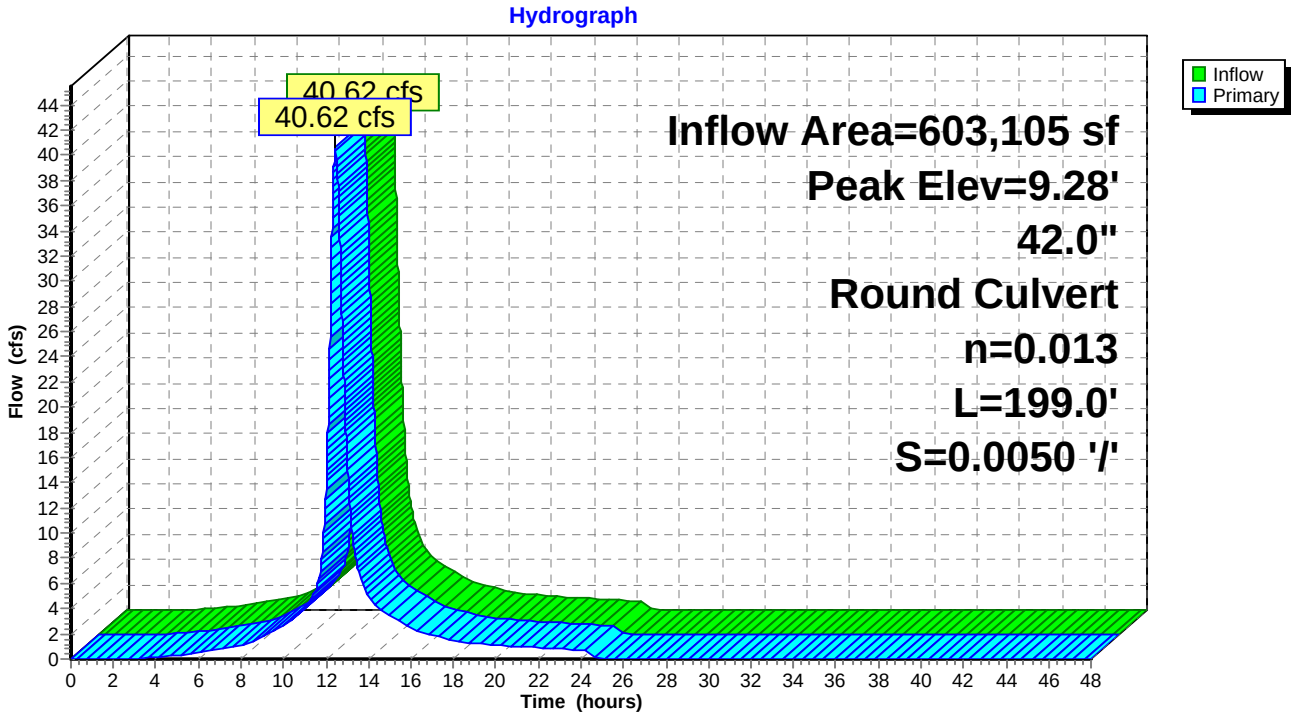
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 9.28' @ 12.44 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**42.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.64 cfs @ 12.46 hrs HW=9.28' TW=7.85' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.64 cfs @ 5.70 fps)

Pond 11P: DMH-1



Summary for Pond 12P: CB-4

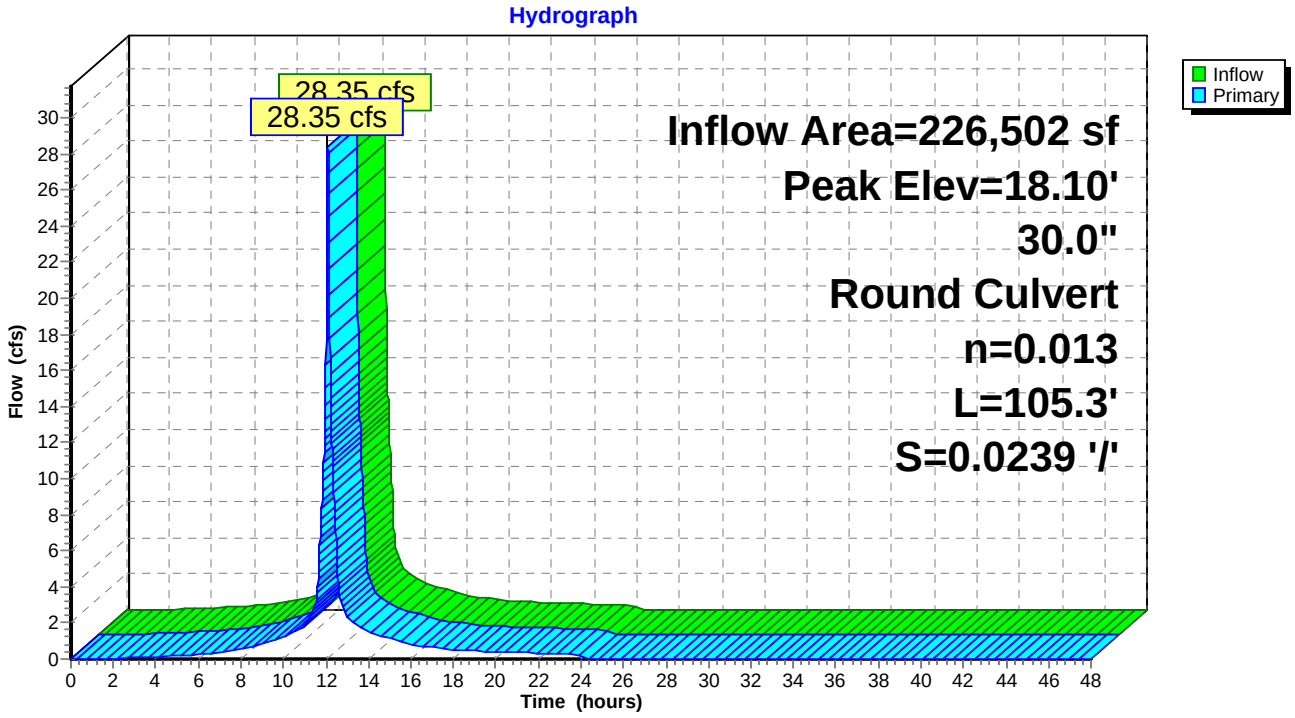
Inflow Area = 226,502 sf, 88.10% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf
Outflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.10' @ 12.09 hrs
Flood Elev= 20.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.28'	**30.0" Round Culvert** L= 105.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.28' / 11.76' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.21 cfs @ 12.08 hrs HW=18.06' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.21 cfs @ 5.75 fps)

Pond 12P: CB-4



Summary for Pond 13P: CB-7

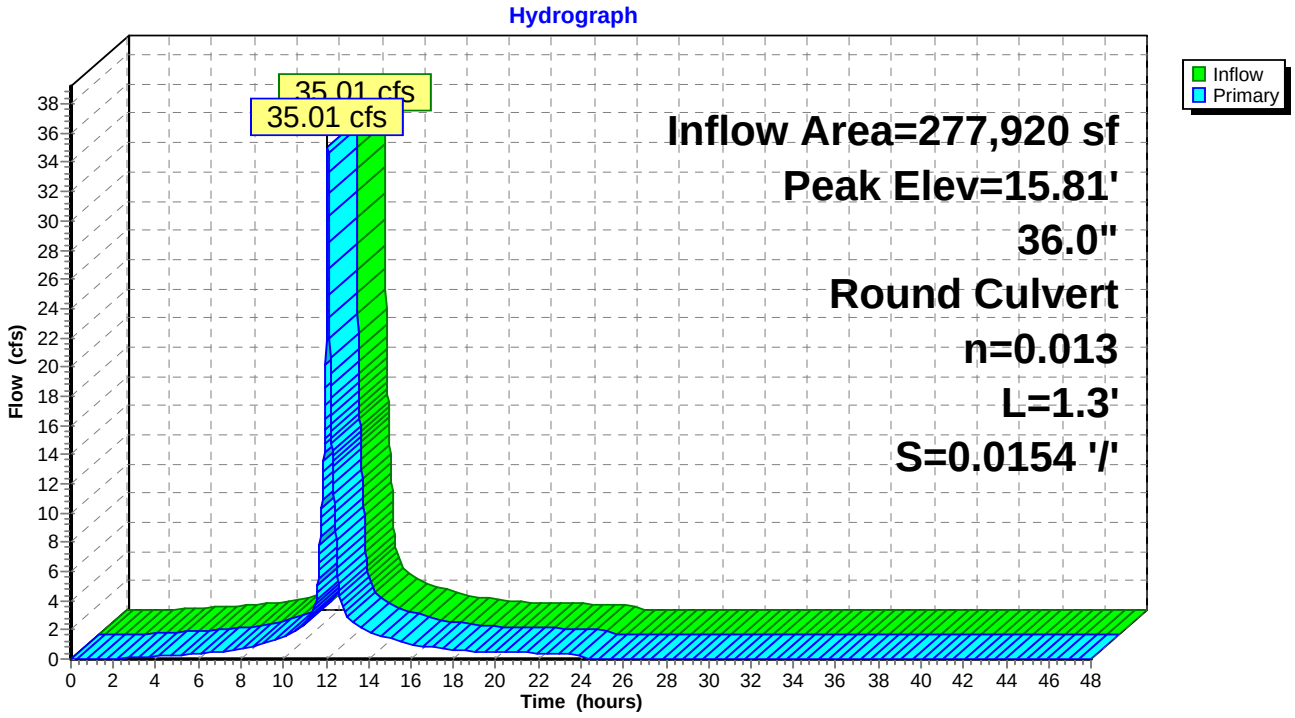
Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.81' @ 12.09 hrs
Flood Elev= 19.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.66'	**36.0" Round Culvert** L= 1.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.66' / 11.64' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=34.41 cfs @ 12.08 hrs HW=15.77' TW=14.13' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 34.41 cfs @ 4.87 fps)

Pond 13P: CB-7



Summary for Pond 14P: ICS-1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.28 cfs @ 12.08 hrs, Volume= 90,264 cf
Secondary = 8.34 cfs @ 12.16 hrs, Volume= 28,583 cf

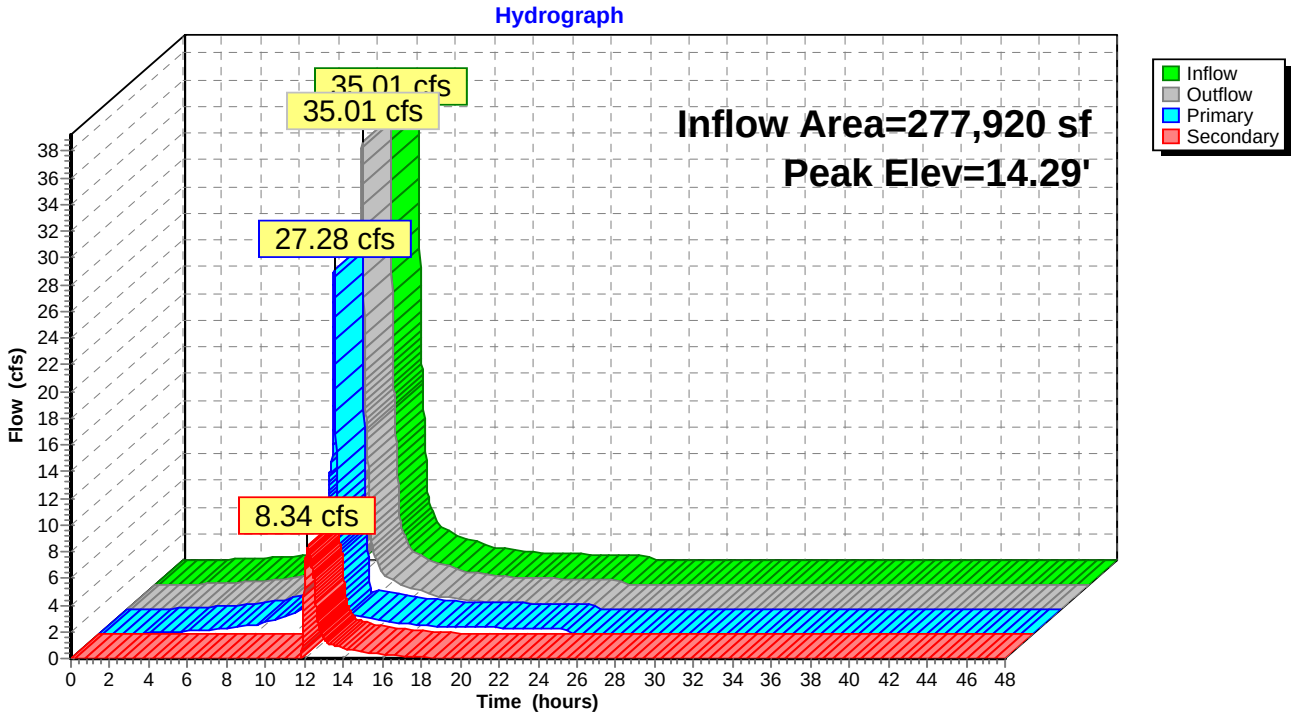
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.29' @ 12.14 hrs
Flood Elev= 19.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.54'	**24.0" Round Culvert X 4.00** L= 2.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.49' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	11.54'	**18.0" Round Bypass Culvert** L= 27.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.00' S= 0.0196 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	13.00'	**6.0' long Overflow Weir** 2 End Contraction(s)

Primary OutFlow Max=27.30 cfs @ 12.08 hrs HW=14.12' TW=13.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.30 cfs @ 2.17 fps)

Secondary OutFlow Max=7.02 cfs @ 12.16 hrs HW=14.28' TW=13.19' (Dynamic Tailwater)
└**2=Bypass Culvert** (Inlet Controls 7.02 cfs @ 3.97 fps)
└**3=Overflow Weir** (Passes 7.02 cfs of 26.65 cfs potential flow)

Pond 14P: ICS-1



Summary for Pond 15P: CB-6

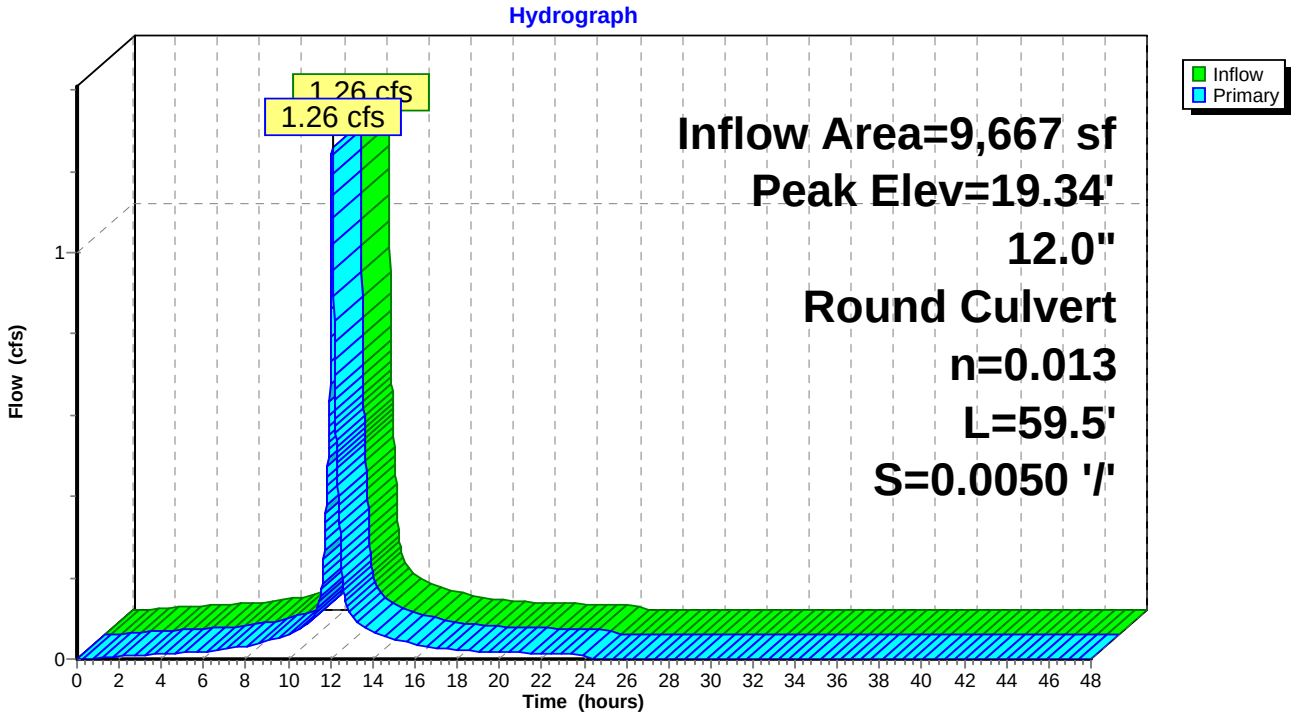
Inflow Area = 9,667 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.34' @ 12.10 hrs
Flood Elev= 20.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.06'	**12.0" Round Culvert** L= 59.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.06' / 14.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=19.20' TW=19.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.00 cfs @ 1.28 fps)

Pond 15P: CB-6



Summary for Pond 16P: CB-3

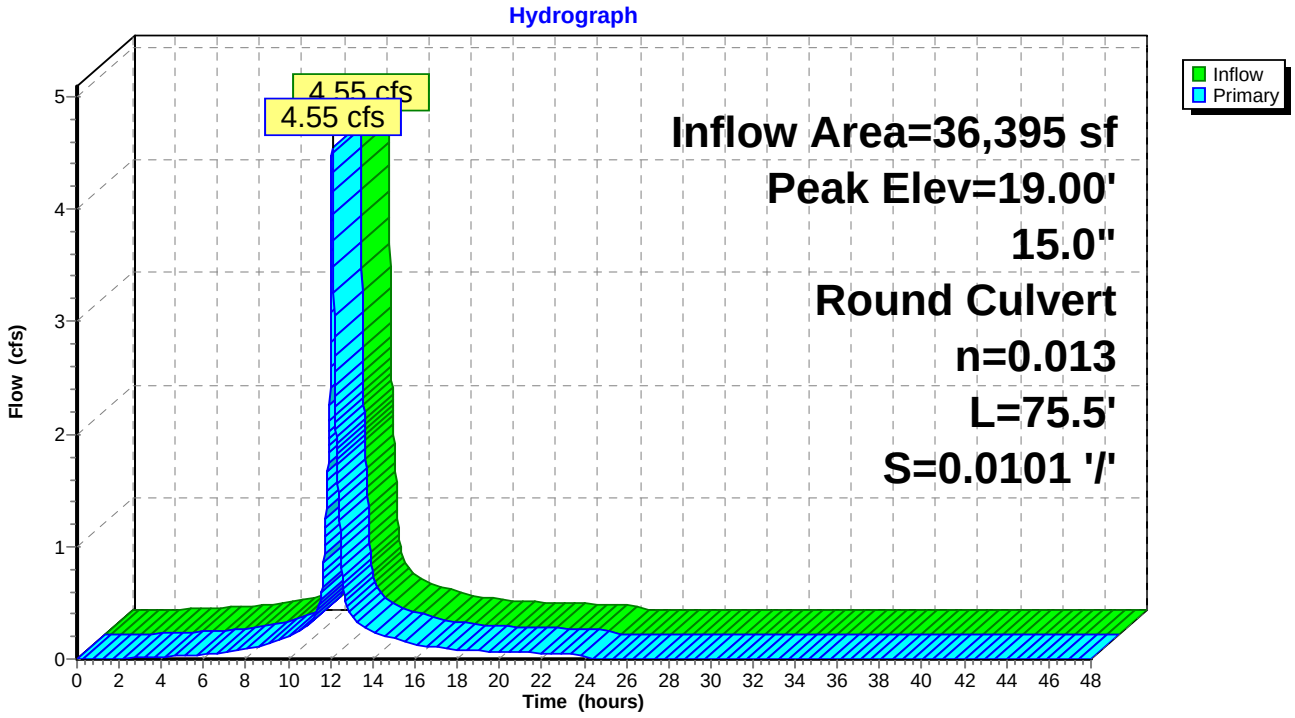
Inflow Area = 36,395 sf, 87.42% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf
Outflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.00' @ 12.09 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.14'	**15.0" Round Culvert** L= 75.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.14' / 14.38' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.36 cfs @ 12.08 hrs HW=18.94' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.36 cfs @ 3.55 fps)

Pond 16P: CB-3



Summary for Pond 17P: CB-2

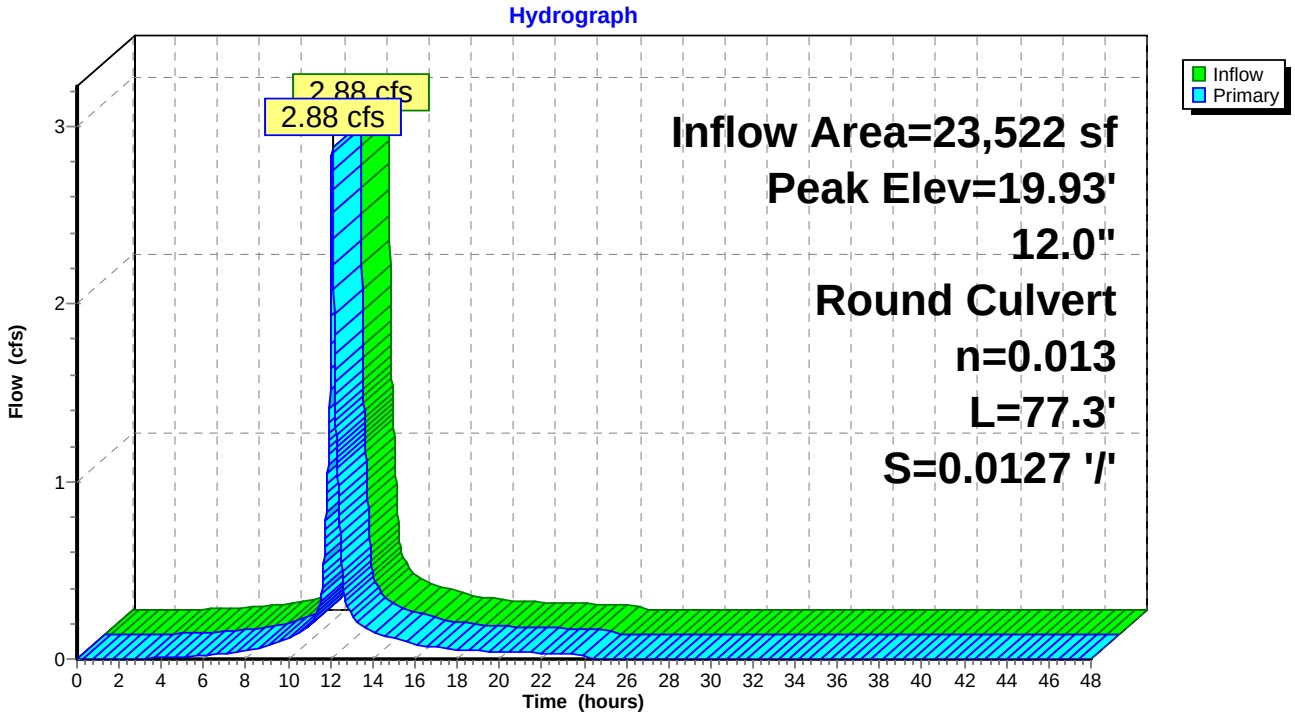
Inflow Area = 23,522 sf, 81.85% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf
Outflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.93' @ 12.10 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.22'	**12.0" Round Culvert** L= 77.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.22' / 15.24' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.08 hrs HW=19.81' TW=18.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.79 cfs @ 3.55 fps)

Pond 17P: CB-2



Summary for Pond 18P: CB-1

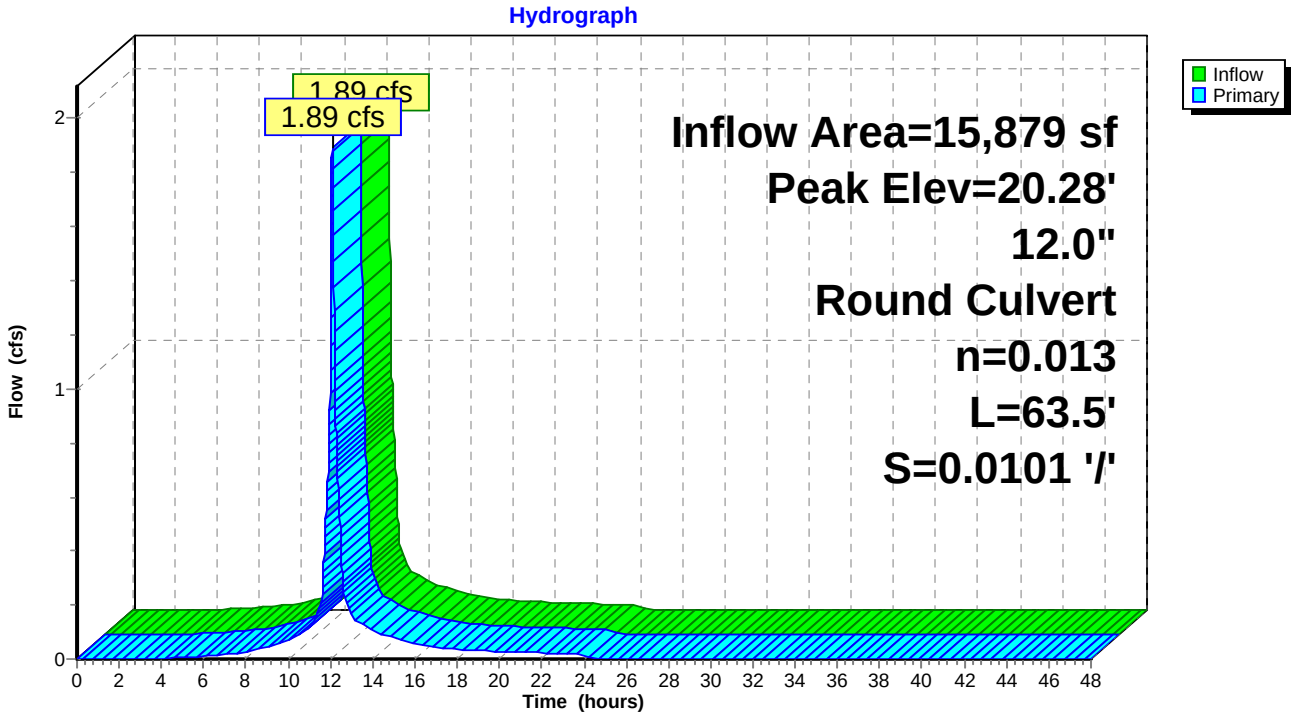
Inflow Area = 15,879 sf, 76.74% Impervious, Inflow Depth = 4.65" for 25-Year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.28' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.96'	**12.0" Round Culvert** L= 63.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.96' / 16.32' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.09 hrs HW=20.13' TW=19.83' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.64 cfs @ 2.09 fps)

Pond 18P: CB-1



Summary for Pond 19P: CB-8

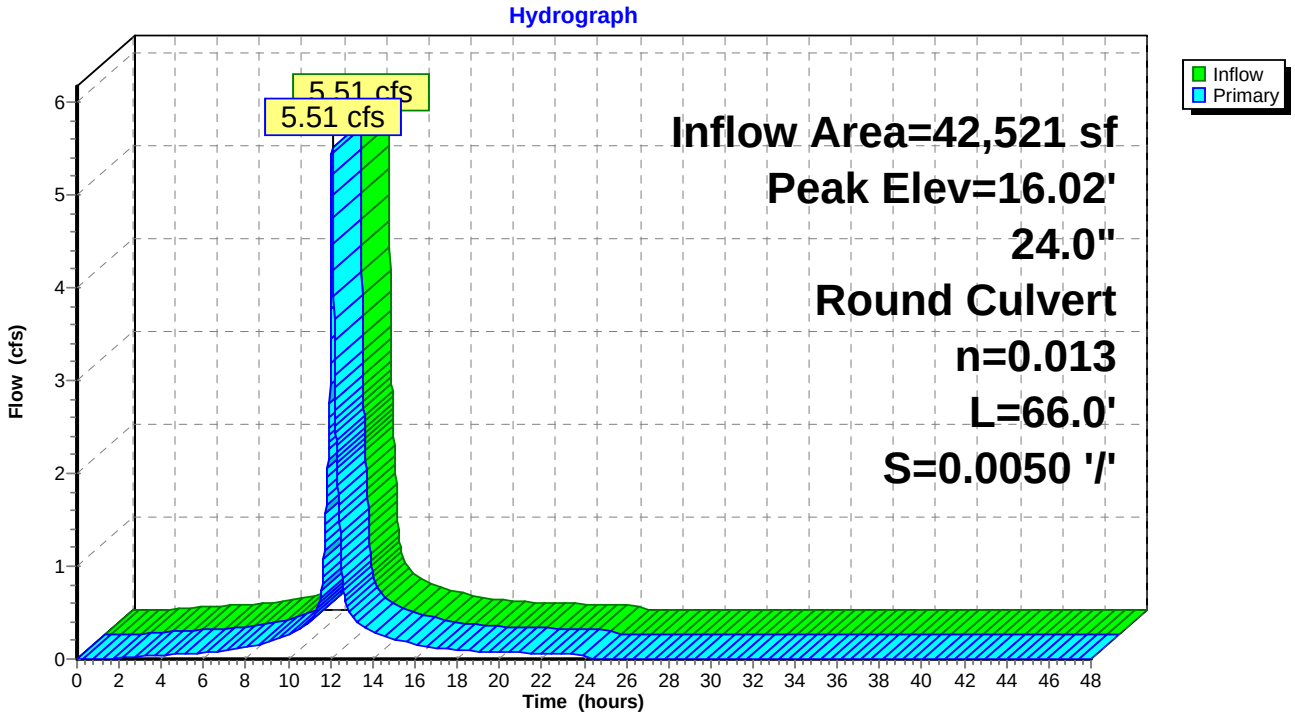
Inflow Area = 42,521 sf, 92.11% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf
Outflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.02' @ 12.09 hrs
Flood Elev= 18.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.09'	**24.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.09' / 11.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.30 cfs @ 12.08 hrs HW=15.97' TW=15.77' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 5.30 cfs @ 1.69 fps)

Pond 19P: CB-8



Summary for Pond 20P: CB-9

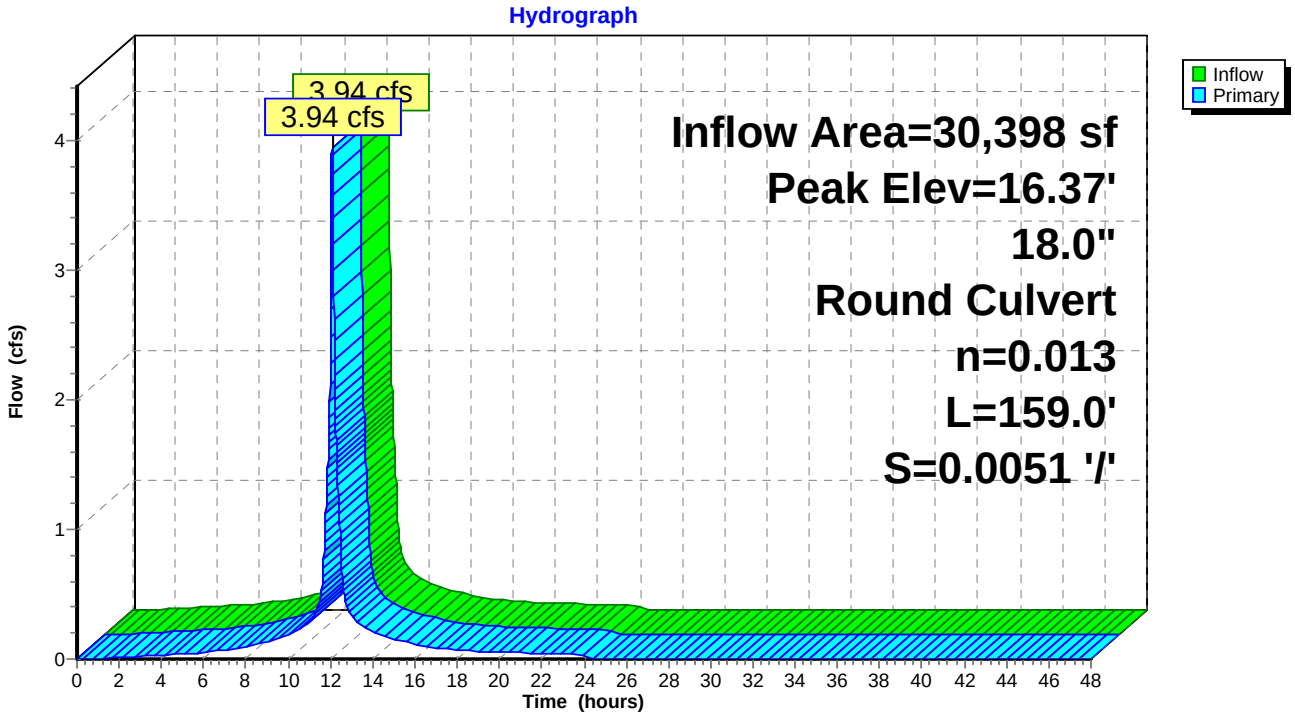
Inflow Area = 30,398 sf, 93.40% Impervious, Inflow Depth = 5.44" for 25-Year event
Inflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf
Outflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.37' @ 12.10 hrs
Flood Elev= 16.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**18.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.00' / 12.19' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.49 cfs @ 12.08 hrs HW=16.26' TW=15.97' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.49 cfs @ 1.98 fps)

Pond 20P: CB-9



Summary for Pond 21P: DMH-2

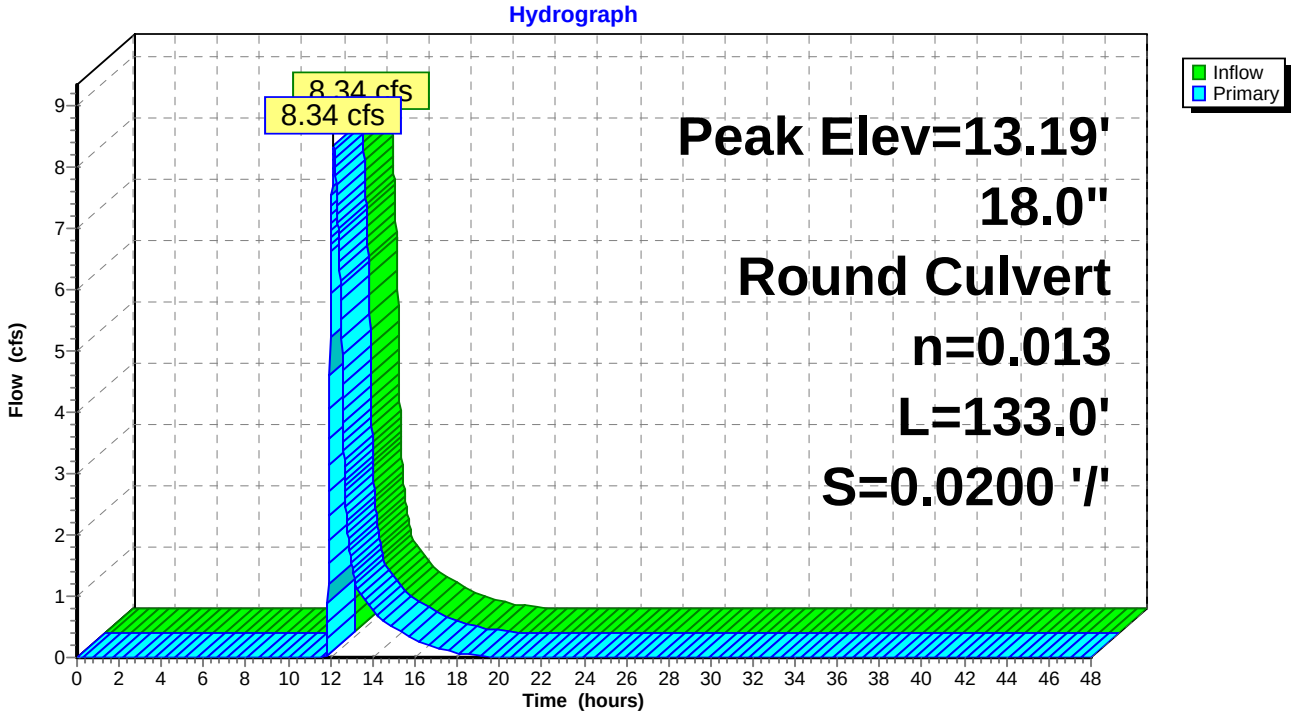
Inflow	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf
Outflow	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.19' @ 12.16 hrs
Flood Elev= 18.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.90'	**18.0" Round Culvert** L= 133.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.90' / 8.24' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.34 cfs @ 12.16 hrs HW=13.19' TW=10.43' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.34 cfs @ 4.72 fps)

Pond 21P: DMH-2



Summary for Pond 22P: DMH-3

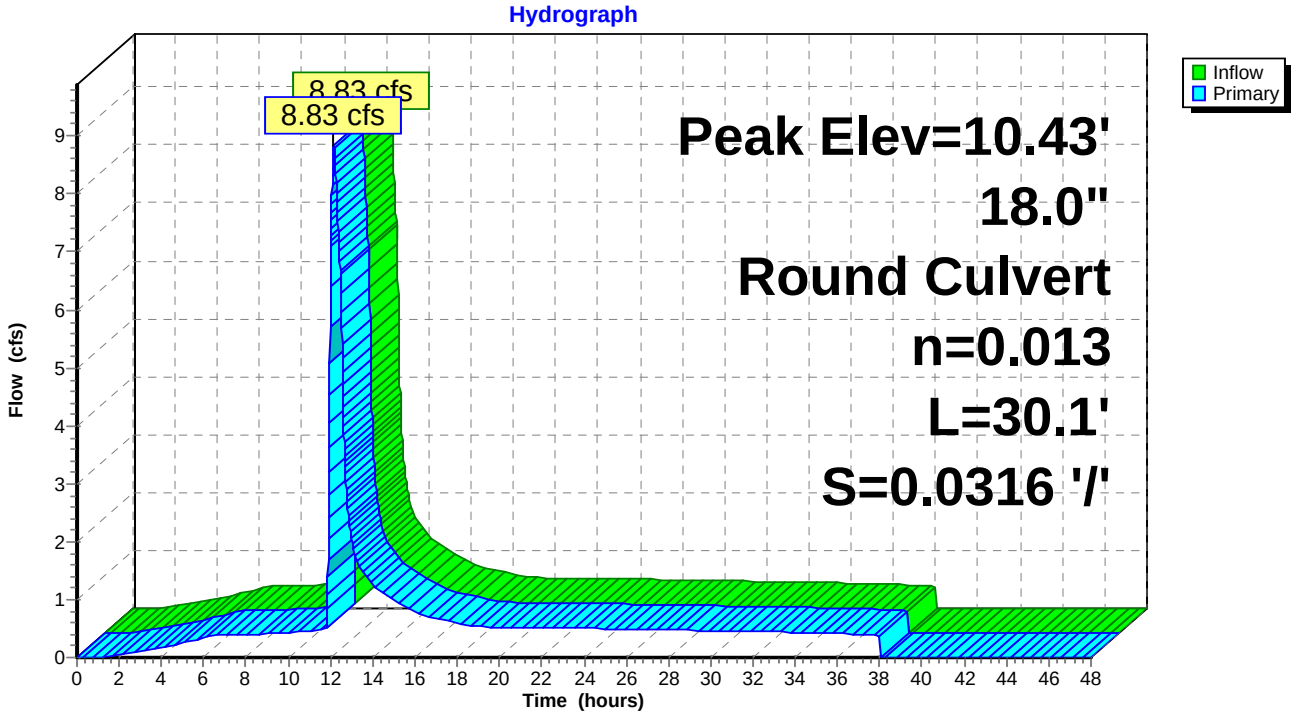
Inflow	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf
Outflow	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.43' @ 12.16 hrs
Flood Elev= 17.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**18.0" Round Culvert** L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.95' / 7.00' S= 0.0316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.83 cfs @ 12.16 hrs HW=10.43' TW=7.70' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.83 cfs @ 4.99 fps)

Pond 22P: DMH-3



Summary for Pond 23P: CBR 15027

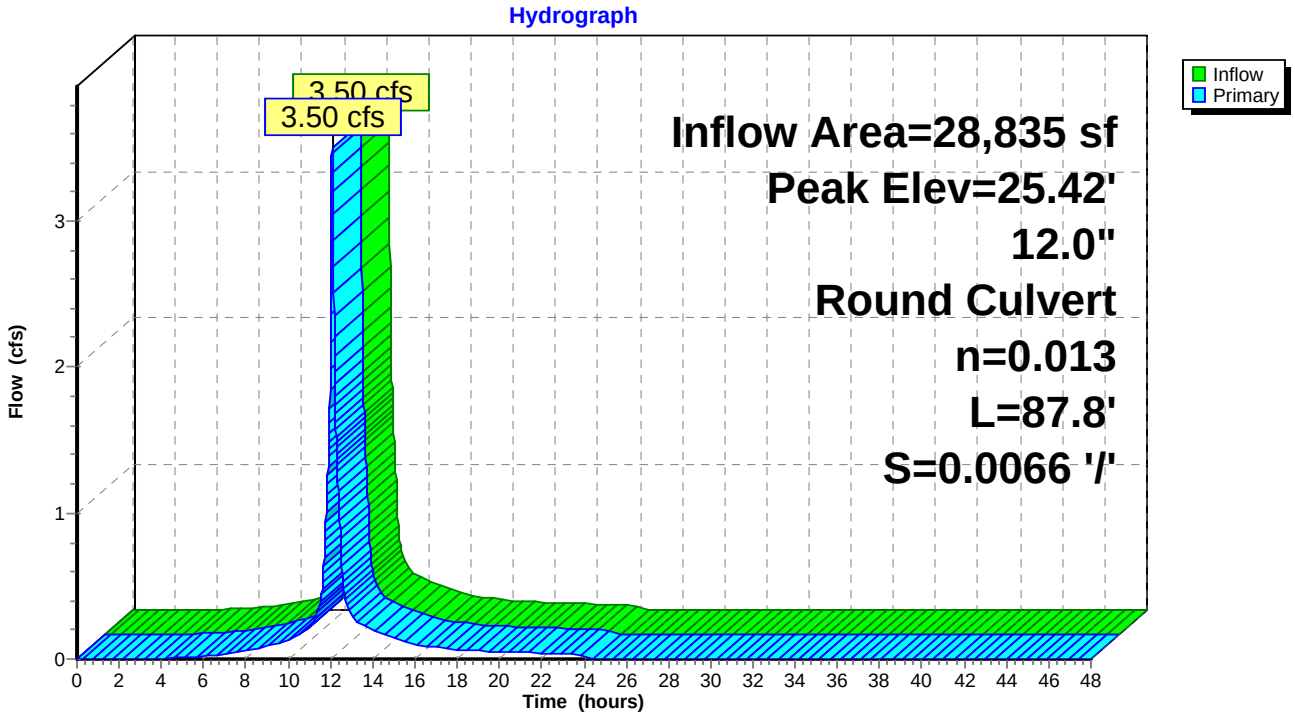
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.42' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.69'	**12.0" Round Culvert** L= 87.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.69' / 23.11' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=25.42' TW=23.98' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 3.50 cfs @ 4.45 fps)

Pond 23P: CBR 15027



Summary for Pond 25P: CBR 15029

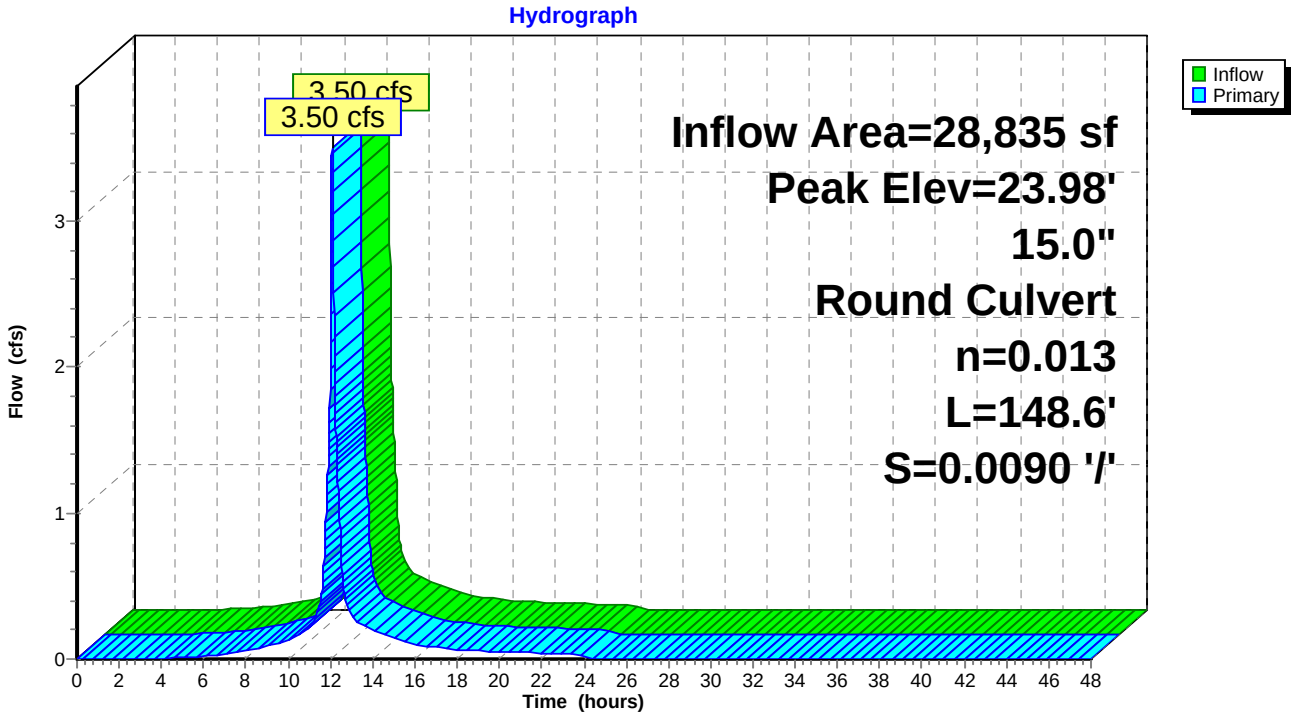
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.98' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=23.98' TW=22.02' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 2.92 fps)

Pond 25P: CBR 15029



Summary for Pond 26P: CB-5

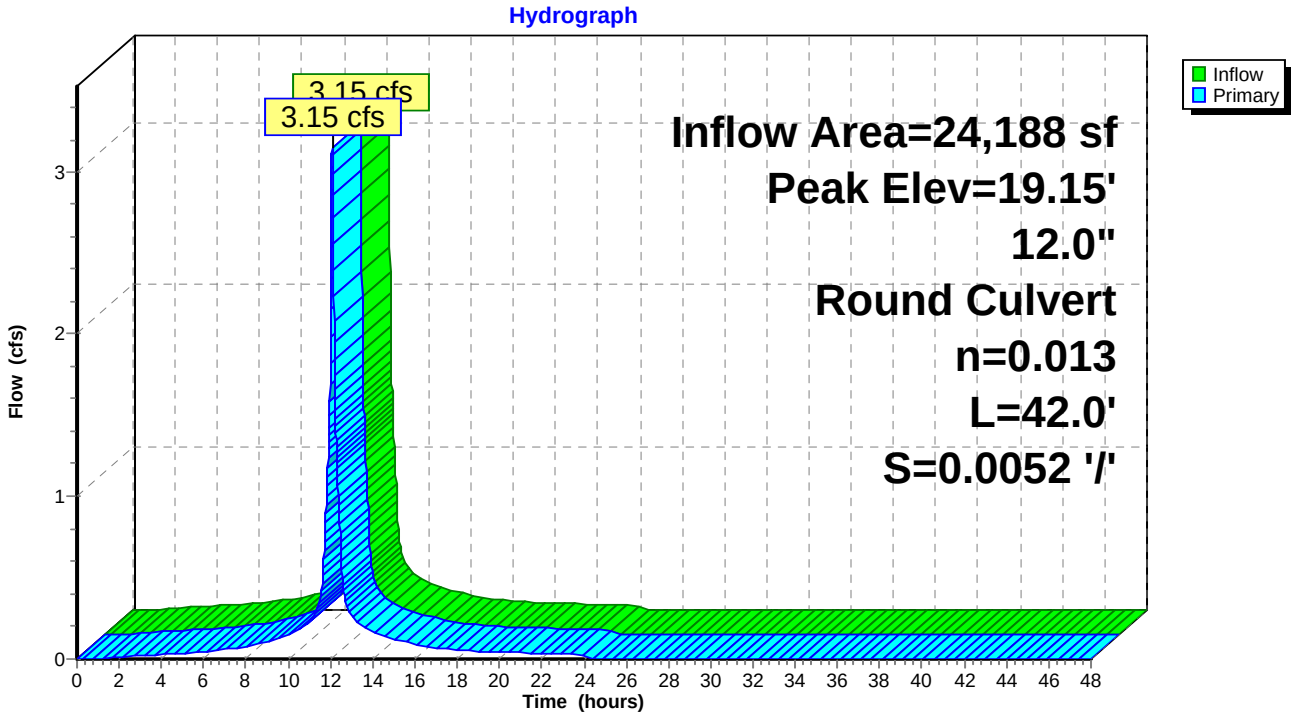
Inflow Area = 24,188 sf, 97.43% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf
Outflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.15' @ 12.09 hrs
Flood Elev= 20.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.66'	**12.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.66' / 14.44' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=19.08' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.85 fps)

Pond 26P: CB-5



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,719 sf, 79.04% Impervious, Inflow Depth = 4.83" for 25-Year event
Inflow = 61.15 cfs @ 12.39 hrs, Volume= 405,073 cf
Outflow = 60.91 cfs @ 12.40 hrs, Volume= 405,068 cf, Atten= 0%, Lag= 1.0 min
Primary = 32.76 cfs @ 12.40 hrs, Volume= 347,756 cf
Secondary = 28.16 cfs @ 12.40 hrs, Volume= 57,312 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.87' @ 12.40 hrs Surf.Area= 5,848 sf Storage= 6,314 cf
Flood Elev= 9.00' Surf.Area= 8,965 sf Storage= 14,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (864.3 - 863.5)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	14,683 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

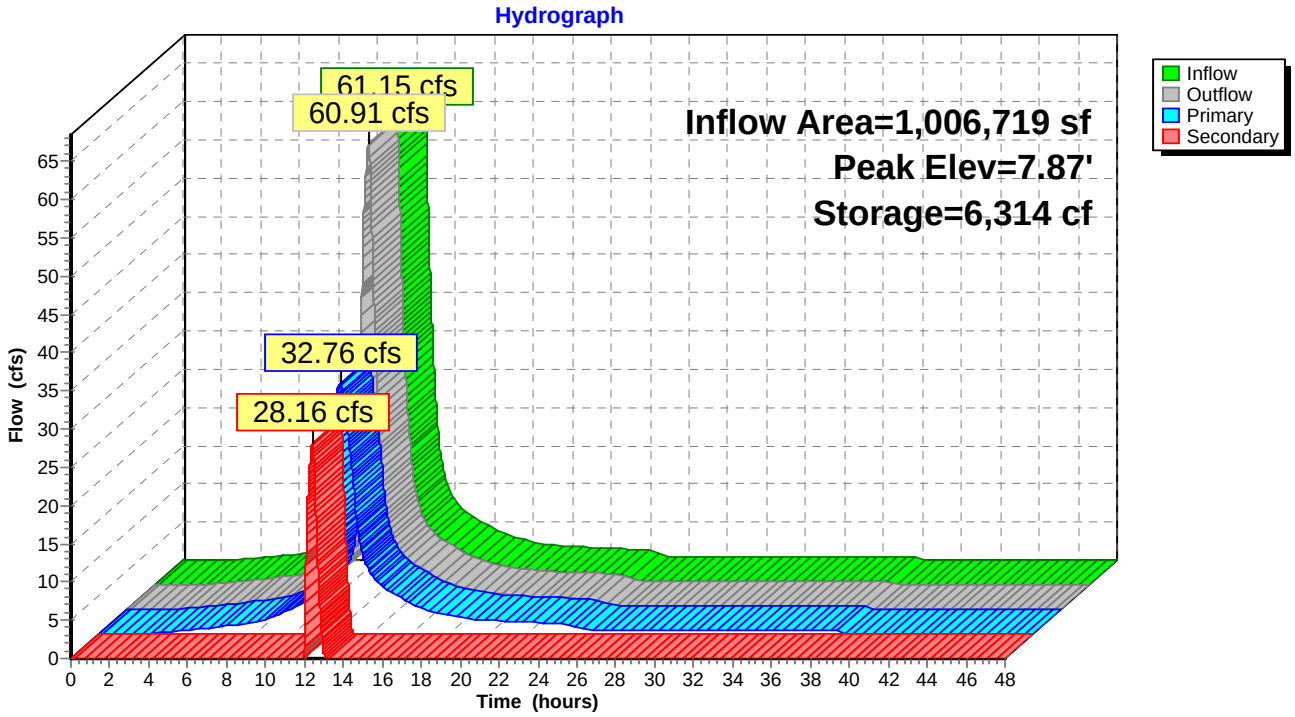
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	3,601	2,211	2,211
8.00	6,189	4,895	7,106
9.00	8,965	7,577	14,683

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=32.75 cfs @ 12.40 hrs HW=7.87' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 32.75 cfs @ 4.64 fps)

Secondary OutFlow Max=28.15 cfs @ 12.40 hrs HW=7.87' TW=6.96' (Dynamic Tailwater)
2=Overflow (Weir Controls 28.15 cfs @ 2.49 fps)

Pond EX WTLND: Existing Wetland



Summary for Pond SSF-1: Subsurface Sand Filter 1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 3.90" for 25-Year event
Inflow = 27.28 cfs @ 12.08 hrs, Volume= 90,264 cf
Outflow = 13.41 cfs @ 12.18 hrs, Volume= 90,268 cf, Atten= 51%, Lag= 6.1 min
Primary = 12.93 cfs @ 12.18 hrs, Volume= 33,708 cf
Secondary = 0.51 cfs @ 19.46 hrs, Volume= 56,561 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.17' @ 12.18 hrs Surf.Area= 20,088 sf Storage= 36,342 cf
Flood Elev= 19.43' Surf.Area= 20,269 sf Storage= 38,911 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 323.5 min (1,083.6 - 760.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.99'	19,065 cf	**133.00'W x 137.78'L x 3.50'H Field A Z=1.0** 67,509 cf Overall - 19,846 cf Embedded = 47,663 cf x 40.0% Voids
#2A	11.49'	19,846 cf	**ADS_StormTech SC-740 +Cap** x 432 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Rows of 18 Chambers
		38,911 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	10.40'	**24.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.40' / 7.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	8.15'	**3.0" Vert. UD Orifice** C= 0.600
#3	Device 2	8.15'	**6.0" Round Header Pipe** L= 3.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.10' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#4	Device 1	13.00'	**6.0' long Weir Wall** 2 End Contraction(s)
#5	Device 3	10.99'	**4.000 in/hr Filtration over Surface area**
#6	Device 4	11.49'	**24.0" Round Culvert** L= 3.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.49' / 11.44' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.92 cfs @ 12.18 hrs HW=14.17' TW=7.72' (Dynamic Tailwater)
└─**1=Culvert** (Passes 12.92 cfs of 25.18 cfs potential flow)
└─**4=Weir Wall** (Passes 12.92 cfs of 23.90 cfs potential flow)
└─**6=Culvert** (Inlet Controls 12.92 cfs @ 4.11 fps)

Secondary OutFlow Max=0.51 cfs @ 19.46 hrs HW=13.01' TW=8.31' (Dynamic Tailwater)
└─**2=UD Orifice** (Orifice Controls 0.51 cfs @ 10.44 fps)
└─**3=Header Pipe** (Passes 0.51 cfs of 2.03 cfs potential flow)
└─**5=Filtration** (Passes 0.51 cfs of 1.80 cfs potential flow)

Pond SSF-1: Subsurface Sand Filter 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +48.0" End Stone x 2 = 137.78' Base Length
24 Rows x 51.0" Wide + 12.0" Spacing x 23 + 48.0" Side Stone x 2 = 133.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

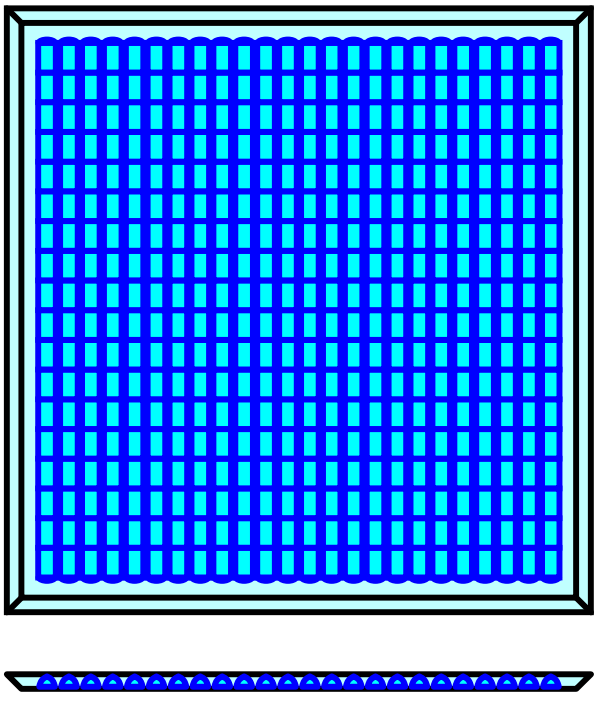
1.0 '/' Side-Z x Height = 42.0" Flare/Side
Base Length + Flare x 2 = 144.78' Top Length
Base Width + Flare x 2 = 140.00' Top Width

432 Chambers x 45.9 cf = 19,846.1 cf Chamber Storage

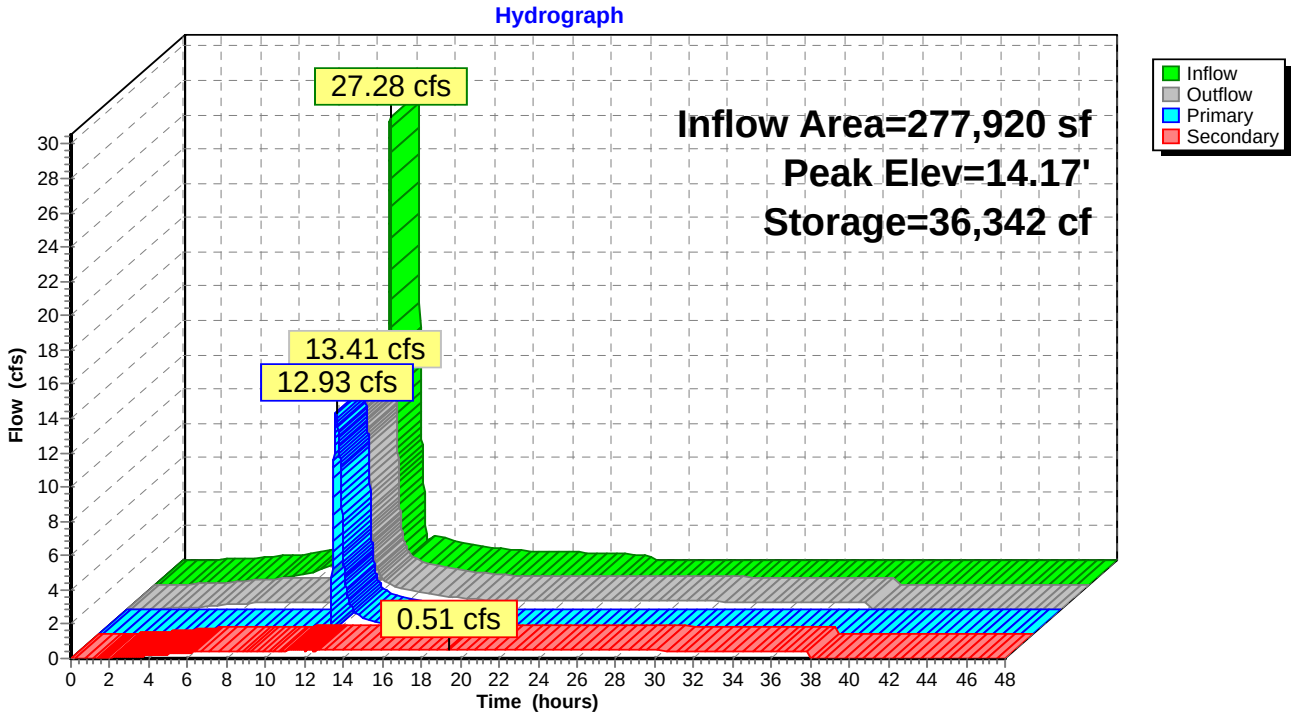
67,509.2 cf Field - 19,846.1 cf Chambers = 47,663.1 cf Stone x 40.0% Voids = 19,065.3 cf Stone Storage

Chamber Storage + Stone Storage = 38,911.3 cf = 0.893 af
Overall Storage Efficiency = 57.6%
Overall System Size = 137.78' x 133.00' x 3.50'

432 Chambers
2,500.3 cy Field
1,765.3 cy Stone



Pond SSF-1: Subsurface Sand Filter 1

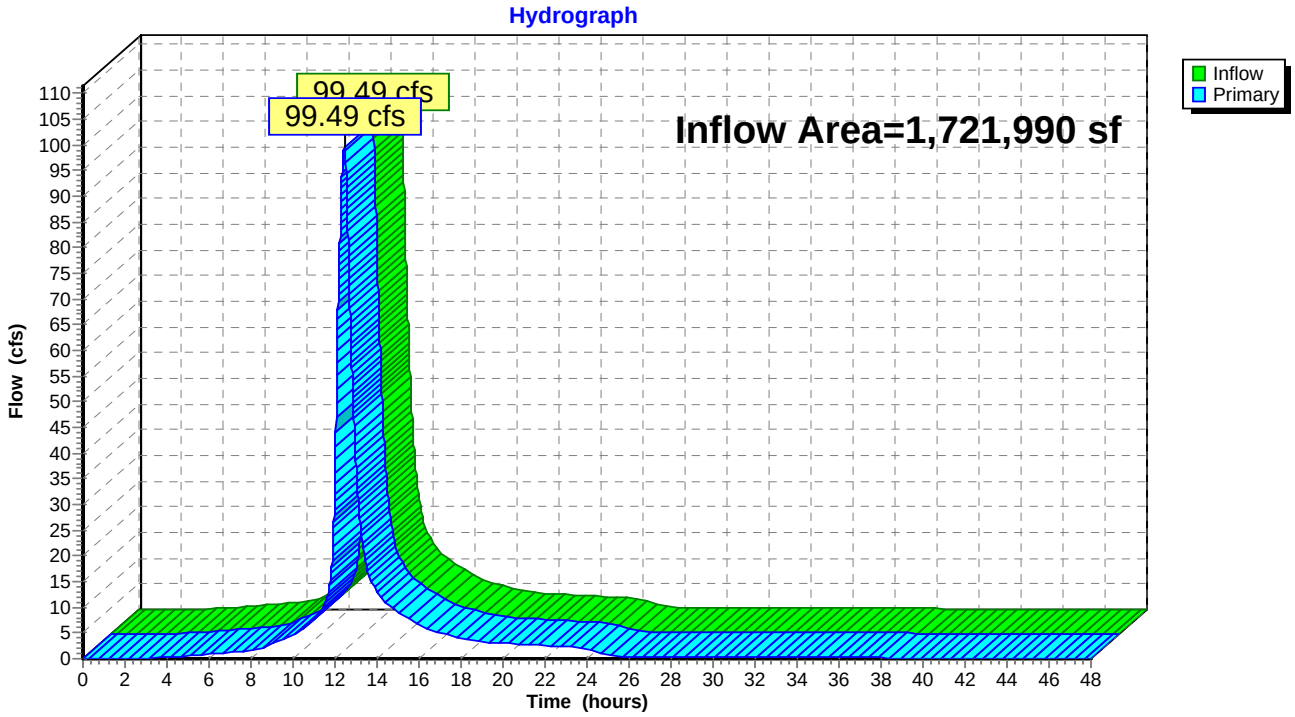


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,990 sf, 68.13% Impervious, Inflow Depth = 4.36" for 25-Year event
Inflow = 99.49 cfs @ 12.44 hrs, Volume= 625,009 cf
Primary = 99.49 cfs @ 12.44 hrs, Volume= 625,009 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

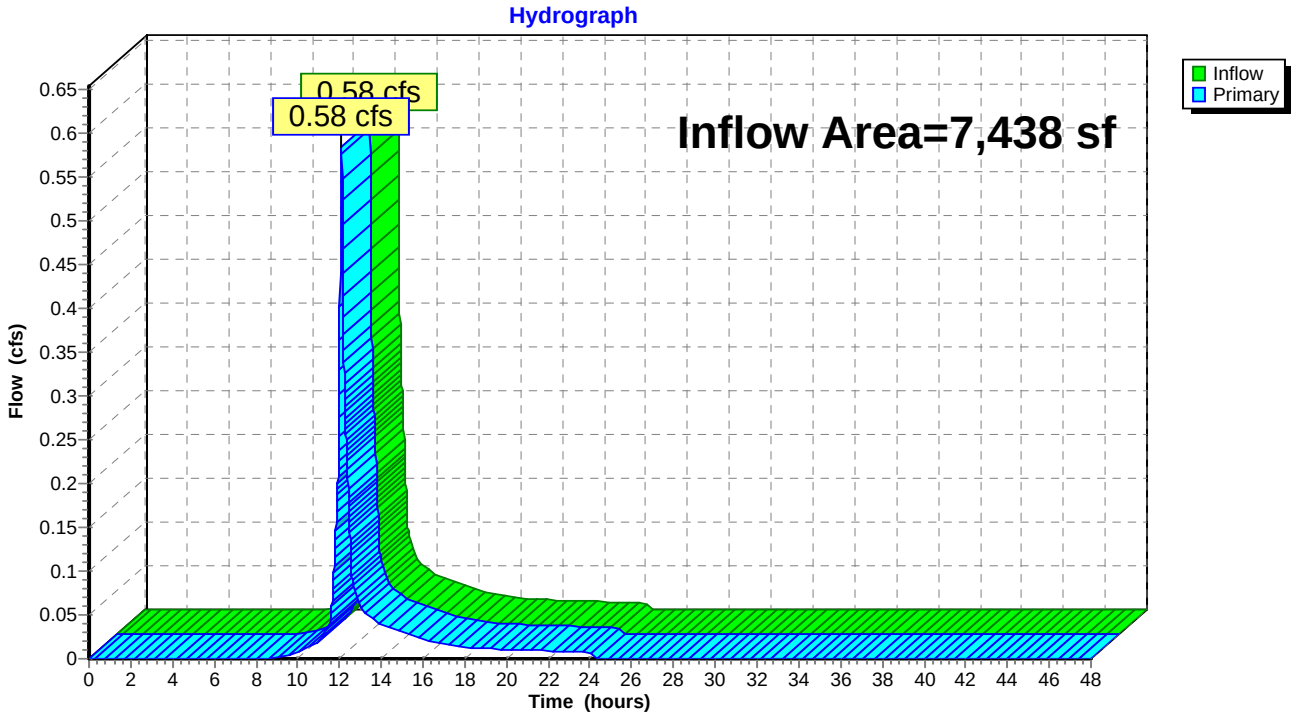


Summary for Link SP-2: Study Point 2

Inflow Area = 7,438 sf, 31.78% Impervious, Inflow Depth = 2.92" for 25-Year event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment E

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Portland Transportation Center
Thompson's Point Connector
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of

the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the

maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

During Preload Construction Phase

1. **Inspection:** During the Preload construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

   A. Filter Berms:
      - Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
      - If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
      - Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
      - Filter berms shall be reshaped as needed.
      - Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

H. Reclaim Asphalt Parking Lot

- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- Parking lot surface shall be inspected after rainfall events for any erosion or channelizing or runoff.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post- Preload Construction Phase

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

A. Vegetated Areas:

- Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
- Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

B. Ditches, Swales and Other Open Channels:

- Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
- Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
- Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
- If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Winter Sanding:

- Clear accumulations of winter sand along access road and parking lots at least once a year, preferably in the spring.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Underdrained Soil Filter:

- During the first year, the basin shall be inspected semi-annually and following major storm events.
- Debris and sediment buildup shall be removed from the forebay and basin as needed. Mowing of a grassed basin can occur semiannually to a height no less than 6 inches. Any bare area or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. Maintaining good grass cover will minimize clogging with fine sediments and if ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration

capacity.

- The soil filter should be inspected after every major storm in the first year to be sure it is functioning properly. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 48 hours following a one inch storm or greater. Following storms that fill the system and overflow is observed, the soil filter should drain in no less than 36 to 60 hours. If the system drains too fast, an orifice may need to be added on the underdrain outlet or, if already present, may need to be modified.
- Soil Filter Replacement: The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. Removed sediments should be disposed of in an acceptable manner.
- Sediment Removal: Sediment and plant debris should be removed from the pretreatment structure at least annually.
- Mowing: If mowing is desired, only handheld string trimmers or push-mowers are allowed on the filter (no tractor) and the grass bed should be mowed no more than 2 times per growing season to maintain grass heights of no less than 6 inches.
- Fertilization: Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation.
- Harvesting and Weeding: Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary.

F. <u>Drainage Ring:</u>

- During the first year, the basin shall be inspected semi-annually and following major storm events.
- Debris and sediment buildup shall be removed from the basin as needed.
- The soil filter should be inspected after every major storm in the first year to be sure it is functioning properly. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 48 hours following a one inch storm or greater. Following storms that fill the system and overflow is observed, the soil filter should drain in no less than 36 to 60 hours. If the system drains too fast, an orifice may need to be added on the underdrain outlet or, if already present, may need to be modified.
- Soil Filter Replacement: The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. Removed sediments should be disposed of in an acceptable manner.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and

Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:
   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:
   - Clear accumulations of winter sand along access road and parking lots at least once a year, preferably in the spring.
   - Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

   D. Culverts:
   - Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
   - Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.

- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Subsurface Sand Filter:
   - Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
   - Make any repairs necessary to ensure the measure is operating properly.
   - Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
   - Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
   - In certain cases, layers of sand may need to be replaced every 3 to 5 years.

3. Documentation:

B. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.
C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of

responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland Transportation Center
Thompson's Point Connector
Portland, Maine

This log is intended to accompany the Inspection, Maintenance and Housekeeping Plan for the proposed Portland Transportation Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality and MDEP. Qualified personnel familiar with the onsite drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Items	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Reclaim and Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

Drainage Ring				
	Remove sediment & debris			Monthly
	Inspection after major storm to verify proper function			Bi-Annually
Underdrained Soil Filter				
	Remove sediment & debris			Monthly
	Remove weeds			Monthly (during growing season)
	Erosion (side slopes, embankment)			Monthly
	Inspection after major storm to verify proper function			Bi-Annually
Subsurface Sand Filter				
	Inspection of subsurface structure following major storm events			Semi-Annually (during first year)
	Inspection after major storm to ensure proper function			Bi-Annually
	Remove sediment and debris			Annually
	Clean/repair outlets and chambers			When drawdown times in filter exceed 48 hrs

STERLING

Stormwater Maintenance Services

Stormwater Compliance Proposal

Site Name: Portland Transportation Center

Location: Portland, Maine

Quote Number: 17112P

Quote Date: 6/13/2018

Contract Term: 5 Years - To Begin Once Construction Has been Completed

Stormwater Compliance Program

Item #	Description[1]	Annual Fee
1	Stormwater Compliance Service	$1,800.00

Notes:

1. Service consists of semi-annual inspection of stormwater components on the site including catch basins, drain manholes, control structures, and a subsurface stormwater facility comprised of Stormtech chambers with isolator rows. Inspection includes a thorough evaluation of each stormwater component from an operational and maintenance perspective.

   Maintenance of the stormwater components will be performed as needed with the permission of client. JetVac services will be provided at a rate of $200 per hour and $75 per ton for disposal. Other maintenance services will be quoted as needed.

   Inspection service also includes the preparation and submittal of semi-annual stormwater compliance report as well as 5-year recertification submittal for the Maine DEP..

Terms & Conditions:

1. Invoice will be sent upon completion of semi-annual inspection and will reflect ½ of total annual fee. Payment is agreed to be made within 30 days of receipt of invoice.
2. STERLING Stormwater Maintenance Services is not the manufacturer nor was it involved in the design of the above listed stormwater management systems and therefore accepts no responsibility for the actual performance of the storm water management systems.

As an authorized representative of the above referenced site, I hereby accept this contract and the associated terms and conditions:

Print Name:_____ Sign Here: _____ Date: _____

September 14, 2018
99607

Ms. Jean Fraser, Planner
City of Portland
Planning and Transportation Division
389 Congress St.
4th Floor
Portland, ME 04101

Response to Peer Engineer Review SLODA Comments
Portland Transportation Center

Dear Ms. Jean Fraser:

Enclosed are the revised plans and documents addressing the peer engineer review SLODA comments for the above referenced project received on June 13, 2018. The text of the comments are provided for reference, followed by our response.

1) Due to the preload requirements for the site, the project will be completed in phases. The Applicant has provided a phased approach to stormwater management, and has provided grading and utility plans for the preload phase. A site plan showing parking lot layout should also be provided for this phase, as the proposed underdrain soil filters will be located within the parking lot footprint, requiring a differing layout during the preload phase.

   Sebago Response: A Preload Site Plan has been provided in the resubmitted material.

2) The Applicant has received Army Corps Approval, and we understand that approval from the Maine DEP for wetland impacts is pending.

   Sebago Response: The MDEP approval will be provided upon receipt.

3) The Applicant will be required to provide assurance of the completion of the final parking lot construction with the final stormwater treatment system. This will be a requirement for compliance with the Site Location of Development permit. We understand that the City and the MaineDEP will be having further discussion about this, and a condition of approval requiring construction of the final stormwater treatment system within a certain time frame will likely be required as part of the final approval.

   Sebago Response: Once the City and MDEP have made a determination regarding the condition of approval, assurance of the final parking lot completion will be provided.

4) Design Plans – The project is being reviewed under the City's Delegated Review Authority for the Site Location of Development Act; as such, the project must show conformance with MaineDEP Chapter 500 Basic, General, and Flooding Standards. Also, in accordance with Section 5 of the City of

Portland Technical Manual, a Final Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. We offer the following comments:

a) Basic Standards: Plans, notes, and details and an erosion and sediment control Inspection, Maintenance, and Housekeeping Plan have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500.

Sebago Response: Agreed

b) General Standards: The Applicant is utilizing a subsurface sand filter in combination with a proprietary ADS chamber system to detain and treat storm water collected in the parking area to meet the quality requirements associated with the General Standards in the final condition. During the preload phase, underdrained soil filters are proposed to treat the reclaim parking lot surface. In addition, a subsurface stone drainage system is proposed as a replacement of the existing stormwater pond located within the project area. While this additional system is not in accordance with any specific DEP standards, it provides an improvement over the existing condition, and will provide for adequate treatment of existing developed areas during the short preload phase. We have the following comments on the proposed systems:

1. It appears that a liner may be necessary for the proposed interim underdrain soil filters. The note is missing from the detail.

   Sebago Response: The underdrained soil filter has been revised show the missing text.

2 Manholes should be provided at both ends of the proposed isolator row in the final treatment system. The manholes provide access for maintenance of the system.

   Sebago Response: In recent conversations with Aaron Cheever, the engineered product manager with ADS StormTech regarding the undrained chamber systems, he suggested that we replace the 24" nyloplast basins at the back of the isolator rows with the typical inspection ports. It is his experience that with chamber systems under 150 feet long, maintenance of the isolator rows can be easily accessed from the inlet control structures, making the nyloplast basins redundant and unnecessary. As the proposed chamber system is only 129 feet long it falls well within the range that a jet vac can reach to effectively clean any gathered sediment.

3. The HydroCAD model should be reviewed versus the plans. Invert elevations for the outlet control structure do not match between the two documents.

   Sebago Response: The HydrCAD model has been revised to match the plans.

c) Flooding Standards: The project discharges directly to the Fore River, and therefore receives a waiver from the Flooding Standard. Please see some additional stormwater comments below.

5) The Applicant should review the Inspection and Maintenance Plan. Sections have been provided for post-construction inspection for the preload and final phases, however the stormwater systems listed are not consistent with the final plans.

Sebago Response: the Inspection and Maintenance Plan has been revised.

6) The outlet from the proposed stormwater chamber system is to a pipe with a 10% slope. The Applicant is proposing larger rip rap at this outlet, but please provide confirmation that the rip rap is adequately sized (size and thickness of layer) for anticipated velocities.

Sebago Response: Riprap calculations have been provided in the resubmitted material.

7) While the project is not required to meet the Flooding Standard, the flow is increasing. The Applicant has modeled the existing downstream 36-inch culverts, and the model indicates that they have adequate capacity. Please provide verification of the condition of these culverts to ensure that the full capacity is available as modeled.

Sebago Response: Photos of the culvert have been provided in the resubmitted material

6) *Please provide some additional clarification on the grading at the western entrance to the Thompson's Point Connector Road. It appears that the driveway will be regraded, based on the proposed contour that is shown, however the area is not identified for repaving.*

Sebago Response: Minimal regrading will be required to accommodate the changes to the entrance. The line indicated is not a contour line but a survey feature line used to create the contours. The survey feature line has been turned off in the plan to avoid confusion.

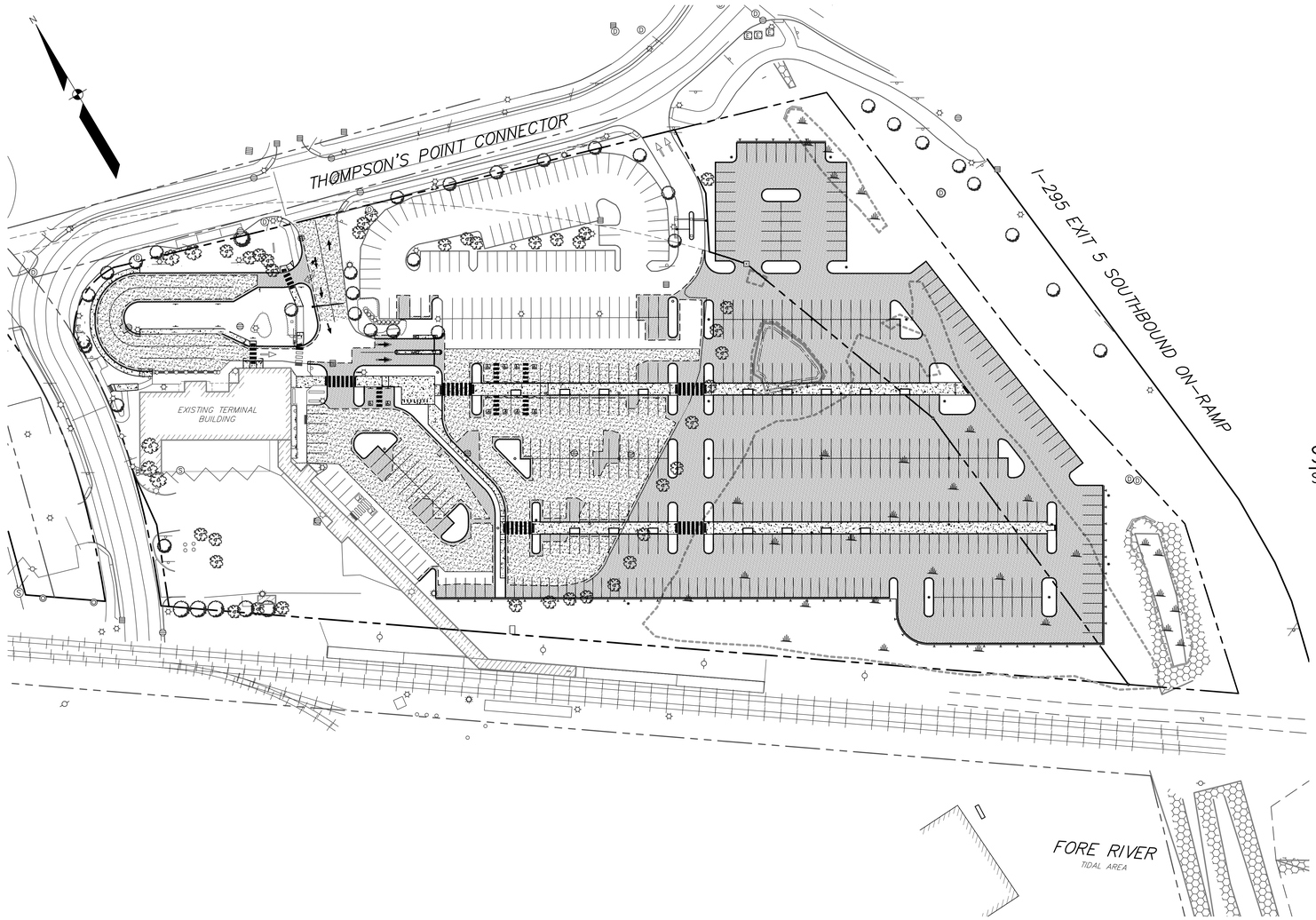
Sincerely,

SEBAGO TECHNICS, INC.

Brandon Blake
Senior Civil Engineer

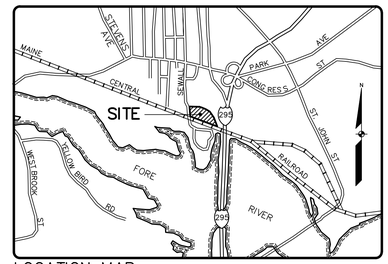
PORTLAND TRANSPORTATION CENTER

THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE



SCALE: 1" = 50'

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.



LOCATION MAP N.T.S.

APPLICANT:
LANGDON STREET
REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

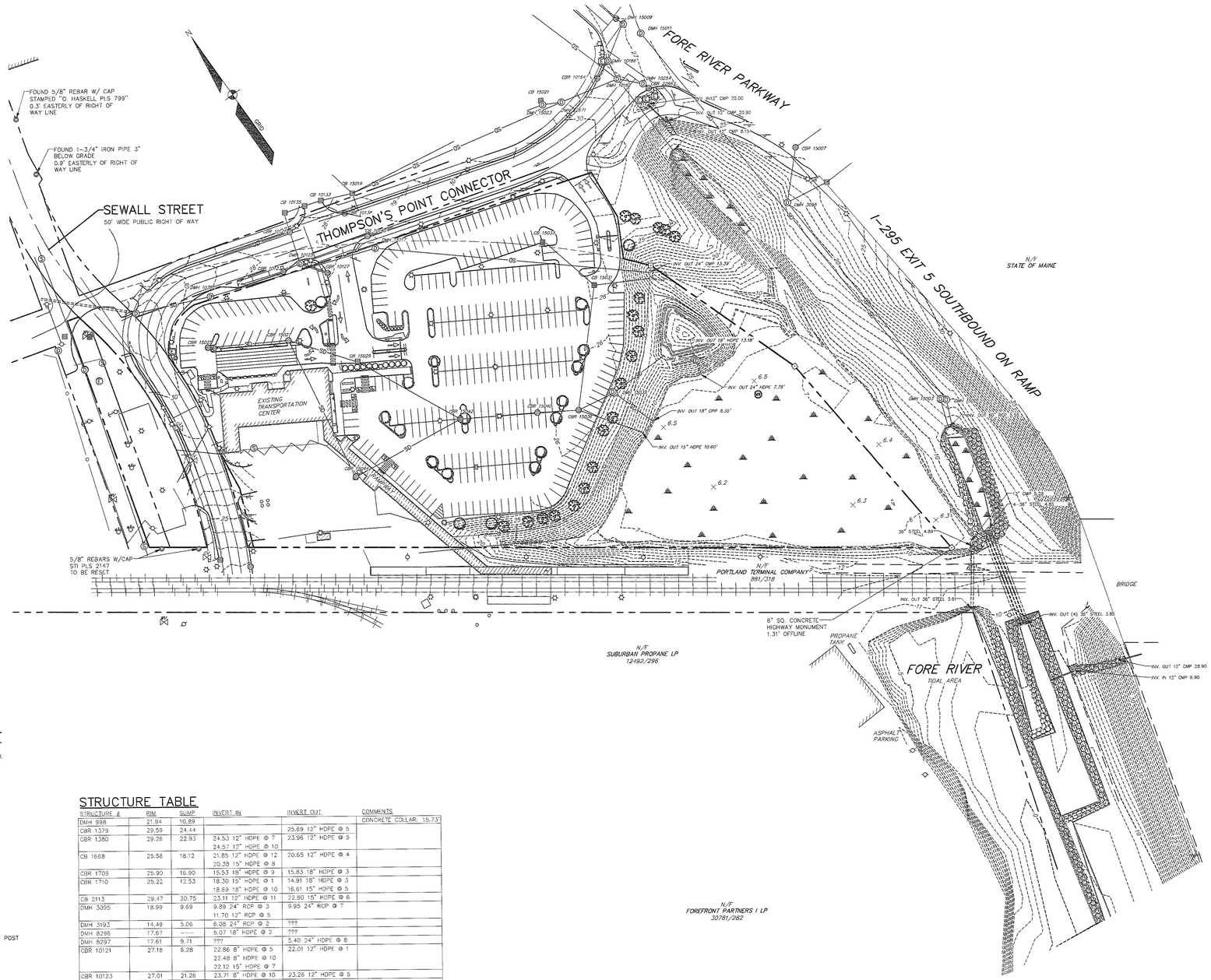
SHEET INDEX

SHEET NO.	SHEET TITLE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	DEMOLITION PLAN - PART A
4	DEMOLITION PLAN - PART B
5	PRELOAD SITE PLAN
6	OVERALL SITE PLAN
7	SITE PLAN - PART A
8	SITE PLAN - PART B
9	PRELOAD GRADING AND UTILITY PLAN- PART A
10	PRELOAD GRADING AND UTILITY PLAN- PART B
11	PRELOAD STORMWATER BMP PLAN
12	GRADING AND UTILITY PLAN - PART A
13	GRADING AND UTILITY PLAN - PART B
14	SUBSURFACE SAND FILTER PLAN
15	LANDSCAPE PLAN - PART A
16	LANDSCAPE PLAN - PART B
17	DETAILS
18	DETAILS
19	DETAILS
20	DETAILS
21	ELECTRICAL PLAN
1	PRE DEVELOPMENT DRAINAGE PLAN
2	PRELOAD DEVELOPMENT DRAINAGE PLAN
3	POST DEVELOPMENT DRAINAGE PLAN

STATE OF MAINE
CRAIG A. BURGESS
No. 10838
LICENSED PROFESSIONAL ENGINEER
09/14/18

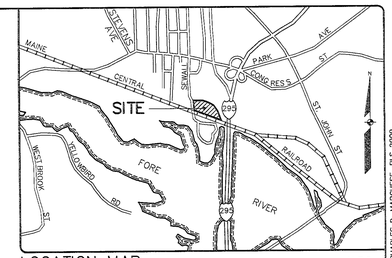
REVISED THROUGH 09-14-18

9980TC.dwg, TAB:COVER



GENERAL NOTES CONTINUED:

1. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
2. THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0013 B, HAVING AN EFFECTIVE DATE OF JULY 17, 1986. THE LOCUS FALLS WITHIN AN UNSHADED ZONE C, AREAS OF MINIMAL FLOODING. (NO SHADING).
3. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN SEPTEMBER, 2017 BY ERIK B. LEMA, CERTIFIED WETLAND SCIENTIST OF NORMANDEAU ASSOCIATES, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED BY SEBAGO TECHNICS USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.
4. THE HIGHEST ANNUAL TIDE ELEVATION FOR THE LOCUS SITE IS 6.7 FEET NAVD 88 AS PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR THE YEAR 2017 FOR THE FORE RIVER IN PORTLAND MAINE.



LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 6.82 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES:
   A. "PLOT PLAN OF CONCORD TRAILWAY FACILITY SEWALL STREET, PORTLAND, MAINE MADE FOR LANGDON STREET REAL ESTATE, INC., 7 LANGDON STREET, CONCORD, N.H. 03301" DATED SEPTEMBER 17, 2002 AND REVISED THROUGH DECEMBER 4, 2002 BY SEBAGO TECHNICS, INC., PROJECT NUMBER 99607.
   B. "PLAN SHOWING LAND AND HOUSE LOTS BELONGING TO THE WEST END LAND CO. AND P.H. AND J.M. BROWN" SURVEYED IN 1887 BY E.C. JORDAN, C.E., BEING FILED IN THE CITY OF PORTLAND'S ENGINEERING FILES AS DRAWING #358/4.
   C. "MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP S.H.C. FILE NO. 3-185 SHEETS 39 & 40 OF 73" DATED MAY 1967 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 112, PAGES 41 & 42.
   D. "PROPERTY AND TOPOGRAPHIC PLAN FOR BEACON WHARF DEVELOPMENT TRUST" DATED THROUGH AUGUST 20, 1986 BY HTA-DEST ASSOCIATES, INC.
   E. "SITE PLAN/STANDARD BOUNDARY SURVEY OF CONCORD TRAILWAYS TRANSPORTATION CENTER FOR CONCORD TRAILWAYS" DATED THROUGH OCTOBER 16,1996 BY SEBAGO TECHNICS, INC.
   F. "RIGHT OF WAY AND TRACK MAP, THE PORTLAND AND OGDENSBURG RY. OWNED & OPERATED BY THE PORTLAND TERMINAL COMPANY, STATION 0+00 TO STATION 52+80, VALUATION PLAN V-2/1" DATED JUNE 30, 1916 WITH RECORD INFORMATION UPDATED THROUGH AUGUST 30, 1985.
   G. "MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP D.O.T. FILE NO. 3-185A, SHEET 1 OF 1" DATED MARCH, 2001.
   H. "ALTA/ACSM LAND TITLE SURVEY OF 1 THOMPSON'S POINT, END OF SEWALL STREET, PORTLAND, MAINE 04102 FOR THOMPSON'S POINT DEVELOPMENT CO., INC., 55 LISBON STREET, LEWISTON, MAINE 04240" DATED MAY 27, 2011 AND REVISED THROUGH NOVEMBER 23, 2011 BY SEBAGO TECHNICS, INC., PROJECT 11122EC, SHEETS 1 THROUGH 4.
   I. "THE FOREFRONT AT THOMPSON'S POINT - CITY OF PORTLAND PLANNING BOARD SUBDIVISION APPROVAL FOR SECTIONAL RECORDING OF PHASE 1A - OWNER: FOREFRONT PARTNER'S I, LP, 55 LISBON STREET, LEWISTON, MAINE 04240" DATED OCTOBER 2013 AND REVISED THROUGH JANUARY 12, 2015 BY FAY, SPOFFARD & THORNDIKE. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 214, PAGE 266.
   J. "SUBDIVISION PLAN SECTIONAL 1 RECORDING PLAT PORTLAND, MAINE THE FOREFRONT AT THOMPSON'S POINT FOR FOREFRONT PARTNERS I, LP, 501 DANFORTH STREET, PORTLAND, MAINE 04101" DATED SEPTEMBER 2014 AND REVISED THROUGH SEPTEMBER16, 2016 BY STANTEC CONSULTING SERVICES, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216, PAGE 438.
   K. "PARCEL EXCHANGE - PHASE I NNEPRA AND FOREFRONT PARTNERS I, LP PORTLAND CUMBERLAND COUNTY 501 DANFORTH ST, PORTLAND, ME 04101" DATED APRIL 2016 BY THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION PORTLAND RIGHT-OF-WAY MAP SHEET 1 OF 2 D.O.T FILE NO. 3-614. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216, PAGE 485.
   L. "PARCEL EXCHANGE - PHASE I NNEPRA AND FOREFRONT PARTNERS I, LP PORTLAND CUMBERLAND COUNTY 501 DANFORTH ST, PORTLAND, ME 04101" DATED APRIL 2016BY THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION PORTLAND RIGHT-OF-WAY MAP SHEET 2 OF 2 D.O.T FILE NO. 3-614. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 215, PAGE 486.
   M. "AMENDED SUBDIVISION PLAN SECTIONAL 1 RECORDING PLAT PORTLAND, MAINE THE FOREFRONT AT THOMPSON'S POINT FOR FOREFRONT PARTNERS I, LP, 501 DANFORTH STREET, PORTLAND, MAINE 04101" DATED SEPTEMBER 2014 AND REVISED THROUGH JULY 14, 2017. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 217, PAGE 511.
   N. "ALTA/ACSM LAND TITLE SURVEY LOT 7 OF LAND OWNED BY FOREFRONT PARTNERS I, LP 501 DANFORTH STREET, PORTLAND, MAINE 04102 PREPARED FOR: CHILDREN'S MUSEUM AND THEATRE OF MAINE 142 FREE STREET, PORTLAND, MAINE 04101" PREPARED BY SEBAGO TECHNICS, INC., DATED FEBRUARY 12, 2016, REVISED THROUGH MARCH 8, 2018.
   O. "ALTA/NSPS LAND TITLE SURVEY LOT 7 OF LAND OWNED BY FOREFRONT PARTNERS I, LP 501 DANFORTH STREET, PORTLAND, MAINE 04101 PREPARED FOR: CHILDREN'S MUSEUM AND THEATRE OF MAINE 142 FREE STREET, PORTLAND, MAINE 04101" PREPARED BY SEBAGO TECHNICS, INC., DATED FEBRUARY 12, 2016, REVISED THROUGH DECEMBER 18, 2017.

LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
- TIE LINE
- SETBACK
- EASEMENT
- FLOODPLAIN
- IRON PIPE/ROD
- BENCHMARK (DESCRIPTION WITH ELEVATION)
- BUILDING
- EDGE WETLAND
- WETLANDS
- EDGE PAVEMENT
- EDGE GRAVEL
- EDGE OF WATER
- HYDRANT
- CATCH BASIN
- OHU — OVERHEAD UTILITY
- ELECTRICAL BOX ON POST
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOLLARD
- SIGN
- RAILROAD
- G — GAS
- GAS GATE VALVE
- GAS METER
- W — WATER
- WATER GATE VALVE
- HYDRANT
- WATER MANHOLE
- SANITARY MANHOLE
- SD — STORM DRAIN
- DRAINAGE MANHOLE
- TRANSFORMER PAD
- ELECTRICAL MANHOLE
- MONUMENT
- RIPRAP
- MONITORING WELL
- 420 — 418 — CONTOURS
- ×120.00 SPOT GRADE

STRUCTURE TABLE

STRUCTURE #	RIM	SUMP	INVERT IN	INVERT OUT	COMMENTS
DMH 998	21.94	10.89			CONCRETE COLLAR: 15.73'
CBR 1379	29.59	24.44		25.69 12" HDPE @ 5	
CBR 1380	29.28	22.93	24.53 12" HDPE @ 7 24.57 12" HDPE @ 10	23.96 12" HDPE @ 5	
CB 1668	25.56	18.12	21.85 12" HDPE @ 12 20.38 15" HDPE @ 8	20.65 12" HDPE @ 4	
CBR 1709	25.90	16.90	15.53 18" HDPE @ 9	15.83 18" HDPE @ 3	
CBR 1710	25.22	12.53	18.30 15" HDPE @ 1 18.69 18" HDPE @ 10	14.91 18" HDPE @ 3 16.61 15" HDPE @ 5	
CB 2113	28.47	20.75	23.11 12" HDPE @ 11	22.80 15" HDPE @ 6	
DMH 3095	18.99	9.69	9.89 24" RCP @ 3 11.70 12" RCP @ 5	9.95 24" RCP @ 7	
DMH 3193	14.49	5.06	6.08 24" RCP @ 2	???	
DMH 8296	17.67	----	5.07 18" HDPE @ 2	???	
DMH 8297	17.61	9.71	???	5.40 24" HDPE @ 8	
CBR 10121	27.18	6.28	22.86 8" HDPE @ 5 22.48 8" HDPE @ 10 22.12 15" HDPE @ 7	22.01 12" HDPE @ 1	
CBR 10123	27.01	21.26	23.71 8" HDPE @ 10	23.28 12" HDPE @ 5	
DMH 10125	27.87	22.27	22.86 15" HDPE @ 2 22.93 12" HDPE @ 10 22.86 10" HDPE @ 7 22.90 10" HDPE @ 7	22.97 8 HDPE @ 5	
CBR 10127	27.61	21.06		23.12 10" HDPE @ 10 23.14 10" HDPE @ 10	
CB 10133	28.46	18.26	20.64 18" HDPE @ 5	20.82 18" HDPE @ 10	
CB 10135	28.51	18.67	21.01 18" HDPE @ 5	21.07 18" HDPE @ 2	
CBR 10138	27.92	21.92	23.85 12" HDPE @ 5	24.07 8" HDPE @ 9	
CBR 10140	28.34	21.89	24.39 8" HDPE @ 5	24.21 12" HDPE @ 2	
DMH 10162	28.14	7.92	9.05 30" RCP @ 2 14.58 24" RCP @ 3 14.01 18" ??? @ 11	9.18 30" RCP @ 8	
CBR 10164	27.89	20.17	22.60 6" HDPE @ 11	22.27 12" RCP @ 12	
DMH 10166	27.99	9.71	15.39 24" RCP @ 5 23.40 12" ??? @ 8 21.96" 12" RCP @ 11	15.17 30" RCP @ 9	STUBBED & PLUGGED
DMH 10254	27.38	19.58	22.67 12" HDPE @ 7	22.62 12" RCP @ 12	
CBR 22663	26.85	22.80	NONE	22.75 12" HDPE @ 1	
DMH 22671	30.05	15.07	15.90 12" HDPE @ 10 17.86 12" HDPE @ 12	15.49 18" RCP @ 5	

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MARCHESE, PLS — SEPTEMBER 19, 2018

CHARLES D. MARCHESE, PLS 2009

STATE OF MAINE — CHARLES D. MARCHESE — NO. 2009 — REGISTERED PROFESSIONAL LAND SURVEYOR

DESIGNED	CHECKED
CDM	JIB

C	CDM	06-21-18 REVISED PER MDEP COMMENTS
B	CDM	02-01-18 ISSUED FOR CITY SITE PLAN REVIEW
A	CDM	12-20-17 ISSUED FOR CLIENT REVIEW
REV	BY	DATE: STATUS:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

EXISTING CONDITIONS PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR RECORD OWNER:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 60'

SHEET 2 OF 19

99607 EC.dwg, TAB:99607EC 30x42

LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
- TIE LINE
- EASEMENT
- CENTERLINE
- MONUMENT
- IRON PIPE/ROD
- C1/L1 DEED CALL
- C1/L1 CURVE/LINE NO.
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- DECK/STEPS/ OVERHANG
- B-1 BORING
- EDGE WETLAND
- WETLANDS
- STREAM
- EDGE PAVEMENT
- EDGE CONCRETE
- PAVEMENT PAINT
- EDGE GRAVEL
- CURB LINE
- EDGE OF WATER
- TREELINE
- 120 118 CONTOURS
- ×120.00 SPOT GRADE
- CHAIN LINK FENCE
- BARB WIRE FENCE
- STOCKADE FENCE
- GUARD RAIL
- STONE WALL
- RETAINING WALL
- DECIDUOUS TREE
- CONIFEROUS TREE
- BOLLARD
- SIGN
- G GAS
- GAS GATE VALVE
- GAS METER
- GAS MANHOLE
- W WATER
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- WATER MANHOLE
- POTABLE WELL
- S SANITARY SEWER
- FM FORCE MAIN
- SANITARY MANHOLE
- SD STORM DRAIN
- UD UNDER DRAIN
- DRAINAGE MANHOLE
- CATCH BASIN
- FIELD INLET
- ST STEAM LINE
- OHU OVERHEAD UTILITY
- UGU UNDERGROUND UTILITY
- TRANSFORMER PAD
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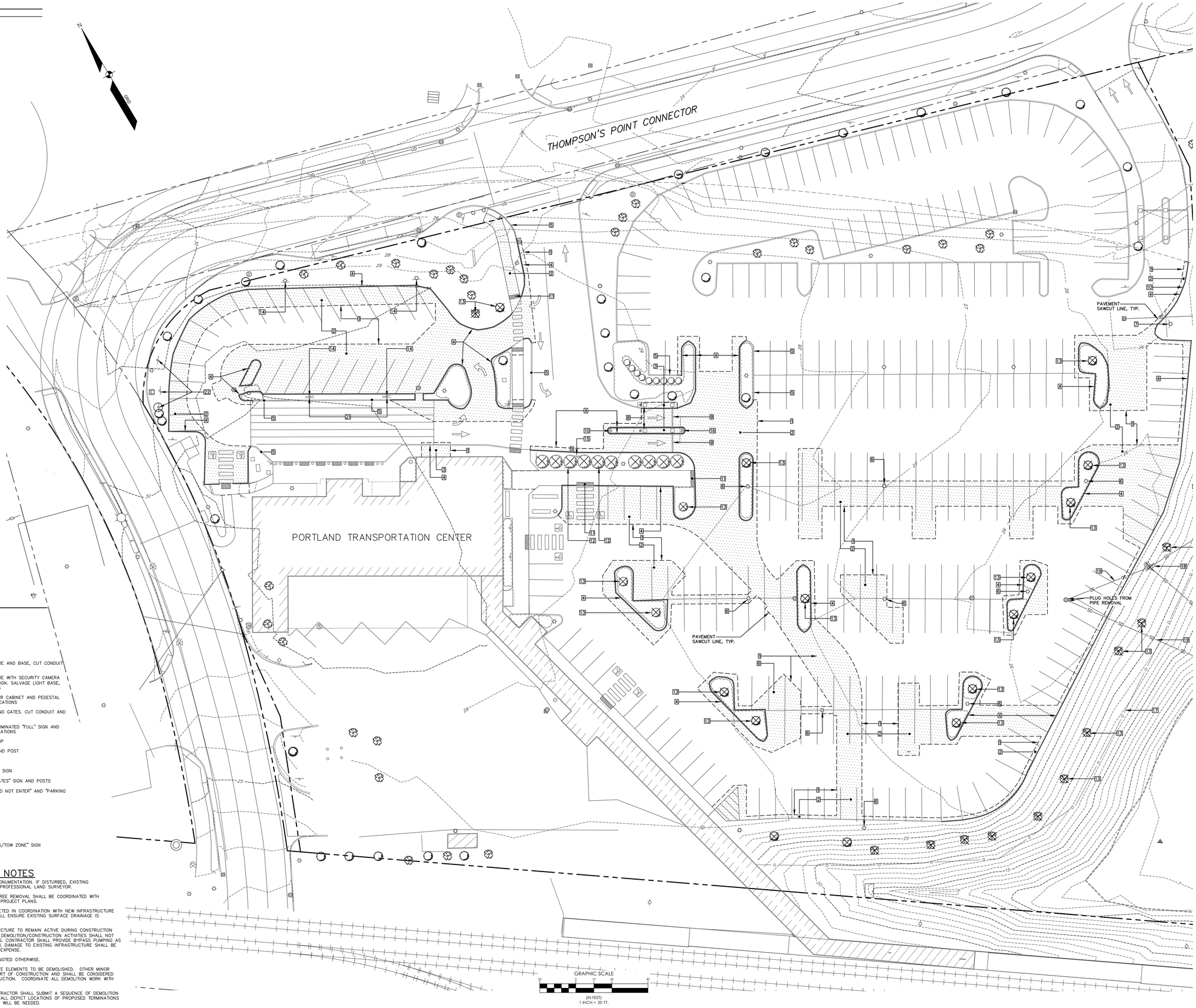
- TELEPHONE MANHOLE
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- RIPRAP



DEMOLITION KEY

1. SAW CUT PAVEMENT
2. REMOVE ASPHALT PAVEMENT
3. REMOVE CONCRETE PAVEMENT
4. REMOVE CURBING
5. CURBING TO REMAIN
6. REMOVE AND SALVAGE LIGHT FIXTURE AND BASE, CUT CONDUIT AND MARK LOCATIONS
7. REMOVE AND SALVAGE LIGHT FIXTURE WITH SECURITY CAMERA AND "EXIT / PAYMENT REMINDER" SIGN. SALVAGE LIGHT BASE, CUT CONDUIT AND MARK LOCATIONS
8. REMOVE AND SALVAGE CARD READER CABINET AND PEDESTAL UNITS. CUT CONDUIT AND MARK LOCATIONS
9. REMOVE AND SALVAGE CABINETS AND GATES. CUT CONDUIT AND MARK LOCATIONS
10. REMOVE AND SALVAGE "LOT B", ILLUMINATED "FULL" SIGN AND POST. CUT CONDUIT AND MARK LOCATIONS
11. REMOVE ADA TACTILE WARNING STRIP
12. REMOVE AND SALVAGE ADA SIGN AND POST
13. REMOVE TREE AND SHRUBS
14. REMOVE "15 MINUTE PARKING ONLY" SIGN
15. REMOVE AND SALVAGE "PARKING RATES" SIGN AND POSTS
16. REMOVE AND SALVAGE "ONE WAY DO NOT ENTER" AND "PARKING RATES" SIGNS AND POST
17. REMOVE FENCE
18. REMOVE DRAINAGE STRUCTURE
19. REMOVE DRAINAGE PIPE
20. REMOVE MONITORING WELL
21. REMOVE AND SALVAGE "NO PARKING/TOW ZONE" SIGN
22. REMOVE "TAXI STAND" SIGN

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH ENGINEER AND IN ACCORDANCE WITH PROJECT PLANS.
3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE AND STRUCTURES. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.
4. EXISTING STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING NEW CONSTRUCTION. DAMAGE TO EXISTING INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
5. PROTECT EXISTING UTILITIES UNLESS NOTED OTHERWISE.
6. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE DRAWINGS.
7. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLAN TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

STATE OF MAINE — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY — 108 — 09/14/18

STATE OF MAINE — CRAIG A. BURGESS — 12638 — PROFESSIONAL ENGINEER — 09/14/18

REV.	BY:	DATE:	STATUS:
E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMT TO CITY
C	WTC	07-10-18	RESUBMT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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DESIGNED WTC — CHECKED WTC

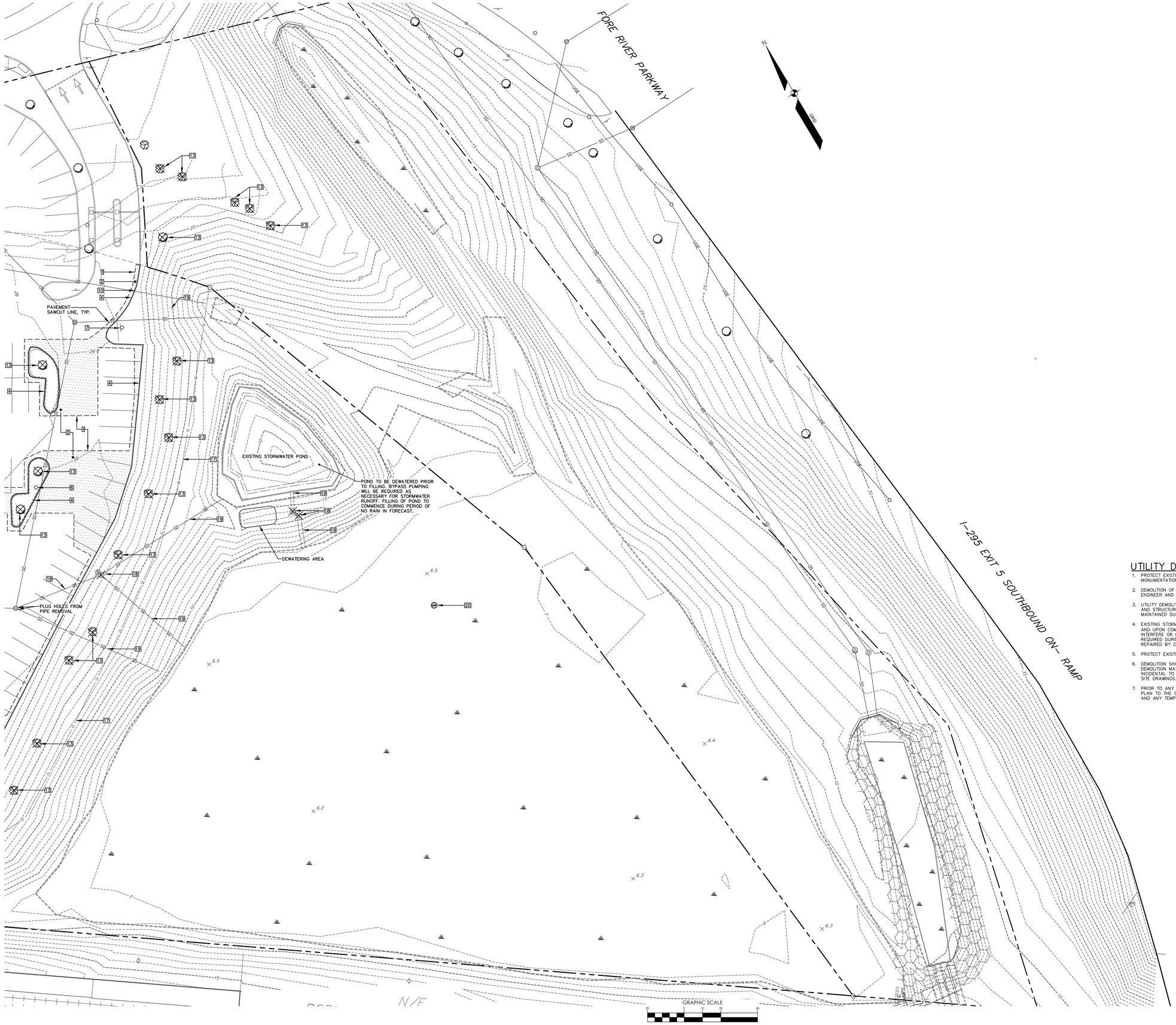
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 1A
South Portland, ME 04106
Tel: 207-200-2100

DEMOLITION PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 3 OF 21

99607DEMO.dwg, TAB1:DEMO1



LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
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- STOCKADE FENCE
- GUARD RAIL
- STONE WALL
- RETAINING WALL
- DECIDUOUS TREE
- CONIFEROUS TREE
- BOLLARD
- SIGN
- GAS
- GAS GATE VALVE
- GAS METER
- GAS MANHOLE
- W WATER
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- WATER MANHOLE
- POTABLE WELL
- S SANITARY SEWER
- FM FORCE MAIN
- SANITARY MANHOLE
- SD STORM DRAIN
- UD UNDER DRAIN
- DRAINAGE MANHOLE
- CATCH BASIN
- FIELD INLET
- ST STEAM LINE
- OHU OVERHEAD UTILITY
- UGU UNDERGROUND UTILITY
- TRANSFORMER PAD
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- RIPRAP

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
2. DEMOLITION OF UTILITIES REQUIRING TREE REMOVAL SHALL BE COORDINATED WITH ENGINEER AND IN ACCORDANCE WITH PROJECT PLANS.
3. UTILITY DEMOLITION SHALL BE COMPLETED IN COORDINATION WITH NEW INFRASTRUCTURE AND STRUCTURES. CONTRACTOR SHALL ENSURE EXISTING SURFACE DRAINAGE IS MAINTAINED DURING CONSTRUCTION.
4. EXISTING STORM DRAINAGE INFRASTRUCTURE TO REMAIN ACTIVE DURING CONSTRUCTION AND UPON COMPLETION OF PROJECT. DEMOLITION/CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE OR IMPEDE EXISTING FLOWS. CONTRACTOR SHALL PROVIDE BYPASS PUMPING AS REQUIRED DURING NEW CONSTRUCTION. DAMAGE TO EXISTING INFRASTRUCTURE SHALL BE REPAIRED BY CONTRACTOR AT THEIR EXPENSE.
5. PROTECT EXISTING UTILITIES UNLESS NOTED OTHERWISE.
6. DEMOLITION SHOWN IS FOR MAJOR SITE ELEMENTS TO BE DEMOLISHED. OTHER MINOR DEMOLITION MAY BE REQUIRED AS PART OF CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. COORDINATE ALL DEMOLITION WORK WITH SITE DRAWINGS.
7. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLAN TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.

DEMOLITION KEY

1. SAW CUT PAVEMENT
2. REMOVE ASPHALT PAVEMENT
3. REMOVE CONCRETE PAVEMENT
4. REMOVE CURBING
5. CURBING TO REMAIN
6. REMOVE AND SALVAGE LIGHT FIXTURE AND BASE, CUT CONDUIT AND MARK LOCATIONS
7. REMOVE AND SALVAGE LIGHT FIXTURE WITH SECURITY CAMERA AND "EXIT / PAYMENT REMINDER" SIGN. SALVAGE LIGHT BASE, CUT CONDUIT AND MARK LOCATIONS
8. REMOVE AND SALVAGE CARD READER CABINET AND PEDESTAL UNITS. CUT CONDUIT AND MARK LOCATIONS
9. REMOVE AND SALVAGE CABINETS AND GATES. CUT CONDUIT AND MARK LOCATIONS
10. REMOVE AND SALVAGE "LOT B", ILLUMINATED "FULL" SIGN AND POST. CUT CONDUIT AND MARK LOCATIONS
11. REMOVE ADA TACTILE WARNING STRIP
12. REMOVE AND SALVAGE ADA SIGN AND POST
13. REMOVE TREE AND SHRUBS
14. REMOVE "15 MINUTE PARKING ONLY" SIGN
15. REMOVE AND SALVAGE "PARKING RATES" SIGN AND POSTS
16. REMOVE AND SALVAGE "ONE WAY DO NOT ENTER" AND "PARKING RATES" SIGNS AND POST
17. REMOVE FENCE
18. REMOVE DRAINAGE STRUCTURE
19. REMOVE DRAINAGE PIPE
20. REMOVE MONITORING WELL

WILLIAM T. CONWAY RLA 108
LANDSCAPE ARCHITECT
REGISTERED
WILLIAM T. CONWAY
108
STATE OF MAINE
09/14/18

CRAIG BURGESS, P.E. #12638
STATE OF MAINE
CRAIG A. BURGESS
NO. 12638
REGISTERED
PROFESSIONAL ENGINEER
09/14/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMT TO CITY
C	WTC	07-10-18	RESUBMT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC., ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

DEMOLITION PLAN - PART B

OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 4 OF 21

99607DEMO.dwg, TAB1:DEMO2

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
FLOODPLAIN	
BUILDING	
EDGE WETLAND	
WETLANDS	
EDGE PAVEMENT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
LIGHT POLE	
TRUNCATED DOME	
DECIDUOUS TREE	
CONIFEROUS TREE	
SHRUB	
TEMPORARY OVERHEAD WIRES	OHU

GENERAL NOTES:

1. WHEN RELOCATING EXISTING SECURITY CAMERA, DO NOT CUT OR SHORTEN ELECTRICAL CABLE TO CAMERA. COIL EXTRA CABLE IN TRENCH, AS THIS EXTRA CABLE LENGTH IS NEEDED, WHEN THE CAMERA IS FINALLY INSTALLED FURTHER AWAY FROM THE TERMINAL BUILDING.

REMOVE CURBING AND INSTALL ASPHALT BINDER COURSE

RELOCATE LIGHTING FIXTURE AND SECURITY CAMERA

SAW CUT FOR NEW WIRING (SEE NOTE)

REMOVE CURBING, GRIND OFF EXISTING PAINT STRIPING

6 FOOT PRECAST CURB/WHEEL STOPS SPACED 3 FEET APART

SAW CUT FOR NEW WIRING

TEMPORARY PEDESTRIAN WALKWAY

PEDESTRIAN WALKWAY SIGN ON POLE - 6 LOCATIONS

LOCATION OF EXISTING WIRING UNKNOWN AND ASSUMED

SAW CUT FOR NEW WIRING

REMOVE CURBING, GRIND OFF EXISTING PAINT STRIPING

INSTALL WHEEL STOPS, TYP.

TELEPHONE POLE AND LIGHT, TYP. (SEE SITE ELECTRICAL PLAN)

PAINT STRIPING TO REMAIN, TYP.

LIMITS OF GRAVEL PRELOAD SURFACE, TYP.

INSTALL TEMPORARY CONCRETE JERSEY BARRIER, TYP.

I-295 EXIT 5 SOUTHBOUND ON-RAMP

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY, RLA #108

STATE OF MAINE · REGISTERED LANDSCAPE ARCHITECT · WILLIAM T. CONWAY · 1108 · 09/14/18

STATE OF MAINE · CRAIG A. BURGESS · 12638 · PROFESSIONAL ENGINEER · 09/14/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
A	WTC	09-14-18	REVISED PER CITY COMMENTS

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A-4
South Portland, ME 04106
Tel. 207-200-2100

PRELOAD SITE PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 5 OF 21

99607S- PRELOAD.dwg, TAB:PRELOAD S

GRAPHIC SCALE

(IN FEET)
1 INCH = 40 FT.

SOIL TYPES

SYMBOL	SOIL SERIES	HSG	DRAINAGE CLASS
BgB	BELGRADE	B	MODERATELY WELL DRAINED
BgC2	BELGRADE	B	MODERATELY WELL DRAINED
Cu	CUT AND FILL	–	MODERATELY WELL DRAINED
Tm	TIDAL MARSH	–	VERY POORLY DRAINED
W	WATER	–	

NOTES:
SOIL INFORMATION FOR THE SITE WAS OBTAINED VIA THE USDA UNITED STATES DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES CONSERVATION SERVICE'S WEB SOIL SURVEY. THE HYDROLOGIC SOIL GROUP (HSG) OF THE SITE SOILS ARE CLASSIFIED BY TECHNICAL RELEASE TR_55 OF THE SOIL CONSERVATION SERVICE.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORNIG LOGS FOR MORE INFORMATION.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
No. 12638
LICENSED PROFESSIONAL ENGINEER
09/14/18

DESIGNED	CHECKED
WTC	WTC

REV:	BY:	DATE:	STATUS:
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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

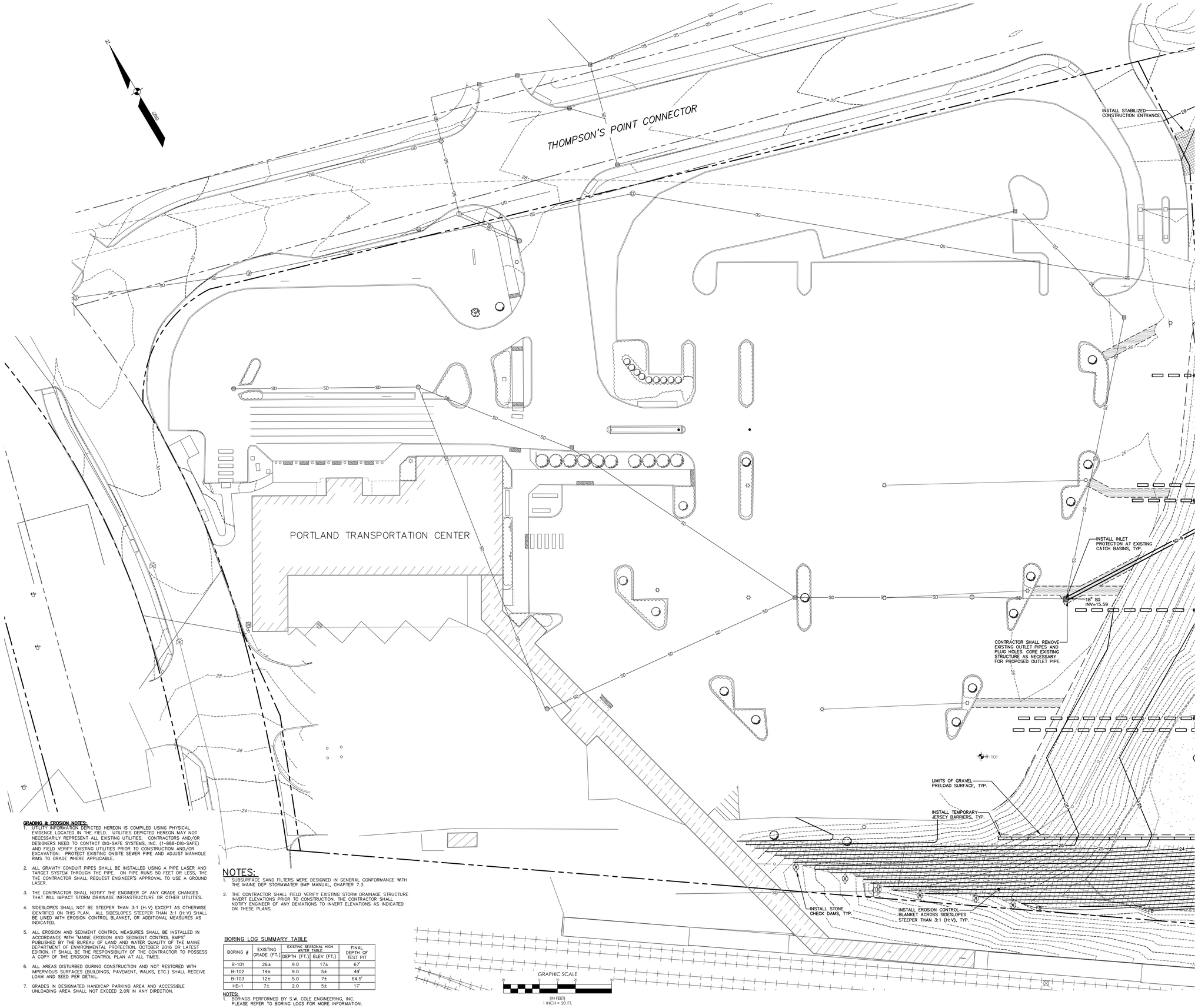
PRELOAD DEVELOPMENT DRAINAGE PLAN

OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

99607SWP-POST – PRELOAD.dwg TAB:SWP-POST PRELOAD



LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	FLOODPLAIN	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
251 250	CONTOURS	250
250.00 +	SPOT GRADE	250.00 +
SP-2	SETTLEMENT PLATFORM	
B-101	BORING	
PZ-1	PIEZOMETER	
	LIGHT POLE	
	DRAINAGE DITCH	
	RIPRAP	
	INLET PROTECTION	
	CATCH BASIN	
	DRAINAGE MANHOLE	
	TRUNCATED DOME	
	EROSION CONTROL BLANKET	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	

GRADING & EROSION NOTES:

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE A GROUND LASER.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OCTOBER 2016 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
7. GRADES IN DESIGNATED HANDICAP PARKING AREA AND ACCESSIBLE UNLOADING AREA SHALL NOT EXCEED 2.0% IN ANY DIRECTION.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
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NOTES:
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CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — PROFESSIONAL ENGINEER — 09/14/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
D	WTC	09-14-18	REVISED PER CITY COMMENTS
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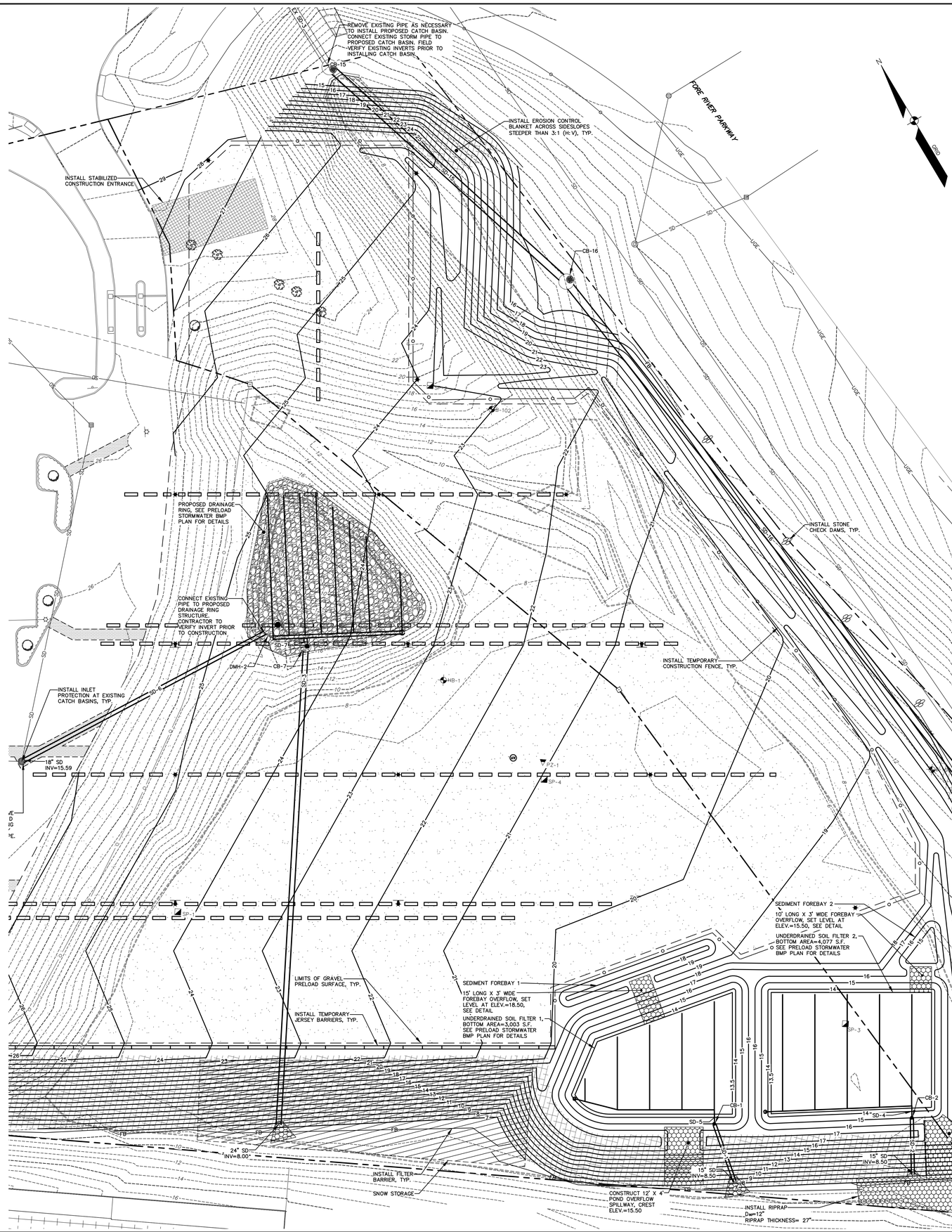
PRELOAD GRADING AND UTILITY PLAN- PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 9 OF 21

99607GJ - PRELOAD.dwg, TAB:PRELOAD GJ-1



GRADING & EROSION NOTES:

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6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.

NOTES:

1. UNDERDRAINED SOIL FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.1.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	FLOODPLAIN	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
251 / 250 / 250.00 +	CONTOURS / SPOT GRADE	250 / 250.00 +
SP-2	SETTLEMENT PLATFORM	
B-101	BORING	
PZ-1	PIEZOMETER	
	LIGHT POLE	
	DRAINAGE DITCH	
	RIPRAP	
	INLET PROTECTION	
	CATCH BASIN	
	DRAINAGE MANHOLE	
	TRUNCATED DOME	
	EROSION CONTROL BLANKET	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE DEPTH (FT.)	EXISTING SEASONAL HIGH WATER TABLE ELEV (FT.)	FINAL DEPTH OF TEST PIT
B-101	26±	9.0	17±	67'
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B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
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STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	15.00	11.03 (SD-5)	11.00 (SD-1)	12"
CB-2	15.00	11.03 (SD-4)	11.00 (SD-2)	12"
CB-7	24.27	12.90 (SD-7)	12.90 (SD-3)	48"
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72"
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72"
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72"
DMH-2	24.60	12.90 (SD-6)		96"

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-3	42"	132'	5.26%
SD-1	15"	28'	8.99%
SD-2	15"	26'	9.58%
SD-3	24"	220'	2.21%
SD-4	6"	5'	0.40%
SD-5	6"	6'	0.29%
SD-6	18"	127'	2.11%
SD-7	15"	2'	0.00%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-26	36"	171'	0.50%

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — 12638 — REGISTERED PROFESSIONAL ENGINEER — 09/14/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	COMMENTS
D	WTC	09-14-18	REVISED PER CITY
C	WTC	08-10-18	RESUBMIT TO CITY
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	06-21-18	REVISED PER MDEP

STATUS:

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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

PRELOAD GRADING AND UTILITY PLAN- PART B
OF: PORTLAND TRANSPORTATION CENTER

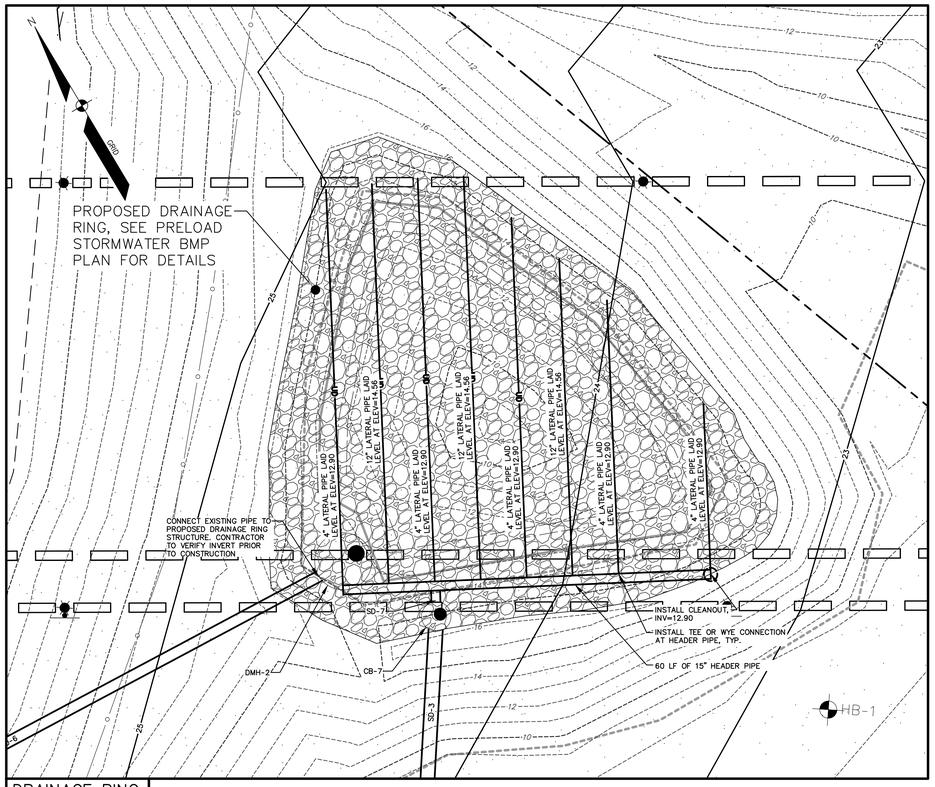
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

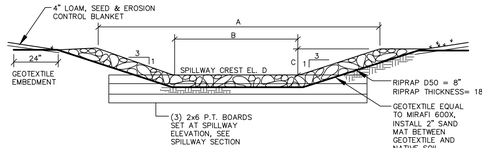
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 10 OF 21

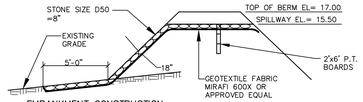
99607GU - PRELOAD.dwg, TAB:PRELOAD GU-2





EMERGENCY SPILLWAY	DIMENSIONS IN FEET A	B	C	ELEVATION D
SEDIMENT FOREBAY 1	13'	10'	0.5	155.30
UNDERDRAINED SOIL FILTER 1	15	12'	1	154.00
SEDIMENT FOREBAY 1	13'	10'	0.5	155.30
UNDERDRAINED SOIL FILTER 1	15'	12'	1	154.00

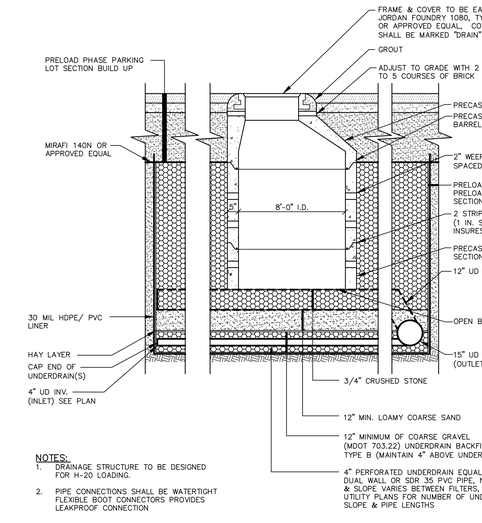
EMERGENCY/ FOREBAY SPILLWAY CROSS-SECTION
NOT TO SCALE



EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION.
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

SPILLWAY SECTION
NOT TO SCALE



NOTES:
1. DRAINAGE STRUCTURE TO BE DESIGNED FOR H-20 LOADING.
2. PIPE CONNECTIONS SHALL BE WATERTIGHT FLEXIBLE BOOT CONNECTORS PROVIDES LEAKPROOF CONNECTION

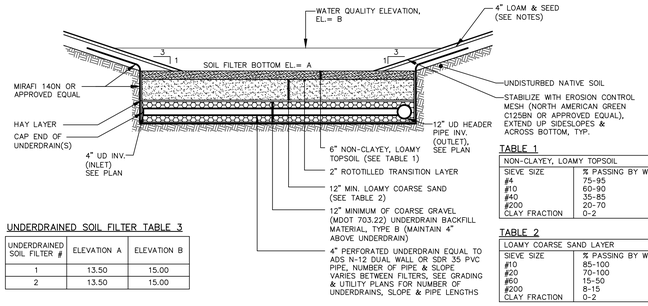
DRAINAGE RING DETAIL
NOT TO SCALE

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-3	42"	132'	5.26%
SD-1	15"	28'	8.99%
SD-2	15"	26'	9.58%
SD-3	24"	220'	2.21%
SD-4	6"	5'	0.40%
SD-5	6"	6'	0.29%
SD-6	18"	127'	2.11%
SD-7	15"	2'	0.00%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-26	36"	171'	0.50%

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	15.00	11.03 (SD-5)	11.00 (SD-1)	12"
CB-2	15.00	11.03 (SD-4)	11.00 (SD-2)	12"
CB-7	24.27	12.90 (SD-7)	12.90 (SD-3)	48"
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72"
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72"
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72"
DMH-2	24.60	12.90 (SD-6)		96"



UNDERDRAINED SOIL FILTER TABLE 3

UNDERDRAINED SOIL FILTER #	ELEVATION A	ELEVATION B
1	13.50	15.00
2	13.50	15.00

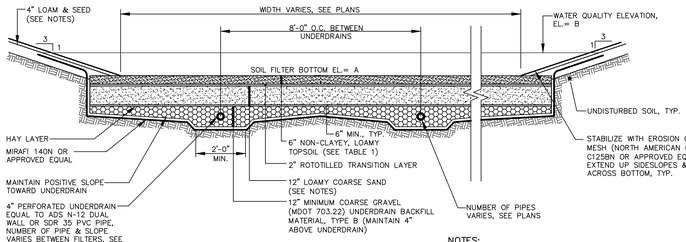
TABLE 1

NON-CLAYEY, LOAMY TOPSOIL SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
CLAY FRACTION	0-2

TABLE 2

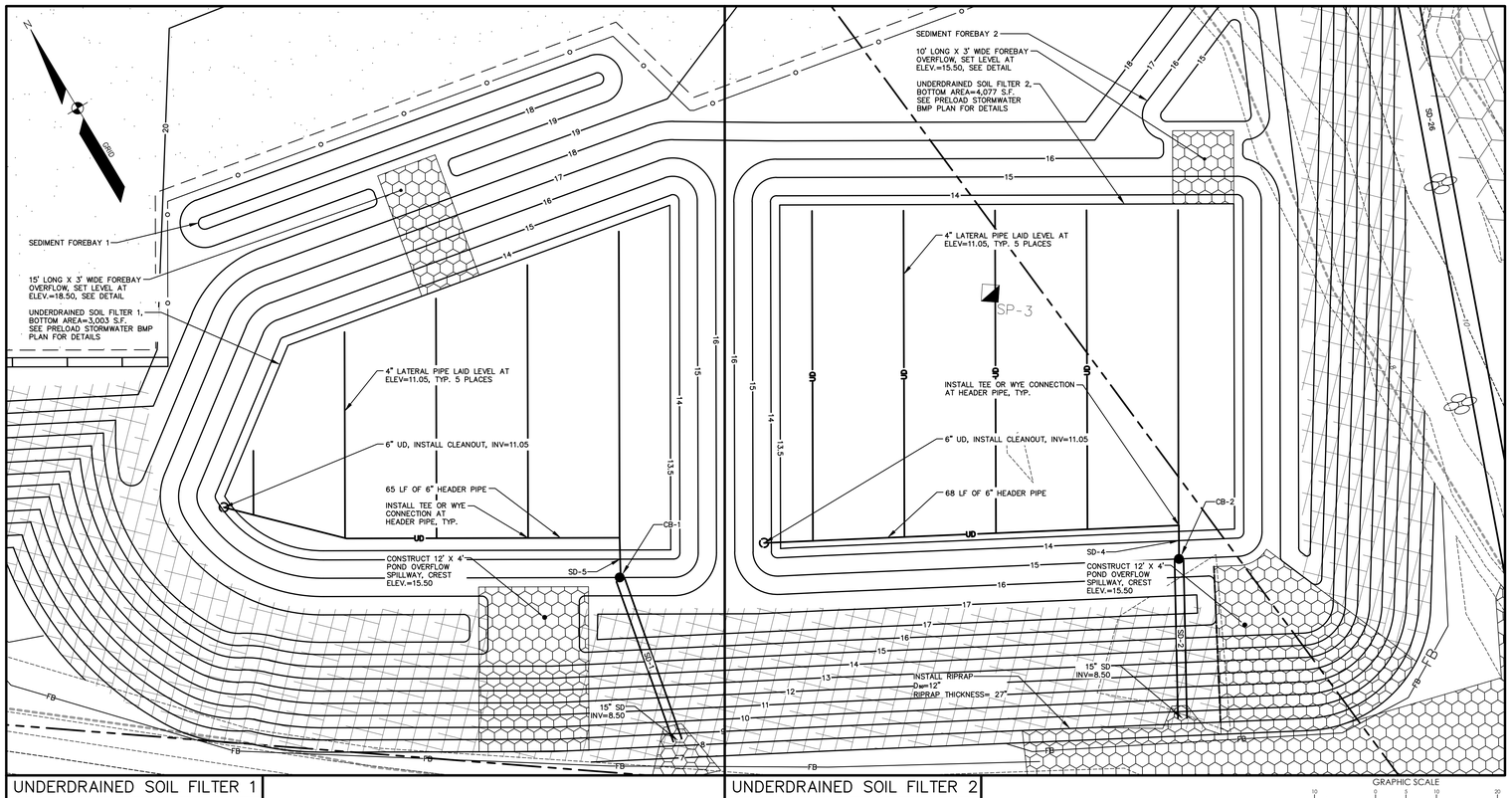
LOAMY COARSE SAND LAYER SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-50
#200	8-15
CLAY FRACTION	0-2

LONGITUDINAL SECTION



SECTION

NOTES:
1. MULTIPLE ROWS OF UNDERDRAIN SHALL CONNECT INTO A 6" HEADER LAID LEVEL PIPE.
2. THE CONTRACTOR SHALL PURCHASE MATERIAL FOR SOIL FILTER CONSTRUCTION FROM OUTSIDE VENDOR THAT HAS MATERIAL PRE-MIXED.



UNDERDRAINED SOIL FILTER DETAIL
NOT TO SCALE

UNDERDRAINED SOIL FILTER CONSTRUCTION OVERSIGHT NOTES:
THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE UNDERDRAIN. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE UNDERDRAIN'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE. THE CONTRACTOR SHALL CONTRACT WITH A QUALIFIED MATERIAL TESTING COMPANY FOR REQUIRED TESTING OF MATERIALS.

1. CONSTRUCTION SEQUENCE: THE UNDERDRAIN AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE UNDERDRAIN HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
2. COMPACTION OF UNDERDRAIN: UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
3. CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
   A. FOR FIRST UNDERDRAIN CONSTRUCTED, AFTER UNDERDRAIN PIPE IS INSTALLED AT GRADE AND BUT NOT BACKFILLED. AFTER THE UNDERDRAIN PIPE IS COMPLETELY BACKFILLED AND BEFORE PLACEMENT OF LOAMY COARSE SAND LAYER.
   B. AFTER THE LOAMY COARSE SAND LAYER AND SOD/ LOAM HAS BEEN INSTALLED.
   C. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
   D. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE UNDERDRAIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY.

TESTING AND SUBMITTALS:
1. THE UNDERDRAIN SHALL CONSIST OF THE TOP THREE LAYERS IDENTIFIED AS LOAMY TOPSOIL, 2" TRANSITION AND 12" LOAMY COARSE SAND. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE FOR EACH COMPONENT OF THE UNDERDRAIN AND SUBMIT GRADATIONS FOR THE UNDERDRAIN MATERIALS TO THE ENGINEER FOR APPROVAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.

UNDERDRAIN SOIL FILTER MATERIAL NOTES:
1. ONSITE LOAM SHALL BE SCREENED FOR STONES LARGER THAN 1 INCH AND BE TESTED TO VERIFY THERE IS LESS THAN 2% CLAY CONTENT AND 5-8% ORGANIC MATTER. IF ONSITE LOAM DOES NOT MEET REQUIREMENTS, THEN LOAM FROM OFFSITE SHALL BE A NON-CLAYEY, LOAMY TOPSOIL SUCH AS A USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER AND 3-10% CLAY CONTENT.
2. 2" TRANSITION LAYER OF THE LOAM/SOD LAYER SHALL BE ROTOTILLED INTO THE LOAMY COARSE SAND LAYER BELOW.
3. THE LOAMY COARSE SAND LAYER SHALL BE TESTED IN ACCORDANCE WITH THE TESTING AND SUBMITTALS NOTES ABOVE.
4. A LAYER OF HAY SHALL BE PLACED BETWEEN 12" LOAMY COARSE LAYER AND UNDERDRAIN STONE BEDDING TO PREVENT SUBSIDENCE OR PLUGGING OF THE SAND/GRAVEL/STONE LAYER AND/OR PIPE.
5. UNDERDRAIN STONE BEDDING MATERIAL MUST CONFORM TO THE MDOT SPECIFICATION 703.22 UNDERDRAIN TYPE B FOR UNDERDRAIN BACKFILL MATERIAL. THE BEDDING MATERIAL MUST HAVE NO MORE THAN 5% PASSING THE 200 SIEVE.
6. MATERIAL LAYERS ABOVE THE UNDERDRAIN BACKFILL LAYER SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS CAN BE MIXED WITHIN THE FILTER. DURING CONSTRUCTION, CARE SHOULD BE TAKEN TO AVOID COMPACTION OF BOTH THE GRAVEL AND SOIL FILTER.
7. OVER COMPACTION OF UNDERDRAIN MATERIAL SHALL BE AVOIDED. IF OVER COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING.

CRAIG BURGESS, P.E. #12638
STATE OF MAINE CRAIG A. BURGESS 12638 REGISTERED PROFESSIONAL ENGINEER 09/14/18

REV.	BY:	DATE:	STATUS:
A	WTC	06-21-18	REVISED PER MDEP COMMENTS
B	WTC	07-10-18	RESUBMIT TO CITY
C	WTC	08-10-18	RESUBMIT TO CITY
D	WTC	09-14-18	REVISED PER CITY COMMENTS

DESIGNED WTC | CHECKED WTC

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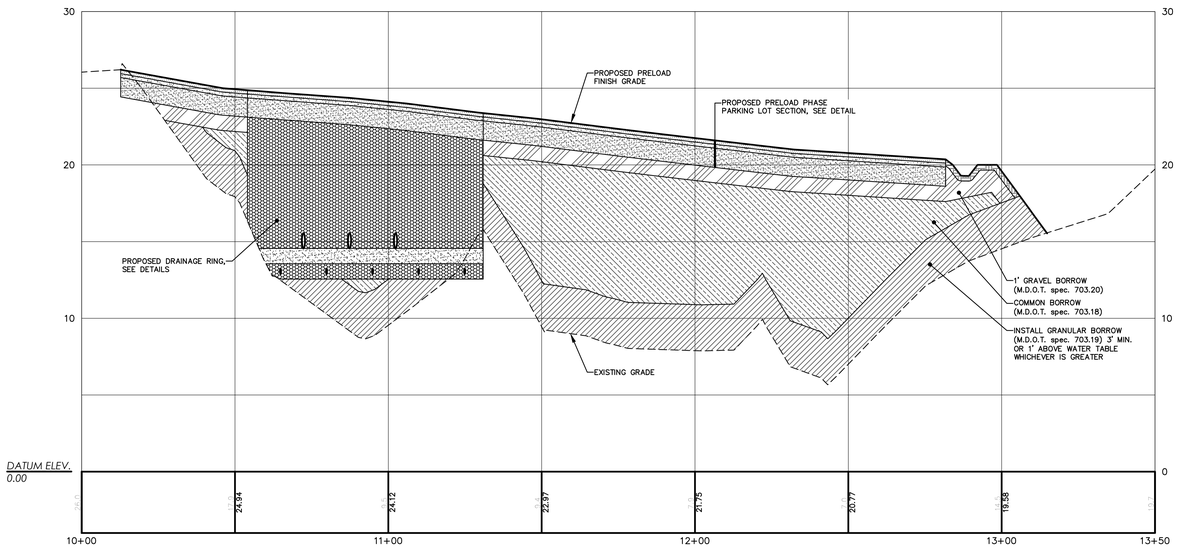
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
South Portland, ME 04106
Tel: 207-200-2100

PRELOAD STORMWATER BMP PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

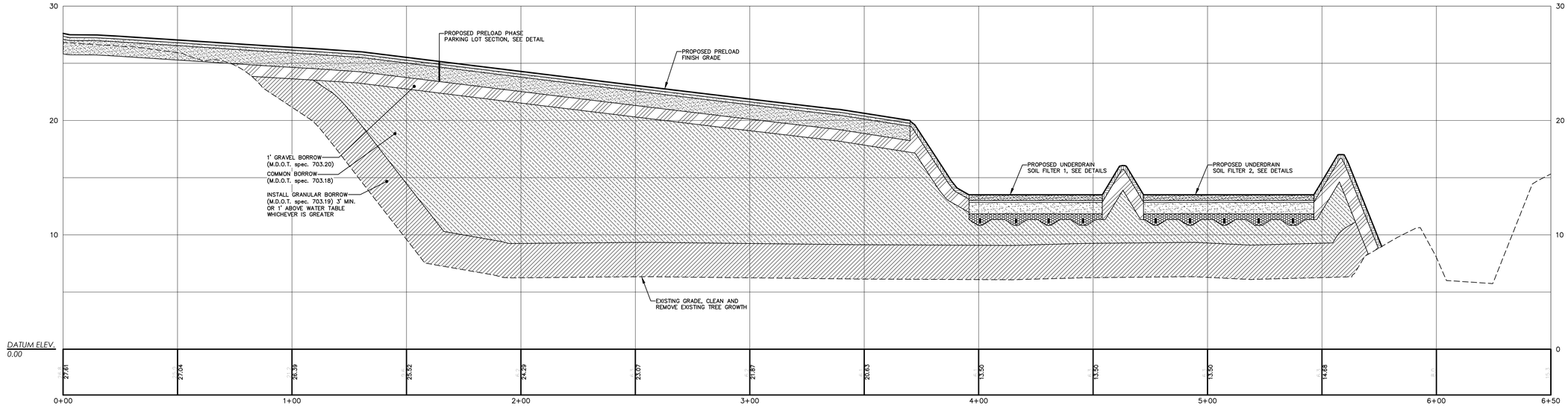
PROJECT NO. 99607 | SCALE 1" = 20'

SHEET 11 OF 21

99607DU - PRELOAD.dwg, TAB:PRELOAD GU-3



PROPOSED PRELOAD
DRAINAGE RING SECTION:
STA. 10+00 TO STA. 13+50
SCALE: 1"=20' HORIZ.
1"=4' VERT.



PROPOSED PRELOAD
UNDERDRAIN SOIL FILTER SECTION:
STA. 0+00 TO STA. 6+50
SCALE: 1"=20' HORIZ.
1"=4' VERT.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
09/14/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
C	WTC	09-14-18	ISSUED FOR BID
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	06-21-18	REVISED PER MDEP COMMENTS

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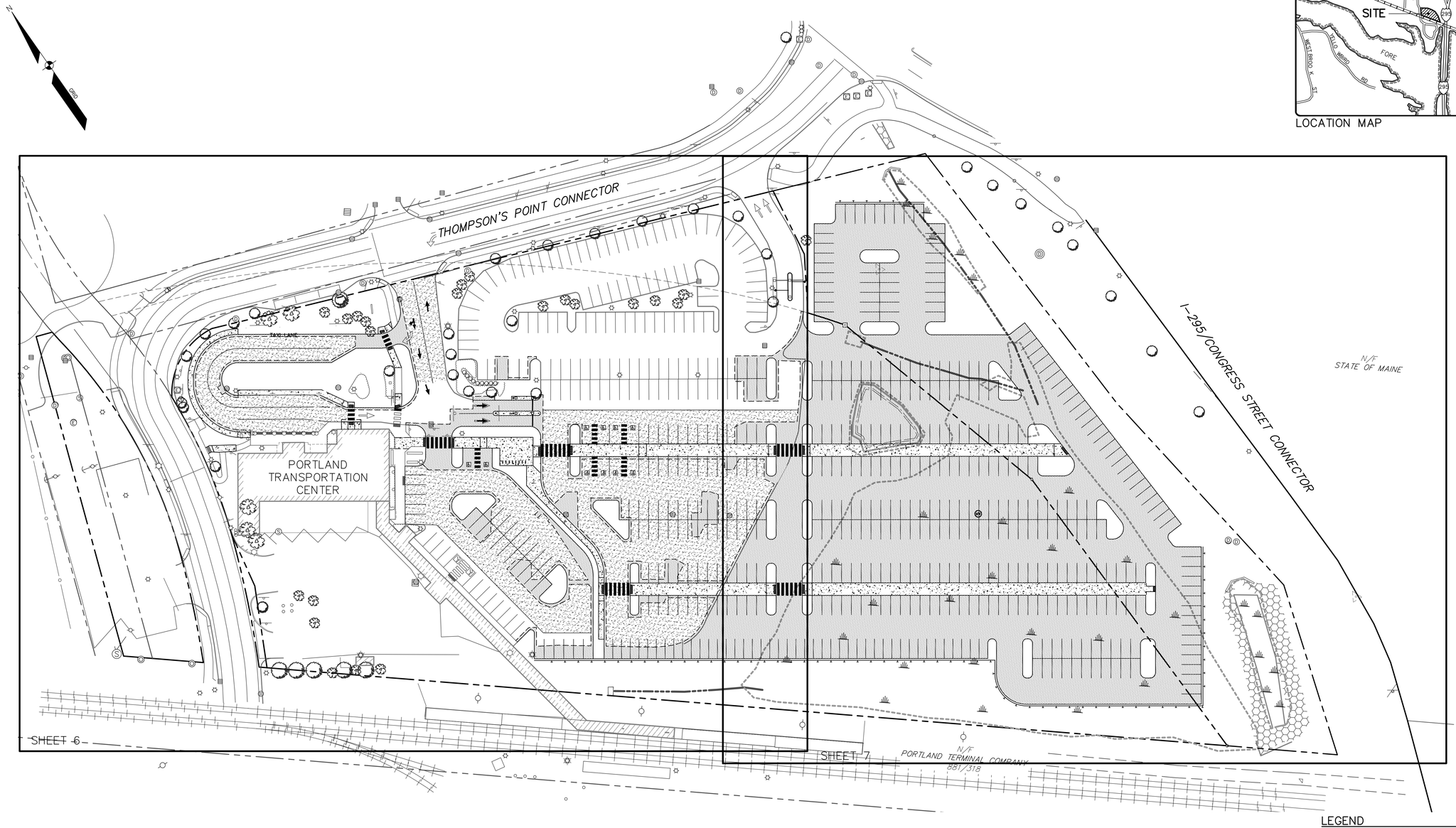
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

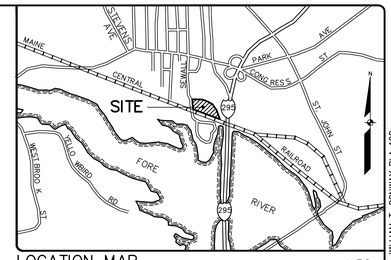
PRELOAD CROSS SECTIONS
OF
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 1 OF 1

99607XS-PRELOAD.dwg, TAB-PRELOAD-XS (FULL SET)





LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

• SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
   EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
   PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
8. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN SEPTEMBER, 2017 BY ERIK B. LEMA, CERTIFIED WETLAND SCIENTIST OF NORMANDEAU ASSOCIATES, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED BY SEBAGO TECHNICS USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.
9. SITE DEVELOPMENT AND EARTHWORK CONSTRUCTION WILL CONFORM TO THE EROSION PREVENTION PROVISIONS OUTLINED IN THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" AND "MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES" BY MDEP BUREAU OF LAND AND WATER QUALITY DATED 2014 OR LATEST REVISION.
10. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. THE DEVELOPER, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.
11. THE PROJECT IS LOCATED IN OR WITHIN PROXIMITY TO PROTECTED NATURAL RESOURCES, INCLUDING WETLANDS, STREAMS AND HABITATS. THE CONTRACTOR SHALL WORK IN COMPLIANCE WITH THE NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND PERMIT FROM THE ARMY CORPS OF ENGINEERS. THESE ENVIRONMENTAL PERMIT APPLICATIONS AND CONDITIONS OF APPROVAL ARE INCLUDED IN APPENDIX OF THE SPECIFICATIONS. VARIATION FROM THE WORK DESCRIBED IN THESE PERMITS MUST BE APPROVED IN WRITING FROM THESE REGULATORY AGENCIES PRIOR TO CONSTRUCTION. WETLANDS SHALL NOT BE IMPACTED UNLESS SHOWN ON THIS PLAN. WETLANDS SHALL BE FLAGGED PRIOR TO CONSTRUCTION.
12. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, CONDUIT AND PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
13. ALL LAWN AREAS, WALKWAYS, AND DRIVEWAYS OUTSIDE THE WORK AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE.
14. EXISTING PAVEMENT SHALL BE SAW CUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.
15. EXISTING DRAINAGE STRUCTURES SHALL NOT BE DISTURBED UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED BY THE ENGINEER.
16. THE CONTRACTOR IS REQUIRED TO PROVIDE A SECURE PROJECT WORK AREA. ALL PIPE TRENCH EXCAVATIONS SHALL BE BACKFILLED AND "CLOSED" DURING CONTRACTOR NON-WORKING HOURS INCLUDING NIGHTS, HOLIDAYS AND WEEKENDS. THE CONTRACTOR MAY REQUEST IN WRITING TO THE ENGINEER AND OWNER TO SECURE OPEN EXCAVATION IN LIEU OF BACKFILLED AND "CLOSED," NOT ALLOWING A SECURE OPEN EXCAVATION SHALL NOT BE A BASIS FOR CLAIMS AGAINST THE OWNER.
17. CONTRACTOR SHALL COMPLETE WORK SPECIFIED ON EACH PLAN AND SHALL COORDINATE WORK WITH ENTIRE PROJECT PLAN SET.
18. AT HANDICAPPED PARKING SPACES, APPLY PAINTED BLUE AND WHITE INTERNATIONAL SYMBOL OF ACCESSIBILITY. ALL ADA PARKING SPACES SHALL BE SIGNED AS VAN ACCESSIBLE. ALL ADA SIGNS (SIGN NO. S-2) SHALL BE INSTALLED ON BOLLARDS SET 6" FROM ADJACENT CURB OR FLUSH CONCRETE PAVING, BOTTOM OF SIGN SET 60" ABOVE GRADE. FINISH GRADES WITHIN ACCESSIBLE SPACES SHALL NOT EXCEED 1:50 IN ANY DIRECTION.
19. ALL PAINTED CROSSWALKS AND ADA ACCESS AISLES SHALL BE PAINTED WITH 24" WIDE SOLID WHITE BARS SET 24" APART.
20. ALL PARKING SPACES SHALL BE DEFINED WITH 4" WHITE PAINTED LINES. VERIFY THAT PROPOSED PAINT MATCHES EXISTING PAINTED LINES
21. PARKING SUMMARY: EXISTING PARKING SPACES= 323
    PROPOSED PARKING SPACES= 621
22. CONTRACTOR SHALL NOT START CONSTRUCTION ON EXISTING PARKING LOT UNTIL PARKING IN PROPOSED PARKING LOT AVAILABLE.

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

LANDSCAPE ARCHITECT WILLIAM T. CONWAY 108 REGISTERED STATE OF MAINE 09/14/18

STATE OF MAINE CRAIG A. BURGESS 12638 REGISTERED PROFESSIONAL ENGINEER 09/14/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMIT TO CITY
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

OVERALL SITE PLAN

OF:

PORTLAND TRANSPORTATION CENTER

THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:

LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

SHEET 6 OF 21

99607S-OVERALL.dwg, TAB1S

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	MILL PAVEMENT AREA	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

SIGN LEGEND

- S-1 EXISTING STOP SIGN TO REMAIN
- S-2 EXISTING "PARKING ONLY / LEFT ARROW "SIGN TO REMAIN
- S-3 EXISTING "DO NOT ENTER" SIGN TO REMAIN
- S-4 EXISTING ADA PARKING SIGN TO REMAIN
- S-5 EXISTING "TAXI STAND" SIGN RELOCATE
- S-6 EXISTING METRO BUS SIGN TO REMAIN
- S-7 NOT USED
- S-8 EXISTING "CUSTOMER DROP OFF / NO PARKING" SIGN TO REMAIN
- S-9 EXISTING EXIT SIGN TO REMAIN
- S-10 NEW STOP SIGN
- S-11 NEW 24" X 24" "SHORT TERM PARKING/ STRAIGHT ARROW AND LONG TERM PARKING / LEFT ARROW" SIGN, BLACK LETTERS ON WHITE BACKGROUND
- S-12 SALVAGED "PARKING RATES" SIGN
- S-13 SAVAGED "LOT B" AND ILLUMINATED "FULL" SIGN
- S-14 SALVAGED "ONE WAY DO NOT ENTER" AND "PARKING RATES" SIGN
- S-15 SALVAGED ADA PARKING SIGN
- S-16 NEW ADA "VAN ACCESSIBLE" PARKING SIGN
- S-17 EXISTING PTC SIGN TO REMAIN
- S-18 NEW "NO PARKING, IMMEDIATE PICK UP AND DROP OFF ONLY / RIGHT ARROW" SIGN (SEE DETAIL)
- S-19 NEW "TAXIS ONLY/ LEFT LANE" SIGN
- S-20 NEW "NO PARKING, TAXIS ONLY" SIGN
- S-21 NEW "TAXIS/LEFT ARROW" SIGN
- S-22 NEW "RIDESHARE PARKING ONLY" SIGN
- S-23 NEW SHORT TERM PARKING / STRAIGHT ARROW" SIGN (SEE DETAIL)
- S-24 NEW LONG TERM PARKING / LEFT ARROW" SIGN (SEE DETAIL)
- S-25 NEW PRE-ARRIVAL ELECTRONIC MESSAGE SIGN (SEE DETAIL)

NOTE - SIGN NOS. S-10 THRU S-15 SIGNS SHALL BE MOUNTED ON A SCH. 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL 30 INCHES BELOW GRADE IN A 12 INCH X 36 INCH CONCRETE FILLED SONATUBE.

SIGN NO. S-16 TO BE ST ON A SCH 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL POST 18 INCHES INTO CONCRETE FILLED STEEL BOLLARD.

LIGHT FIXTURE LEGEND

- E EXISTING BASE AND POLE TO REMAIN, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- R EXISTING BASE AND POLE TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- RS EXISTING BASE, POLE AND SECURITY CAMERA TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- N NEW BASE, 20 FOOT SQUARE POLE, COLOR BLACK, AND NEW FIXTURE

NOTE: ALL FIXTURES SHALL BE BEACON LED VIPER SERIES VPS - 48L - 110 - 4K7, COLOR BLACK

THOMPSON'S POINT CONNECTOR

PORTLAND TRANSPORTATION CENTER

EXISTING METRO BUS SHELTER

41 SPACES

12 SPACES

2 SPACES

5 SPACES

14 SPACES

23 SPACES

5 SPACES

23 SPACES

565 SPACES INSIDE GATED AREA

17 SPACES

17 SPACES
5'X9' TREE WELL, TYP.

15 SPACES

14 SPACES

13 SPACES

13 SPACES

44 COMPACT SPACES (8'x18')

2 SPACES

6 SPACES

9 SPACES

11 SPACES

14 SPACES

KISS & RIDE
48 SPACES

6 SPACES

SEE ENLARGED AREA PLAN ON SHEET 7

NON-JURISDICTIONAL STREAM

SITE PLAN KEY NOTES

1. PAVEMENT SAW CUT, TYPICAL (SEE DEMOLITION PLANS)
2. EXISTING ASPHALT PAVING TO REMAIN
3. MILL OFF 1.5 INCHES EXISTING ASPHALT PAVING AND INSTALL NEW 1.5 INCH ASPHALT OVERLAY SURFACE COURSE
4. NEW FULL DEPTH ASPHALT PAVING SECTION
5. EXISTING CURBING TO REMAIN
6. NEW CONCRETE SLIPFORM CURBING
7. NEW 4.0 INCH CONCRETE SIDEWALK
8. NEW ADA TACTILE WARNING PANELS, TYPICAL
9. EXISTING 4.0 INCH WHITE PAINT STRIPING TO REMAIN
10. NEW 4.0 INCH WHITE PAINT STRIPING
11. EXISTING 24 INCH WHITE PAINT BARS TO REMAIN
12. NEW 24 INCH WHITE PAINT BARS, 24 INCHES APART
13. EXISTING BLUE PAINTED ADA SYMBOL TO REMAIN
14. NEW BLUE PAINTED ADA SYMBOL, TYPICAL
15. EXISTING WHITE PAINTED ARROW, TYPICAL
16. NEW WHITE PAINTED ARROW, TYPICAL
17. (25) EXISTING BIKE RACKS
18. (12) NEW BIKE RACKS - DERO BIKE HITCH MODEL, COLOR BLACK, SPACED 24 INCHES APART
19. TIP DOWN CURB, TYPICAL
20. NEW WHITE PAINTED LETTERS, 6 FEET TALL
21. EXISTING SIDEWALK TO REMAIN
22. CORTEN VEHICLE GUARDRAIL WITH W-BEAM CRASH BARRIER END TREATMENT
23. SALVAGED CARD READERS
24. SALVAGED CABINET AND GATE ARM
25. INSTALL (2) OR (3) CAST CONCRETE STEPS, TOP TREAD TO MATCH EXISTING SIDEWALK, BOTTOM RISER TO MATCH SIDEWALK ON STREET MAXIMUM RISER 7", MINIMUM TREAD 11"
26. BLACK STEEL CANTILEVERED OVERHEAD SIGN STRUCTURE
27. BIKE RACKS TO REMAIN

P PORTLAND TRANSPORTATION CENTER
LONG TERM PARKING
LOT (A)
LOT (B) FULL
SHORT TERM PARKING

SIGN S-25

NO PARKING
IMMEDIATE PICK-UP AND DROP-OFF ONLY

SIGN S-18

SHORT TERM PARKING
ALL NON-IMMEDIATE DROP-OFFS AND PICK-UPS MUST PARK
RIDESHARE PARKING

SIGN S-23

LONG TERM PARKING
LOT (B)

SIGN S-24

NO PARKING
TAXIS ONLY

SIGN S-20

SIGN DETAILS

WILLIAM T. CONWAY RLA 108 — REGISTERED LANDSCAPE ARCHITECT — STATE OF MAINE — 09/14/18

CRAIG BURGESS, P.E. #12638 — STATE OF MAINE — CRAIG A. BURGESS No. 12638 REGISTERED PROFESSIONAL ENGINEER — 09/14/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMIT TO CITY
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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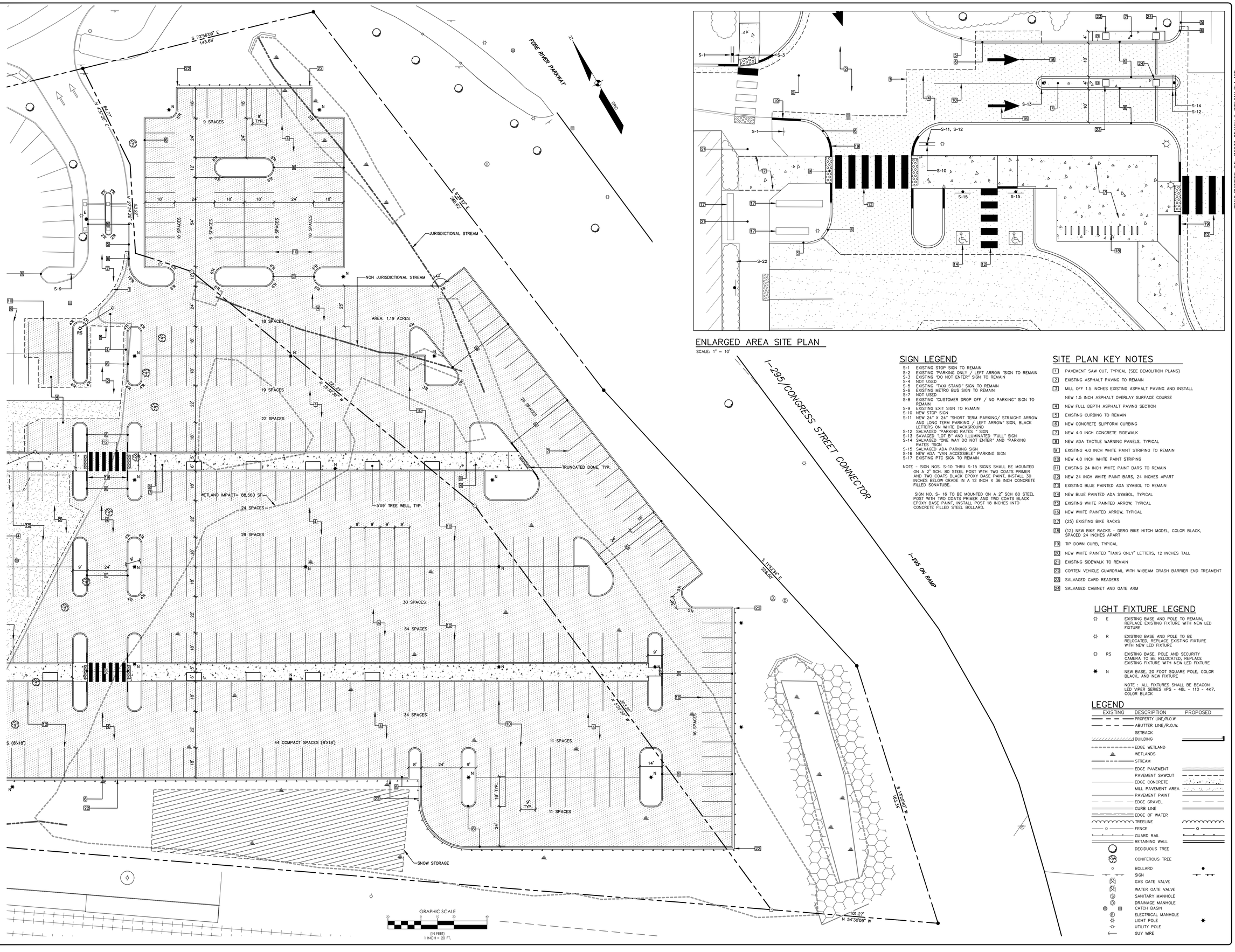
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

SITE PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 7 OF 21

99607S-dwg, TAB:S1



ENLARGED AREA SITE PLAN

SCALE: 1" = 10'

SIGN LEGEND

- S-1 EXISTING STOP SIGN TO REMAIN
- S-2 EXISTING "PARKING ONLY / LEFT ARROW "SIGN TO REMAIN
- S-3 EXISTING "DO NOT ENTER" SIGN TO REMAIN
- S-4 NOT USED
- S-5 EXISTING "TAXI STAND" SIGN TO REMAIN
- S-6 EXISTING METRO BUS SIGN TO REMAIN
- S-7 NOT USED
- S-8 EXISTING "CUSTOMER DROP OFF / NO PARKING" SIGN TO REMAIN
- S-9 EXISTING EXIT SIGN TO REMAIN
- S-10 NEW STOP SIGN
- S-11 NEW 24" X 24" "SHORT TERM PARKING/ STRAIGHT ARROW AND LONG TERM PARKING / LEFT ARROW" SIGN, BLACK LETTERS ON WHITE BACKGROUND
- S-12 SALVAGED "PARKING RATES " SIGN
- S-13 SAVAGED "LOT B" AND ILLUMINATED "FULL" SIGN
- S-14 SALVAGED "ONE WAY DO NOT ENTER" AND "PARKING RATES "SIGN
- S-15 SALVAGED ADA PARKING SIGN
- S-16 NEW ADA "VAN ACCESSIBLE" PARKING SIGN
- S-17 EXISTING PTC SIGN TO REMAIN

NOTE - SIGN NOS. S-10 THRU S-15 SIGNS SHALL BE MOUNTED ON A 2" SCH. 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL 30 INCHES BELOW GRADE IN A 12 INCH X 36 INCH CONCRETE FILLED SONATUBE.

SIGN NO. S- 16 TO BE MOUNTED ON A 2" SCH 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL POST 18 INCHES INTO CONCRETE FILLED STEEL BOLLARD.

SITE PLAN KEY NOTES

1. PAVEMENT SAW CUT, TYPICAL (SEE DEMOLITION PLANS)
2. EXISTING ASPHALT PAVING TO REMAIN
3. MILL OFF 1.5 INCHES EXISTING ASPHALT PAVING AND INSTALL NEW 1.5 INCH ASPHALT OVERLAY SURFACE COURSE
4. NEW FULL DEPTH ASPHALT PAVING SECTION
5. EXISTING CURBING TO REMAIN
6. NEW CONCRETE SLIPFORM CURBING
7. NEW 4.0 INCH CONCRETE SIDEWALK
8. NEW ADA TACTILE WARNING PANELS, TYPICAL
9. EXISTING 4.0 INCH WHITE PAINT STRIPING TO REMAIN
10. NEW 4.0 INCH WHITE PAINT STRIPING
11. EXISTING 24 INCH WHITE PAINT BARS TO REMAIN
12. NEW 24 INCH WHITE PAINT BARS, 24 INCHES APART
13. EXISTING BLUE PAINTED ADA SYMBOL TO REMAIN
14. NEW BLUE PAINTED ADA SYMBOL, TYPICAL
15. EXISTING WHITE PAINTED ARROW, TYPICAL
16. NEW WHITE PAINTED ARROW, TYPICAL
17. (25) EXISTING BIKE RACKS
18. (12) NEW BIKE RACKS - DERO BIKE HITCH MODEL, COLOR BLACK, SPACED 24 INCHES APART
19. TIP DOWN CURB, TYPICAL
20. NEW WHITE PAINTED "TAXIS ONLY" LETTERS, 12 INCHES TALL
21. EXISTING SIDEWALK TO REMAIN
22. CORTEN VEHICLE GUARDRAIL WITH W-BEAM CRASH BARRIER END TREAMENT
23. SALVAGED CARD READERS
24. SALVAGED CABINET AND GATE ARM

LIGHT FIXTURE LEGEND

- E EXISTING BASE AND POLE TO REMAIN, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- R EXISTING BASE AND POLE TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- RS EXISTING BASE, POLE AND SECURITY CAMERA TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- N NEW BASE, 20 FOOT SQUARE POLE, COLOR BLACK, AND NEW FIXTURE

NOTE : ALL FIXTURES SHALL BE BEACON LED VIPER SERIES VPS - 48L - 110 - 4K7, COLOR BLACK

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	MILL PAVEMENT AREA	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

DESIGNED	WTC	CHECKED	WTC

F	WTC	09-14-18	REVISED PER CITY COMMENTS
E	WTC	09-10-18	RESUBMIT TO CITY
C	WTC	06-21-18	REVISED PER MDEP COMMENTS
B	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVEW
A	CDM	01-18-18	EXHIBIT B LAND ACQUISITION SKETCH ISSUED TO STATE OF MAINE
REV:	BY:	DATE:	STATUS:

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel: 207-200-2100

SITE PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 25'

SHEET 8 OF 21

99607S.dwg, TAB:S2

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	SIZE
CB-1	23.45		16.96 (SD-1)	72" DIA DOUBLE GRATE
CB-2	21.02	16.32 (SD-1)	16.22 (SD-2)	48" DIA
CB-3	21.02	15.24 (SD-2)	15.14 (SD-3)	72" DIA DOUBLE GRATE
CB-4	20.69	14.66 (SD-3) 14.38 (SD-5) 14.38 (SD-27)	14.28 (SD-4)	48" DIA
CB-5	20.68	14.76 (SD-33)	14.66 (SD-5)	48" DIA
CB-6	20.47		15.08 (SD-6)	48" DIA
CB-7	19.40	11.76 (SD-4) 11.76 (SD-8)	11.66 (SD-7)	72" DIA
CB-8	18.55	12.19 (SD-9)	12.09 (SD-8)	48" DIA
CB-9	16.50		13.00 (SD-9)	72" DIA DOUBLE GRATE
CB-10	27.30		21.90 (SD-10)	48" DIA
CB-11	27.30	21.57 (SD-10)	21.47 (SD-11)	48" DIA
CB-12	30.00		24.68 (SD-12)	48" DIA
CB-13	27.63		25.69 (EX SD-1)	48" CB
CB-14	18.58		15.59 (SD-27)	48" DIA
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72" DIA
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72" DIA
CB-17	25.65		19.30 (SD-29)	48" DIA
CB-18	27.93		23.06 (SD-30)	48" DIA
CB-19	20.68	14.82 (SD-6) 14.82 (SD-32)	14.82 (SD-33)	48" DIA
CB-20	25.62		16.96 (SD-31)	48" DIA
CB-21	24.78	16.61 (SD-31)	16.51 (SD-32)	48" DIA
CBR 15027	29.26	24.57 (EX SD-1) 24.57 (SD-12)	23.69 (EX SD-2)	EXIST. CB
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72" DIA
DMH-2	18.67	11.00 (SD-17)	10.90 (SD-18)	48" DIA
DMH-3	17.04	8.24 (SD-18) 8.05 (UD-1)	7.95 (SD-19)	48" DIA
ICS-1	19.43	11.64 (SD-7)	11.54 (SD-20) 11.54 (SD-21) 11.54 (SD-28)	6'x12'
ICS-2	19.19	11.54 (SD-28)	11.54 (SD-22) 11.54 (SD-23) 11.54 (SD-17)	6'x12'
OCS-1	17.33	11.44 (SD-24)	10.40 (SD-25)	48" DIA

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-1	12"	101'	1.11%
EX SD-2	12"	88'	0.66%
EX SD-3	42"	106'	0.60%
SD-1	12"	63'	1.02%
SD-2	12"	76'	1.30%
SD-3	15"	76'	0.63%
SD-4	30"	105'	2.41%
SD-5	12"	52'	0.54%
SD-6	12"	52'	0.50%
SD-7	36"	2'	1.28%
SD-8	24"	65'	0.51%
SD-9	18"	159'	0.51%
SD-10	12"	63'	0.52%
SD-11	12"	12'	0.60%
SD-12	12"	21'	0.52%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-17	18"	27'	2.00%
SD-18	18"	133'	2.00%
SD-19	18"	30'	3.15%
SD-20	24"	3'	1.67%
SD-21	24"	3'	1.67%
SD-22	24"	3'	1.67%
SD-23	24"	3'	1.67%
SD-24	24"	3'	1.49%
SD-25	24"	34'	9.98%
SD-26	36"	171'	0.50%
SD-27	24"	233'	0.52%
SD-28	24"	5'	0.00%
SD-29	12"	17'	0.54%
SD-30	10"	22'	0.74%
SD-31	12"	34'	1.02%
SD-32	12"	167'	1.01%
SD-33	12"	10'	0.67%
UD-1	6"	15'	0.65%

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	FLOODPLAIN	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
251 250	CONTOURS	250
250.00 +	SPOT GRADE	250.00 +
SP-2	SETTLEMENT PLATFORM	
B-101	BORING	
PZ-1	PIEZOMETER	
	LIGHT POLE	
	DRAINAGE DITCH	
	RIPRAP	
	INLET PROTECTION	
	CATCH BASIN	
	DRAINAGE MANHOLE	
	TRUNCATED DOME	
	EROSION CONTROL BLANKET	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	

GRADING & EROSION NOTES:

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE A GROUND LASER.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OCTOBER 2016 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
7. GRADES IN DESIGNATED HANDICAP PARKING AREA AND ACCESSIBLE UNLOADING AREA SHALL NOT EXCEED 2.0% IN ANY DIRECTION.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FT.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — REGISTERED PROFESSIONAL ENGINEER — 09/14/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMIT TO CITY
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
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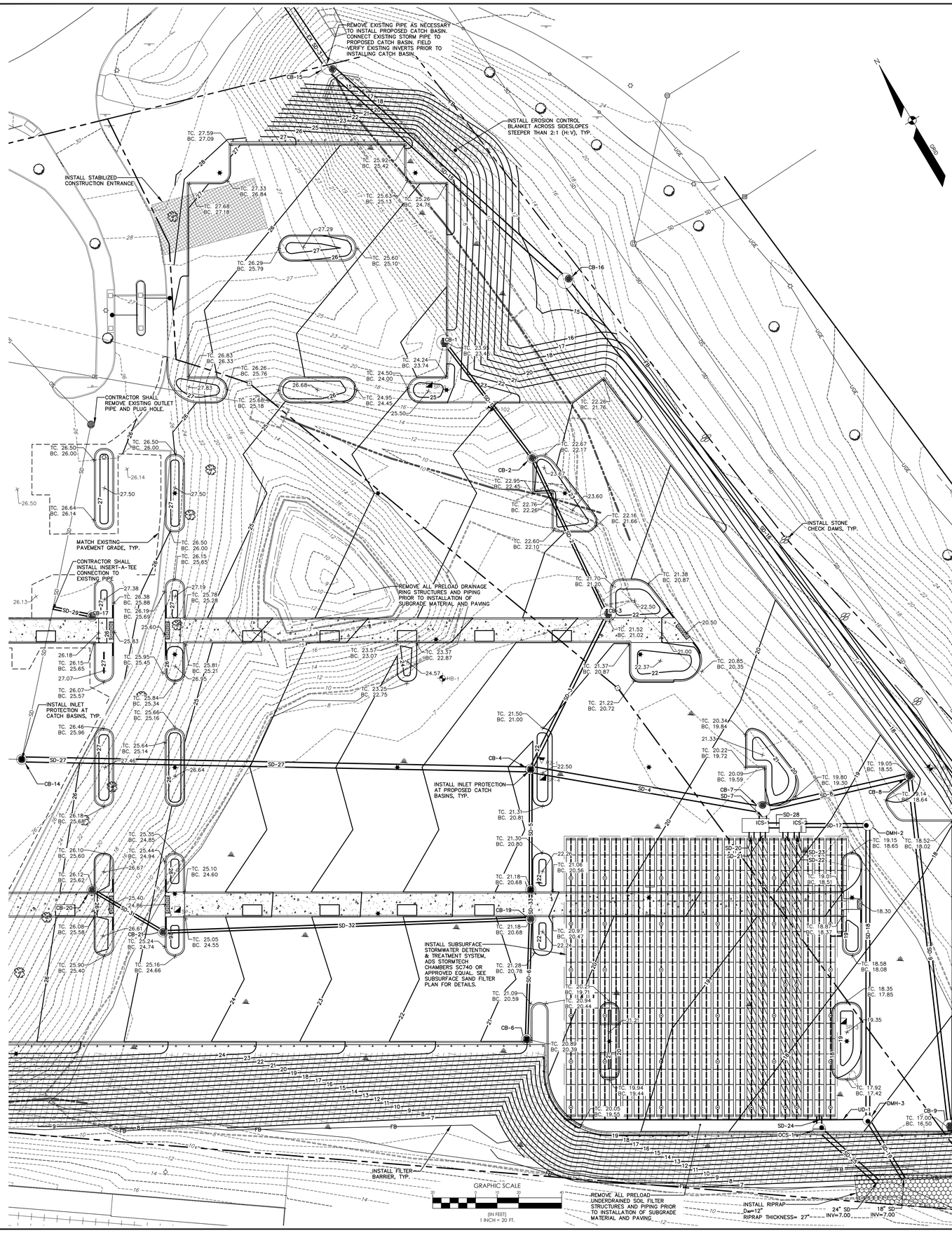
GRADING AND UTILITY PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 12 OF 21

99607GU.dwg, TAB1.01



GRADING & EROSION NOTES:

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5. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
FLOODPLAIN	
BUILDING	
EDGE WETLAND	
WETLANDS	
EDGE PAVEMENT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
251 250 CONTOURS	250
250.00 + SPOT GRADE	250.00 +
SP-2 SETTLEMENT PLATFORM	
B-101 BORING	
PZ-1 PIEZOMETER	

EXISTING	PROPOSED
	LIGHT POLE
	DRAINAGE DITCH
	RIPRAP
	INLET PROTECTION
	CATCH BASIN
	DRAINAGE MANHOLE
	TRUNCATED DOME
	EROSION CONTROL BLANKET
	DECIDUOUS TREE
	CONIFEROUS TREE
	SHRUB

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	SIZE
CB-1	23.45		16.96 (SD-1)	72" DIA DOUBLE GRATE
CB-2	21.02	16.32 (SD-1)	16.22 (SD-2)	48" DIA
CB-3	21.02	15.24 (SD-2)	15.14 (SD-3)	72" DIA DOUBLE GRATE
CB-4	20.69	14.66 (SD-3) 14.38 (SD-5) 14.38 (SD-27)	14.28 (SD-4)	48" DIA
CB-5	20.68	14.76 (SD-33)	14.66 (SD-5)	48" DIA
CB-6	20.47		15.08 (SD-6)	48" DIA
CB-7	19.40	11.76 (SD-4) 11.76 (SD-8)	11.66 (SD-7)	72" DIA
CB-8	18.55	12.19 (SD-9)	12.09 (SD-8)	48" DIA
CB-9	16.50		13.00 (SD-9)	72" DIA DOUBLE GRATE
CB-10	27.30		21.90 (SD-10)	48" DIA
CB-11	27.30	21.57 (SD-10)	21.47 (SD-11)	48" DIA
CB-12	30.00		24.68 (SD-12)	48" DIA
CB-13	27.63		25.69 (EX SD-1)	48" CB
CB-14	18.58		15.59 (SD-27)	48" DIA
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72" DIA
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72" DIA
CB-17	25.65		19.30 (SD-29)	48" DIA
CB-18	27.93		23.06 (SD-30)	48" DIA
CB-19	20.68	14.82 (SD-6) 14.82 (SD-32)	14.82 (SD-33)	48" DIA
CB-20	25.62		16.96 (SD-31)	48" DIA
CB-21	24.78	16.61 (SD-31)	16.51 (SD-32)	48" DIA
CBR 15027	29.26	24.57 (EX SD-1) 24.57 (SD-12)	23.69 (EX SD-2)	EXIST. CB
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72" DIA
DMH-2	18.67	11.00 (SD-17)	10.90 (SD-18)	48" DIA
DMH-3	17.04	8.24 (SD-18) 8.05 (UD-1)	7.95 (SD-19)	48" DIA
ICS-1	19.43	11.64 (SD-7)	11.54 (SD-20) 11.54 (SD-21) 11.54 (SD-28)	6'x12'
ICS-2	19.19	11.54 (SD-28)	11.54 (SD-22) 11.54 (SD-23) 11.54 (SD-17)	6'x12'
OCS-1	17.33	11.44 (SD-24)	10.40 (SD-25)	48" DIA

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-1	12"	101'	1.11%
EX SD-2	12"	88'	0.66%
EX SD-3	42"	106'	0.60%
SD-1	12"	63'	1.02%
SD-2	12"	76'	1.30%
SD-3	15"	76'	0.63%
SD-4	30"	105'	2.41%
SD-5	12"	52'	0.54%
SD-6	12"	52'	0.50%
SD-7	36"	2'	1.28%
SD-8	24"	65'	0.51%
SD-9	18"	159'	0.51%
SD-10	12"	63'	0.52%
SD-11	12"	12'	0.60%
SD-12	12"	21'	0.52%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-17	18"	27'	2.00%
SD-18	18"	133'	2.00%
SD-19	18"	30'	3.15%
SD-20	24"	3'	1.67%
SD-21	24"	3'	1.67%
SD-22	24"	3'	1.67%
SD-23	24"	3'	1.67%
SD-24	24"	3'	1.49%
SD-25	24"	34'	9.98%
SD-26	36"	171'	0.50%
SD-27	24"	233'	0.52%
SD-28	24"	5'	0.00%
SD-29	12"	17'	0.54%
SD-30	10"	22'	0.74%
SD-31	12"	34'	1.02%
SD-32	12"	167'	1.01%
SD-33	12"	10'	0.67%
UD-1	6"	15'	0.65%

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — 12638 — REGISTERED PROFESSIONAL ENGINEER — 09/14/18

DESIGNED	CHECKED
WTC	WTC

E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMIT TO CITY
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW
REV:	BY:	DATE:	STATUS:

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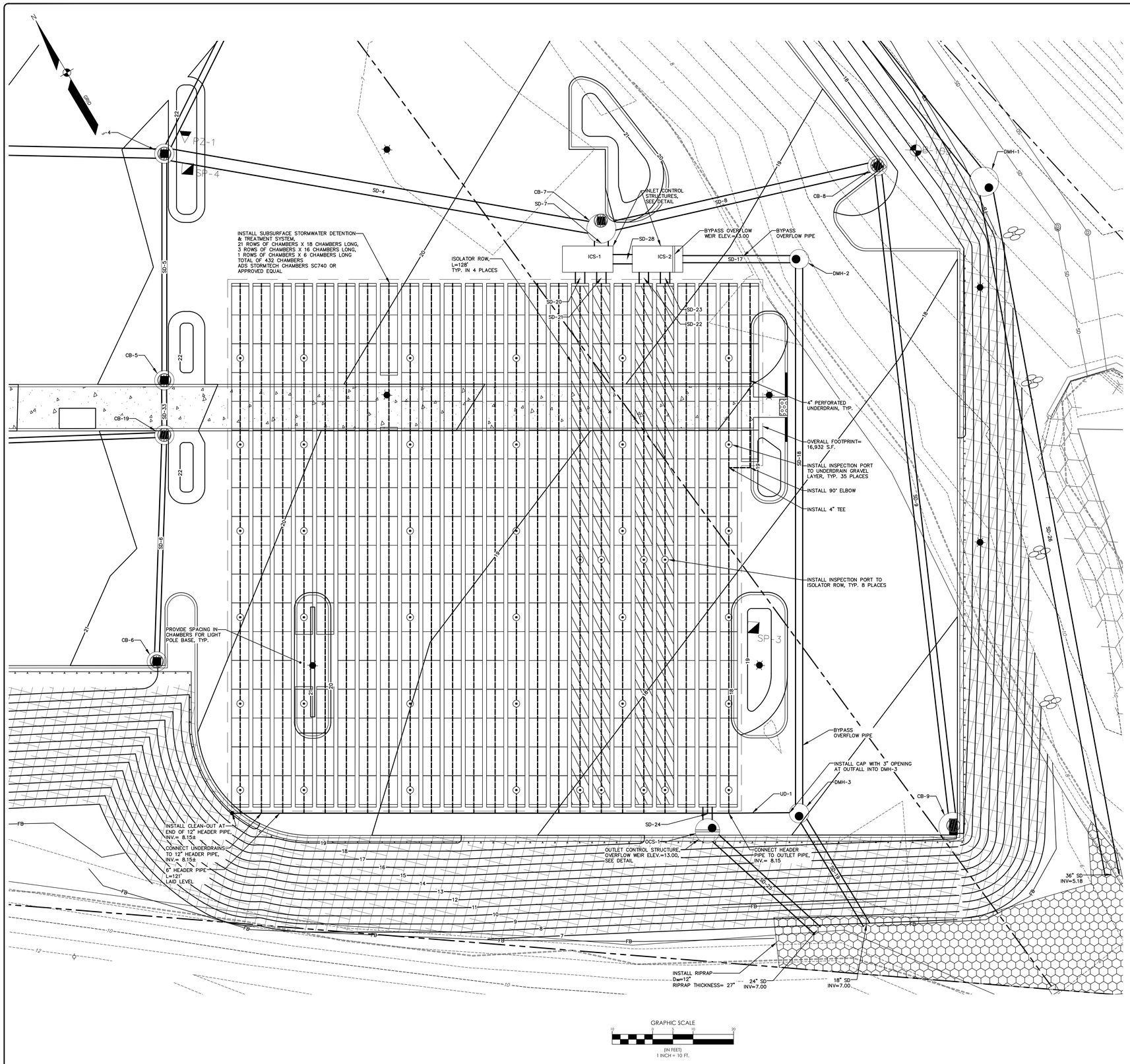
WWW.SEBAGOTECHNICS.COM
75 John H. Roberts Rd.
Suite #4
South Portland, ME 04106
Tel: 207-200-2100

GRADING AND UTILITY PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 13 OF 21

99607GU.dwg, TAB:C2



GRAPHIC SCALE

10 0 5 10 20

(IN FEET)
1 INCH = 10 FT.

GRADING & EROSION NOTES:

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE A GROUND LASER.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
5. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
FLOODPLAIN	
BUILDING	
EDGE WETLAND	
WETLANDS	
EDGE PAVEMENT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
251 250 CONTOURS	250
250.00 + SPOT GRADE	250.00 +
SP-2 SETTLEMENT PLATFORM	
B-101 BORING	
PZ-1 PIEZOMETER	
LIGHT POLE	
DRAINAGE DITCH	
RIPRAP	
INLET PROTECTION	
CATCH BASIN	
DRAINAGE MANHOLE	
TRUNCATED DOME	
EROSION CONTROL BLANKET	
DECIDUOUS TREE	
CONIFEROUS TREE	
SHRUB	

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE DEPTH (FT.)	EXISTING SEASONAL HIGH WATER TABLE ELEV (FT.)	FINAL DEPTH OF TEST PIT
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	SIZE
CB-1	23.45		16.96 (SD-1)	72" DIA DOUBLE GRATE
CB-2	21.02	16.32 (SD-1)	16.22 (SD-2)	48" DIA
CB-3	21.02	15.24 (SD-2)	15.14 (SD-3)	72" DIA DOUBLE GRATE
CB-4	20.69	14.66 (SD-3) 14.38 (SD-5) 14.38 (SD-27)	14.28 (SD-4)	48" DIA
CB-5	20.68	14.76 (SD-33)	14.66 (SD-5)	48" DIA
CB-6	20.47		15.08 (SD-6)	48" DIA
CB-7	19.40	11.76 (SD-4) 11.76 (SD-8)	11.66 (SD-7)	72" DIA
CB-8	18.55	12.19 (SD-9)	12.09 (SD-8)	48" DIA
CB-9	16.50		13.00 (SD-9)	72" DIA DOUBLE GRATE
CB-10	27.30		21.90 (SD-10)	48" DIA
CB-11	27.30	21.57 (SD-10)	21.47 (SD-11)	48" DIA
CB-12	30.00		24.68 (SD-12)	48" DIA
CB-13	27.63		25.69 (EX SD-1)	48" CB
CB-14	18.58		15.59 (SD-27)	48" DIA
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72" DIA
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72" DIA
CB-17	25.65		19.30 (SD-29)	48" DIA
CB-18	27.93		23.06 (SD-30)	48" DIA
CB-19	20.68	14.82 (SD-6) 14.82 (SD-32)	14.82 (SD-33)	48" DIA
CB-20	25.62		16.96 (SD-31)	48" DIA
CB-21	24.78	16.61 (SD-31)	16.51 (SD-32)	48" DIA
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CRAIG BURGESS, P.E. #12638

STATE OF MAINE CRAIG A. BURGESS 12638 REGISTERED PROFESSIONAL ENGINEER 09/14/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
F	WTC	09-14-18	REVISED PER CITY COMMENTS
E	WTC	08-10-18	RESUBMIT TO CITY
D	WTC	07-10-18	RESUBMIT TO CITY
C	WTC	06-21-18	REVISED PER MDEP COMMENTS
B	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A-4
South Portland, ME 04106
Tel. 207-200-2100

SUBSURFACE SAND FILTER PLAN

OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 14 OF 21

99607DU.dwg, 1:1

PLANT SCHEDULE

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AR	ACER RUBRUM / SWAMP MAPLE	3" CALIPER
NS	NYSSA SYLVATICA / TUPELO	3" CALIPER
CC	CARPINUS CAROLINIANA / AMERICAN HORNBEAM	3" CALIPER
AC	AMELANCHIER CANADENSIS / SHADBUSH	8'-10' CLUMP
BA	BETULA ALLEGHENIENSIS / YELLOW BIRCH	8'-10' CLUMP
CA	CORNUS ALTERNIFOLIA / PAGODA DOGWOOD	6' - 8 ' CLUMP
RT	RHUS TYPHINA / STAGHORN SUMAC	3 FT. - 4 FT.
AB	ABIES BASAMEA / BALSAM FIR	6'-10' AS NOTED
PG	PICEA GLAUCA / WHITE SPRUCE	6' - 10' AS NOTED
DL	DIERVILLA LONICERA / BUSH HONEYSUCKLE	NO. 3 CONT.
MG	MYRICA GALE / SWEETGALE	NO.3 CONT.

SEED MIX ' A ' - MDOT SEEDING METHOD NO. 1
SEED MIX ' B ' - NORTHEAST WILDFLOWER SEED MIX - APPLY 50 LBS PER ACRE
(WWW.AMERICAN MEADOWS.COM)

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
SETBACK	
EASEMENT	
BUILDING	
EDGE PAVEMENT	
CURB LINE	
EDGE OF WATER	
TREELINE	
	EDGE PAVEMENT
DECIDUOUS TREE	X
CONIFEROUS TREE	X
LIGHT POLE	
SIGN	

THOMPSON'S POINT CONNECTOR

PORTLAND TRANSPORTATION CENTER

SEED MIX 'A'
MULCH LINE
18 DL
3 NS
6 MG
30 MG
24 MG
2 CC
1 AC
2 NS/SEED MIX 'A'
1 NS/7 DL
4 CC
1 NS/SEED MIX 'A'
1 AB
15 DL
1 CA/7 MG
2 AR/SEED MIX 'A'
3 CC
7 CA/SEED MIX 'A'
1 AC/SEED MIX 'A'
SEED MIX 'B'
1 CC

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FT.

WILLIAM T. CONWAY RLA 108

REGISTERED LANDSCAPE ARCHITECT WILLIAM T. CONWAY STATE OF MAINE 09/14/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
D	WTC	09-14-18	REVISED PER CITY COMMENTS
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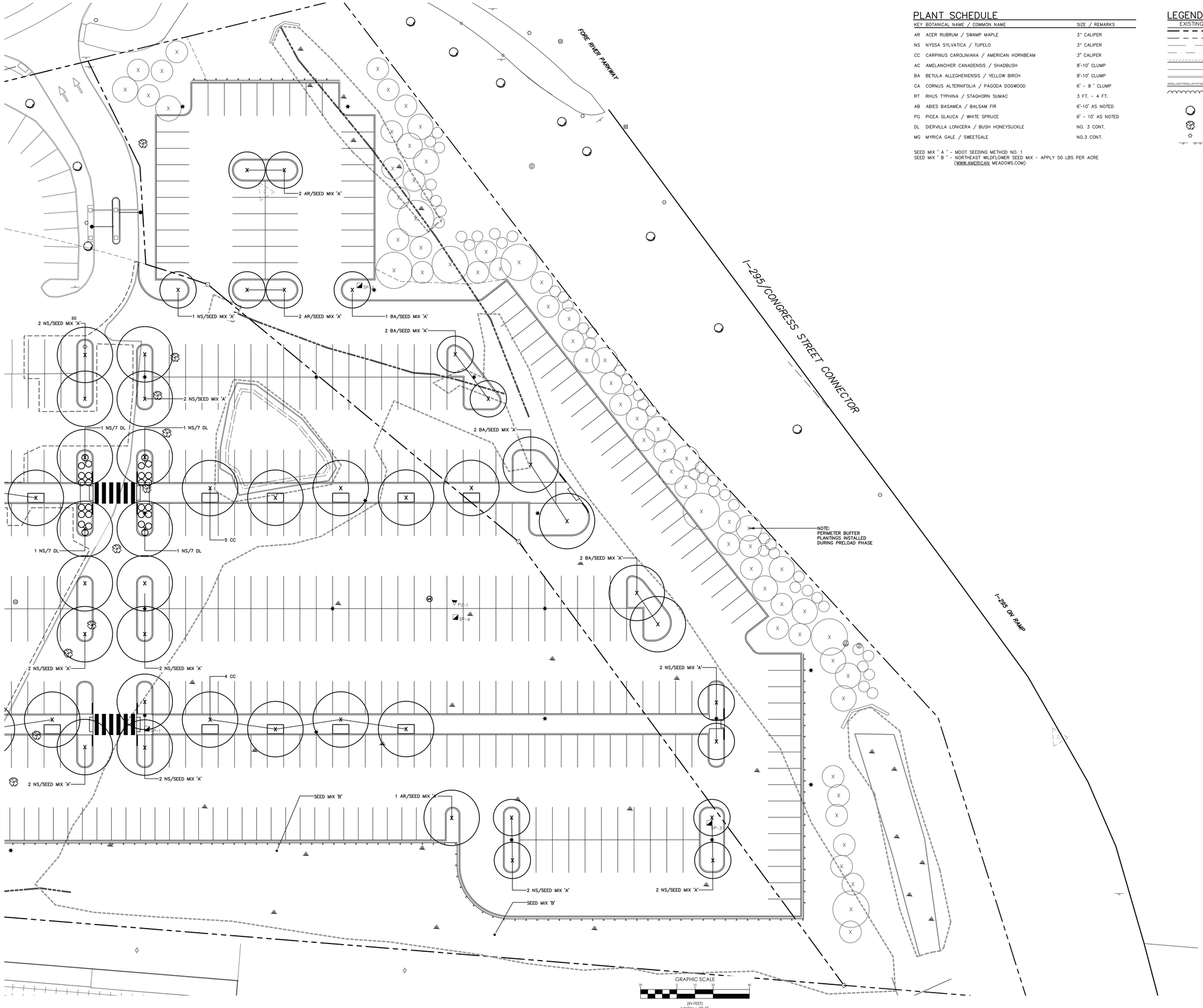
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 4A
South Portland, ME 04106
Tel. 207-200-2100
250 Goddard Rd.
Lewiston, ME 04240
Tel. 207-783-5656

LANDSCAPE PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 15 OF 21

99607Land_TABL1.1



PLANT SCHEDULE

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AR	ACER RUBRUM / SWAMP MAPLE	3" CALIPER
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BA	BETULA ALLEGHENIENSIS / YELLOW BIRCH	8'-10' CLUMP
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DL	DIERVILLA LONICERA / BUSH HONEYSUCKLE	NO. 3 CONT.
MG	MYRICA GALE / SWEETGALE	NO.3 CONT.

SEED MIX ' A ' - MDOT SEEDING METHOD NO. 1
SEED MIX ' B ' - NORTHEAST WLDFLOWER SEED MIX - APPLY 50 LBS PER ACRE
(WWW.AMERICAN MEADOWS.COM)

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	EASEMENT	
	BUILDING	
	EDGE PAVEMENT	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	EDGE PAVEMENT	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	LIGHT POLE	
	SIGN	

WILLIAM T. CONWAY RLA 108
REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
STATE OF MAINE
09/14/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
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LANDSCAPE PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 16 OF 21

99607Ldwg, TABL2

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.

2. INSPECTION AND MAINTENANCE:
ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR OPEN-TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN-OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.

4. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES, THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. STABILIZED CONSTRUCTION EXIT:
PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

5. PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.
D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN 2018, DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

1.	ESTIMATED CONSTRUCTION TIME:	24 MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 3
4.	PRELOAD PROPOSED PARKING LOT SITE	WEEK 4 - WEEK 8
5.	PRELOAD SETTLEMENT PERIOD	WEEK 8 - WEEK 86
6.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 86 - WEEK 91
7.	UTILITY INSTALLATION AND PARKING LOT CONSTRUCTION	WEEK 91 - WEEK 95
8.	MULCH SPREAD FOR EROSION CONTROL	2020 OF CONSTRUCTION YEAR
9.	START FINAL SEEDING ON PREPARED AREAS (DURING GROWING SEASON)	WEEK 91
10.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH	WEEK 91
11.	RE-SEEDING OF AREAS, IF NEEDED	WEEK 102
12.	REMOVAL OF EROSION CONTROL DEVICES	UPON FINAL PROJECT COMPLETION

* DATES ARE SUBJECT TO CHANGE AT THE DISCRETION OF THE ENGINEER, DEPENDING ON CONSTRUCTION PROGRESS.

HOUSEKEEPING:

THE FOLLOWING GENERAL PERFORMANCE STANDARDS APPLY TO THE PROPOSED PROJECT.

A. SPILL PREVENTION:
CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

B. GROUNDWATER PROTECTION:
DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

C. FUGITIVE SEDIMENT AND DUST:
ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

D. DEBRIS AND OTHER MATERIALS:
MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

E. EXCAVATION DE-WATERING:
EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

F. AUTHORIZED NON-STORMWATER DISCHARGES:
IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
DISCHARGES FROM FIREFIGHTING ACTIVITY; FIRE HYDRANT FLUSHINGS;
VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS;
ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
UNCONTAMINATED GROUNDWATER OR SPRING WATER;
FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
UNCONTAMINATED EXCAVATION DEWATERING;
POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS;
LANDSCAPE IRRIGATION;

G. UNAUTHORIZED NON-STORMWATER DISCHARGES:
THE DEP DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON_STORMWATER, SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING;
TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE

WINTER EROSION CONTROL MEASURES

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 1 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION.

AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 LBS./1,000 S.F. (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

1. SOIL STOCKPILES
STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS/1,000 S.F. (3 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

2. NATURAL RESOURCES PROTECTION
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH EROSION CONTROL MATS. DURING WINTER CONSTRUCTION, A DOUBLE LINE OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

3. SEDIMENT BARRIERS
DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOOD WASTE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

4. MULCHING
ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1.000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75-LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED.
MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW WILL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1.000 SQUARE FEET (3TONS/ACRE) AND ADEQUATELY ANCHORED THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH.

BETWEEN THE DATES OF SEPTEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACK OR WOOD CELLULOSE FIBER. WHEN GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH THEN COVER IS SUFFICIENT.
AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL BARE SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORK DAY.

5. MULCHING ON SLOPES AND DITCHES
SLOPES SHALL NOT BE LEFT EXPOSED FOR ANY EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH PEG AND NETTING OR WITH EROSION CONTROL BLANKETS.
MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS/1,000 S.F. ON ALL SLOPES GREATER THAN 8% MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. EROSION CONTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.

6. SEEDING
BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOOMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING ANCHORED WITH STAPLES. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4' OF LOAM AND SEED AT AN APPLICATION RATE OF 5LBS/1000 S.F. ALL AREAS SEEDED DURING THE WINTER WILL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS SUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH.
IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

7. TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION
WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, ICING, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

8. INSPECTION AND MONITORING
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/ OR UNESTABLISHED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85 TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WINTER

1. STANDARD FOR THE TIMELY STABILIZATION OF DITCHES AND CHANNELS -- THE APPLICANT WILL CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS ON THE SITE BY NOVEMBER 15. THE APPLICANT WILL CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS ON THE SITE BY SEPTEMBER 15. IF THE APPLICANT FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED BY SEPTEMBER 15, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER.

INSTALL A SOD LINING IN THE DITCH -- THE APPLICANT WILL LINE THE DITCH WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD STRIPS FROM SLOUGHING DURING FLOW CONDITIONS.

INSTALL A STONE LINING IN THE DITCH --THE APPLICANT WILL LINE THE DITCH WITH STONE RIPRAP BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE APPLICANT WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE APPLICANT WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 1. THE APPLICANT WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE APPLICANT FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE APPLICANT WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.

STABILIZE THE SLOPE WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

STABILIZE THE SLOPE EROSION CONTROL MIX -- THE APPLICANT WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 1. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STABILIZE THE SLOPE WITH STONE RIPRAP -- THE APPLICANT WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

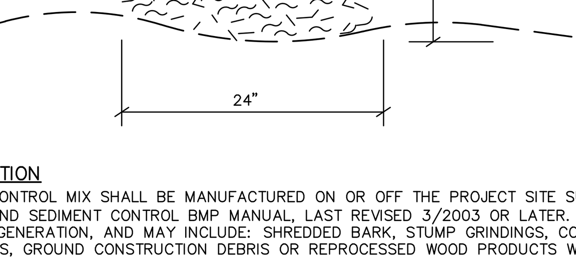
3. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE APPLICANT WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE APPLICANT FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE APPLICANT WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM III OF THIS STANDARD.

STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

STABILIZE THE SOIL EROSION CONTROL MIX -- THE APPLICANT WILL PLACE A MINIMUM 2-INCH LAYER OF EROSION CONTROL MIX ON SOILS WITH SLOPES OF 8% OR LESS AND ADD AN ADDITIONAL ½ -INCH PER 20 FEET OF SLOPE OR UP TO 4-INCHES ON A 100 FOOT SLOPE.



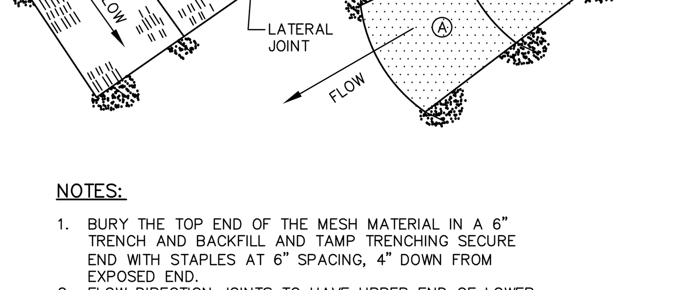
COMPOSITION

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.
2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER.
3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.
4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

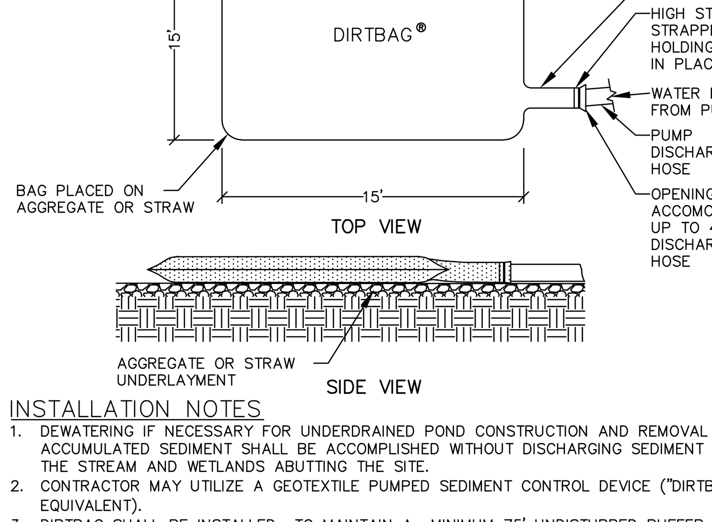
EROSION CONTROL MIX BERM
NOT TO SCALE



NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

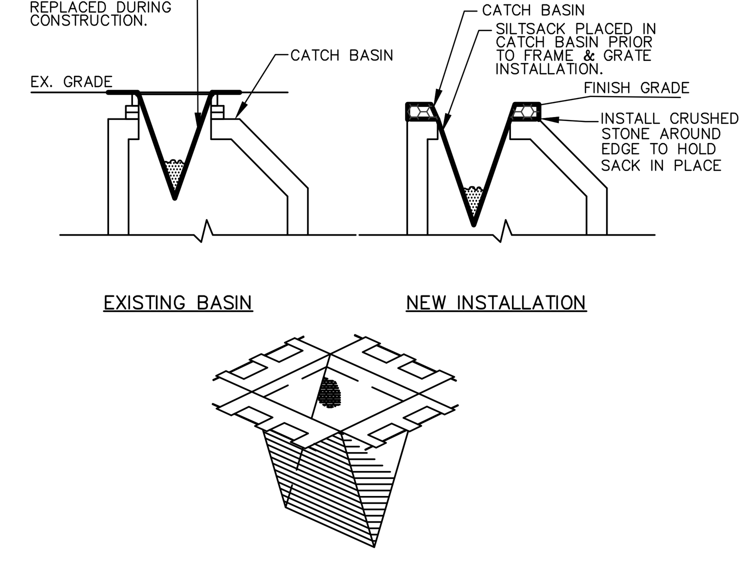
EROSION CONTROL BLANKET
NOT TO SCALE



INSTALLATION NOTES

1. DEWATERING IF NECESSARY FOR UNDERDRAINED POND CONSTRUCTION AND REMOVAL OF ACCUMULATED SEDIMENT SHALL BE ACCOMPLISHED WITHOUT DISCHARGING SEDIMENT LADEN WATER TO THE STREAM AND WETLANDS ABUTTING THE SITE.
2. CONTRACTOR MAY UTILIZE A GEOTEXTILE PUMPED SEDIMENT CONTROL DEVICE ("DIRTBAG" OR EQUIVALENT).
3. DIRTBAG SHALL BE INSTALLED TO MAINTAIN A MINIMUM 75' UNDISTURBED BUFFER FROM THE STREAM AND WETLANDS.
4. INSTALL DIRTBAG ON A 3" BED OF HAY TO MAXIMIZE FLOW OF WATER THROUGH ALL SURFACES OF THE BAG.
5. SURROUND DIRTBAG WITH A DOUBLE ROW OF SILTATION FENCE, OR AN EROSION CONTROL BERM BACKED BY SILTATION FENCE.

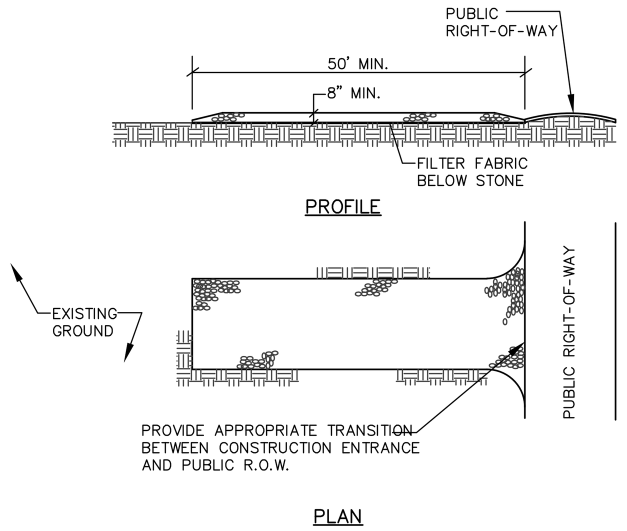
DIRTBAG PUMPED SILT CONTROL SYSTEM
NOT TO SCALE



NOTES:

PRIOR TO FINAL GRADING AND PAVING OPERATIONS, A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL (FOR PAVED AREAS)
NOT TO SCALE



NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

CRAIG BURGESS, P.E. #12838

DESIGNED	CHECKED
WTC	WTC

REV.	BY	DATE	STATUS
E	WTC	09-14-18	REVISED PER CITY COMMENTS
D	WTC	08-10-18	RESUBMIT TO CITY
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-12-18	FOR CITY SITE PLAN REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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DETAILS
OF: PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR: LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	NTS

SHEET 17 OF 21

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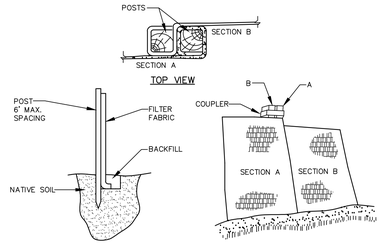
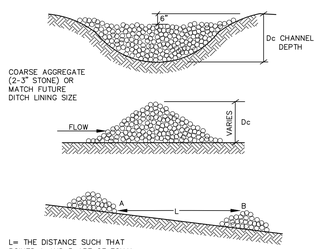


INSTALLATION:

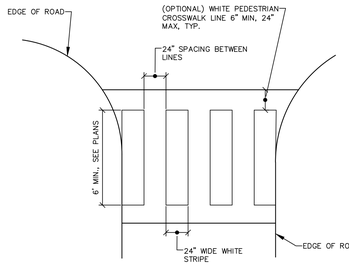
1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER
NOT TO SCALE

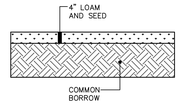


L= THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

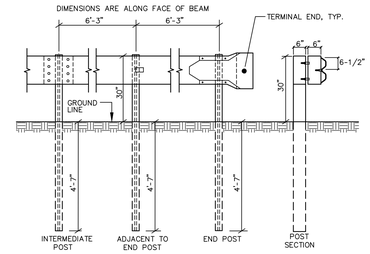
STONE CHECK DAM
NOT TO SCALE



CROSSWALK MARKINGS
NOT TO SCALE



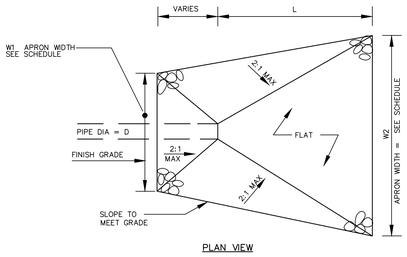
LOAM AND SEED SECTION
NOT TO SCALE



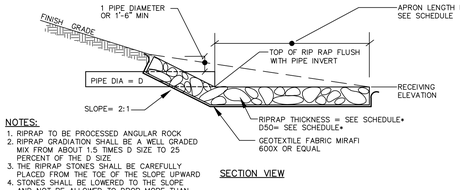
NOTES:

1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.
4. ALL MATERIALS AND INSTALLATION SHALL CONFORM WITH MDOT SPECIFICATIONS.
5. SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION.
6. ALL POSTS SHALL BE 7'-0" IN LENGTH, MEASURED FROM THE TOP ON THE GUARDRAIL.
7. W-BEAM CRASH BARRIER END TREAMENT

VEHICULAR GUARDRAIL
NOT TO SCALE



PLAN VIEW



SECTION VIEW

NOTES:

1. RIPRAP TO BE PROCESSED ANGULAR ROCK
2. RIPRAP GRADIATION SHALL BE A WELL GRADED MIX FROM ABOUT 1.5 TIMES D SIZE TO 25 PERCENT OF THE D SIZE
3. THE RIPRAP STONES SHALL BE CAREFULLY PLACED FROM THE TOE OF THE SLOPE UPWARD
4. STONES SHALL BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12" ONTO THE GEOTEXTILE
5. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH, UNIFORMLY SLOPED SURFACE

TYPICAL RIPRAP APRON SCHEDULE

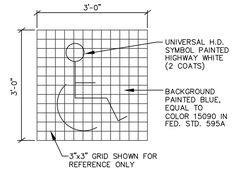
CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH -W1 (FT)	WIDTH -W2 (FT)	RIPRAP D50 (IN.)*	RIPRAP THICKNESS (IN.)*
12	8	3	9	6	14
15	10	4	12	6	14
18	13	5	15	7	16
24	18	6	20	8	18
36	29	9	32	11	25

*UNLESS NOTES OTHERWISE ON PLANS

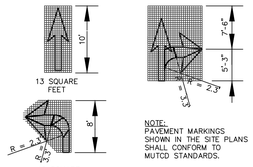
SIZING NOTES:

1. VALUES CALCULATED USING AN HDPE CULVERT AT A SLOPE OF 1% FLOWING FULL.
2. APRON LENGTHS AND RIPRAP D50 SIZES DETERMINED FROM THE OUTLET PROTECTION SIZING CHART IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL.
3. APRON WIDTHS W1 & W2 WERE BASED ON THE STANDARDS SET FORTH IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL SECTION E-3-2.
4. THESE DIMENSIONS ARE MINIMUM VALUES FOR EACH PIPE. IF NECESSARY, THESE DIMENSIONS CAN BE INCREASED AND ARE LABELED BY THE ENGINEER ON THE PLANS.

RIPRAP APRON
NOT TO SCALE

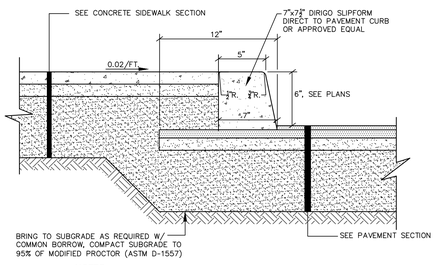


HANDICAP PAINT
NOT TO SCALE



NOTE:
PAVEMENT MARKINGS SHOWN IN THE SITE PLANS SHALL CONFORM TO MUTCD STANDARDS.

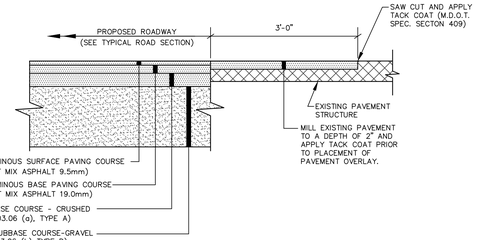
PAVEMENT ARROW DETAILS
NOT TO SCALE



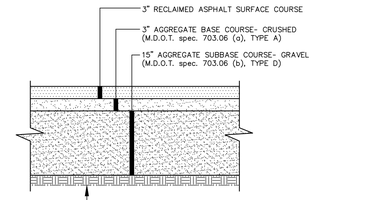
NOTES:

1. COMPACT GRAVEL SUBBASE AND BASE COURSES TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. HOT MIX ASPHALT SURFACE COARSE SHALL BE COMPACTED TO 95% OF ITS THEORETICAL MAXIMUM DENSITY (ASTM D-2041). BASE COARSE SHALL BE COMPACTED TO 95% ±2.5% OF ITS THEORETICAL MAXIMUM DENSITY (ASTM D-2041).
3. APPLY TACK COAT BETWEEN SUCCESSIVE LIFTS OF BITUMINOUS PAVEMENT.
4. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

PEDESTRIAN WALK W/ CURB
NOT TO SCALE



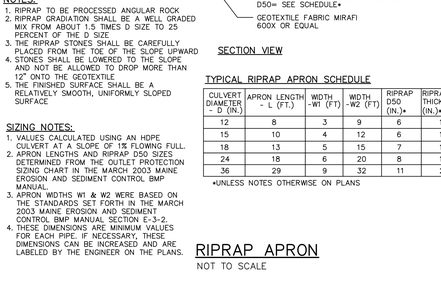
TYPICAL PAVEMENT JOINT
NOT TO SCALE



NOTES:

1. COMPACT GRAVEL SUBBASE AND BASE COURSES TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.

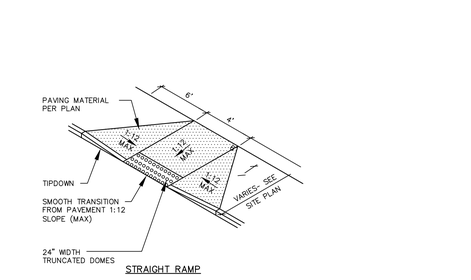
PRELOAD PHASE PARKING LOT SECTION
NOT TO SCALE



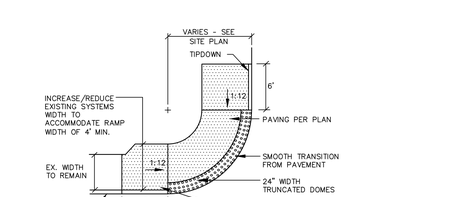
NOTES:

1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MOOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE PLATE WIDTH + CONCRETE SHALL EXTEND THE WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.

TRUNCATED DOME DETAIL
NOT TO SCALE



CORNER RAMP



WALKWAY TERMINUS RAMP

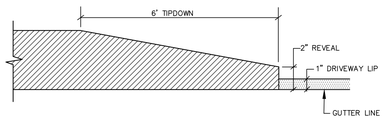
HANDICAP RAMP WITH TRUNCATED DOME BAND
NOT TO SCALE

NOTE: WORDS AND ARROWS FOR DRIVEWAYS SHALL BE APPLIED ACCORDING TO REQUIREMENTS AS OUTLINED IN SECTION 3B OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

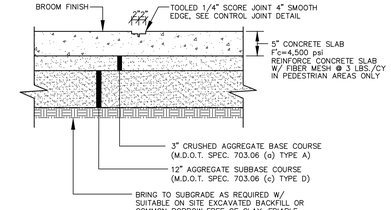
1. THESE WORDS AND BAR ARE TO BE PAINTED REFLECTIVE WHITE.

STOP BAR
NOT TO SCALE

STRAIGHT RAMP



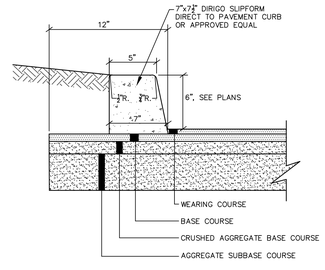
TYPICAL TIPDOWN CURB INSTALLATION
NOT TO SCALE



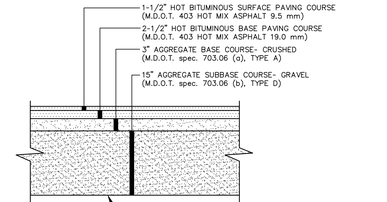
NOTES:

1. CONCRETE SHALL BE 4,500 PSI COMPRESSIVE, 500 PSI FLEXURAL, 3/4" AGGREGATE, WITH 6% (±1%) AIR ENTRAINMENT.
2. PROVIDE CONTRACTION CONTROL JOINTS PER CONTROL JOINT DETAIL.
3. PROVIDE FULL DEPTH EXCAVATION OF FROST SUSCEPTIBLE MATERIALS AND SUBSEQUENT REPLACEMENT WITH A NON-FROST SUSCEPTIBLE COMPACTED STRUCTURAL FILL. REFER TO GEOTECHNICAL REPORT.

CONCRETE SIDEWALK SECTION
NOT TO SCALE



CONCRETE SLIPFORM CURB SECTION
NOT TO SCALE



NOTES:

1. PAVEMENT SUBGRADES SHOULD BE DENSIFIED WITH 3 TO 5 PASSES OF A VIBRATORY ROLLER. THE BASE AND SUBBASE MATERIALS SHOULD BE COMPACTED TO AT LEAST 95% OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557.
2. HOT MIX ASPHALT PAVEMENT SHOULD BE COMPACTED TO 92% TO 97% OF ITS THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D-2041. A TACK COAT SHOULD BE USED BETWEEN SUCCESSIVE LIFTS OF BITUMINOUS PAVEMENT.

TYP. PAVED PARKING LOT SECTION
NOT TO SCALE

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — PROFESSIONAL ENGINEER — 09/14/18

DESIGNED	CHECKED
WTC	WTC

E	WTC	09-14-18 REVISED PER CITY COMMENTS
D	WTC	08-10-18 RESUBMIT TO CITY
C	WTC	07-10-18 RESUBMIT TO CITY
B	WTC	06-21-18 REVISED PER NDEP COMMENTS
A	WTC	02-01-18 ISSUED FOR CITY SITE PLAN REVIEW
REV.	BY:	DATE: STATUS:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

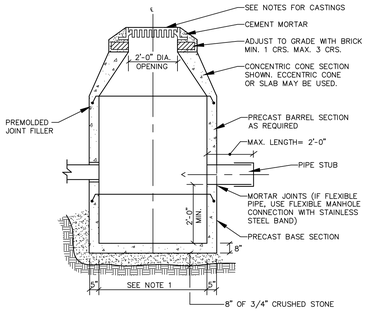
DETAILS
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	NTS

SHEET 18 OF 21

99607D.dwg, 1AB.02

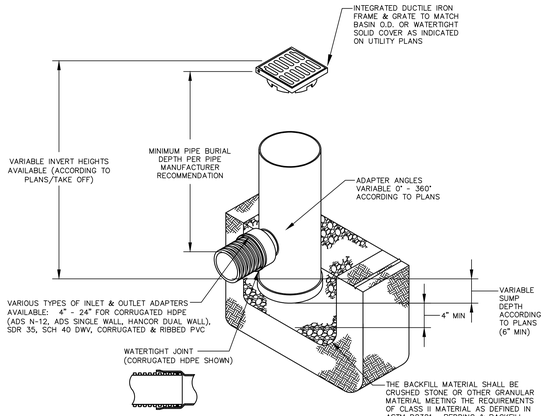


NOTES:

1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON GRADING AND UTILITY PLANS.
4. CATCH BASIN SET IN PAVED AREAS: FRAME AND GRATE SHALL BE EAST JORDAN FOUNDRY 5250, OR APPROVED EQUAL.
5. CATCH BASIN SET IN LANDSCAPED AREAS: FRAME SHALL BE V-3600-2 AND GRATE SHALL BE V-3800-2 BY EAST JORDAN FOUNDRY, OR APPROVED EQUAL.
6. DOUBLE GRATE CATCH BASIN FRAME AND GRATE SHALL BE EAST JORDAN FOUNDRY 5236, OR APPROVED EQUAL.
7. INSTALL AN OIL BOOM WITHIN ANY CATCH BASIN THAT EXISTS IN A PAVED AREA

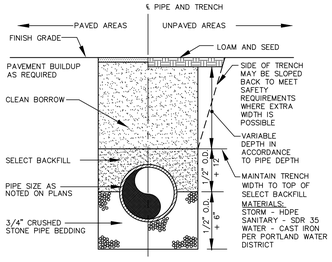
TYPICAL DRAINAGE MANHOLE/CATCH BASIN

NOT TO SCALE



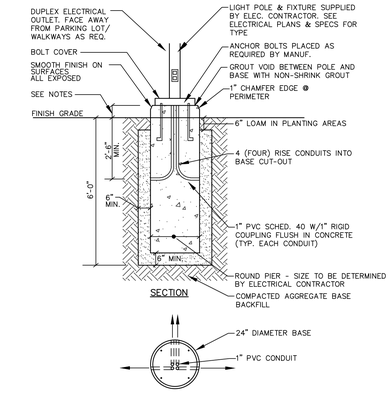
NYLOPLAST DRAIN BASIN

NOT TO SCALE



TYPICAL TRENCH SECTION

NOT TO SCALE

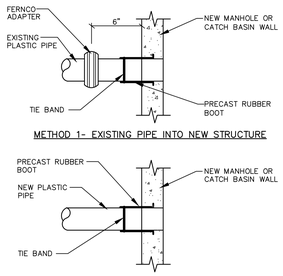


NOTES:

1. CONCRETE f'c=5000 psi. @ 28 DAYS WITH STEEL REINFORCEMENT
2. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED PROVIDED BY ELECTRICAL CONSTRACTOR
3. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
4. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.
5. LIGHT POLE BASE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL

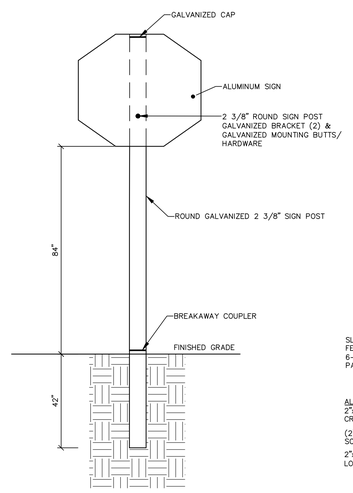
24" ROUND LIGHT POLE BASE

NOT TO SCALE



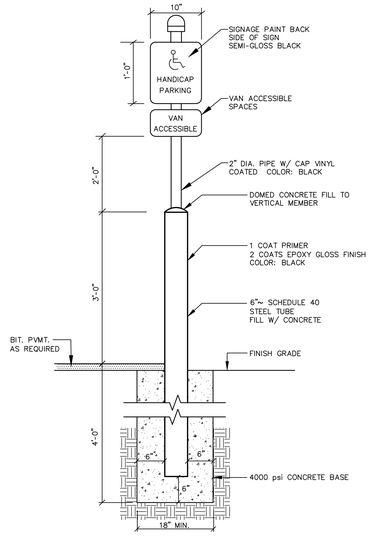
PLASTIC PIPE CONNECTIONS

NOT TO SCALE



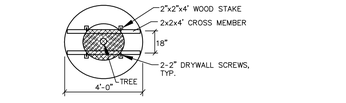
TYPICAL STREET SIGN POST

NOT TO SCALE



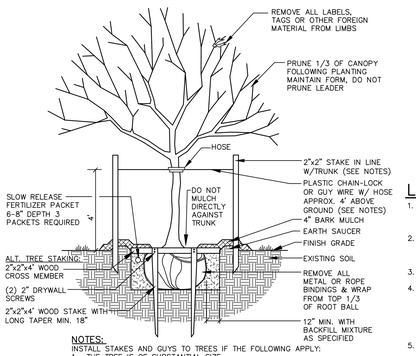
HANDICAP SIGNS IN METAL BOLLARD

NOT TO SCALE



ALT. TREE STAKING PLAN

NOT TO SCALE

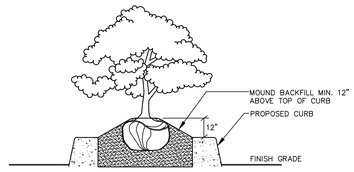


NOTES:
INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:

1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

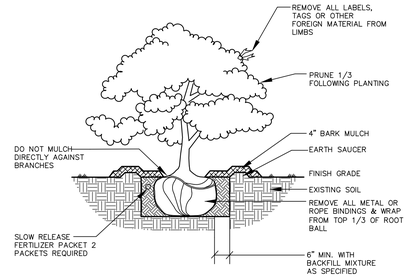
TREE PLANTING DETAIL

NOT TO SCALE



LANDSCAPE ISLAND PLANTING DETAIL

NOT TO SCALE

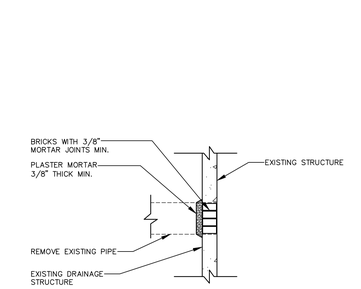


DECIDUOUS & EVERGREEN SHRUB

NOT TO SCALE

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.



CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

TYPICAL UNDERGROUND ELECTRICAL DUCT BANK

NOT TO SCALE

STORMDRAIN PLUG DETAIL

NOT TO SCALE

CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
NO. 12638
REGISTERED PROFESSIONAL ENGINEER
09/14/18

DESIGNED	CHECKED
WTC	WTC

	REV.	BY:	DATE:	STATUS:
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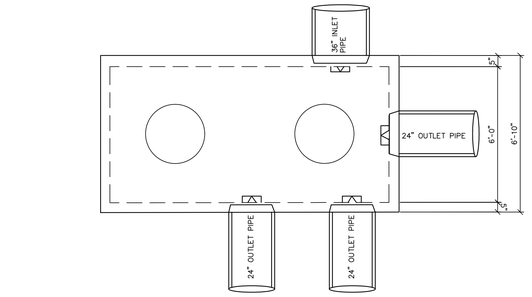
DETAILS
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

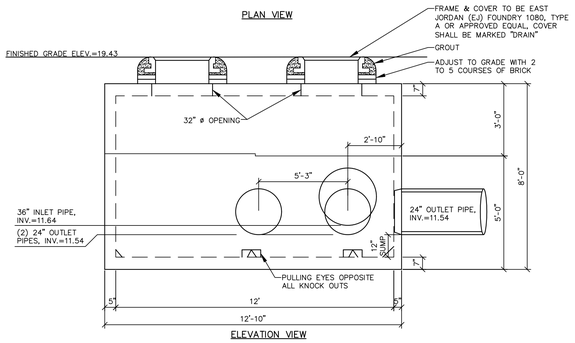
PROJECT NO.	SCALE
99607	NTS

SHEET 19 OF 21

99607D.dwg, TAB:D3



PLAN VIEW



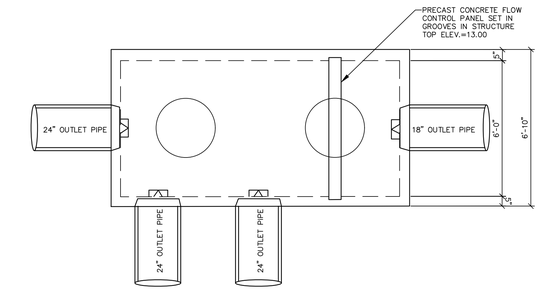
ELEVATION VIEW

CONCRETE SPECIFICATIONS:
1. 4000 PSI AFTER 28 DAYS
2. REINFORCING IS GRADE 60 FOR H-20 LOADING

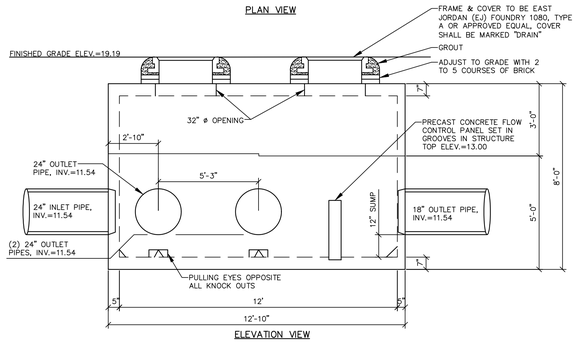
INSTALLATION REQUIREMENTS:
1. TO BE INSTALLED ON MIN. 8" THICK BED OF CRUSHED 3/4" STONE.
2. USE 1" CON-SEAL 102 AT JOINTS.
3. JOINT GAPS LESS THAN 0.5", GROUT TO FILL VOIDS.

NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.
3. CONTRACTOR SHALL INSTALL A SORBENT BOOM, PASSIVE SKIMMER OR APPROVED EQUAL TO REMOVE HYDROCARBONS PRIOR TO INFLOW INTO THE SUBSURFACE SAND FILTER
4. STRUCTURE SHALL BE 38Y ELECTRICAL MANHOLE

6'x12' INLET CONTROL STRUCTURE-1 (ICS-1)
NOT TO SCALE



PLAN VIEW



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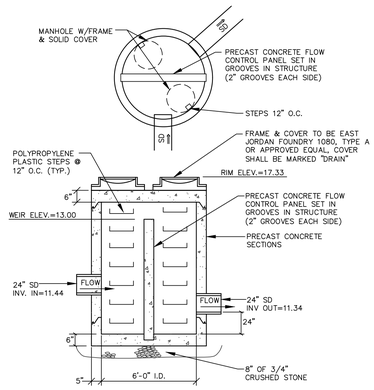
4. STRUCTURE SHALL BE 38Y ELECTRICAL MANHOLE

6'x12' INLET CONTROL STRUCTURE-2 (ICS-2)
NOT TO SCALE



NOTES:
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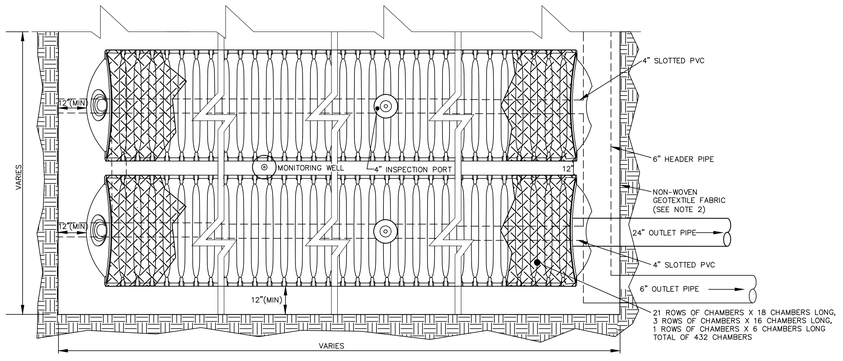
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.

OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE



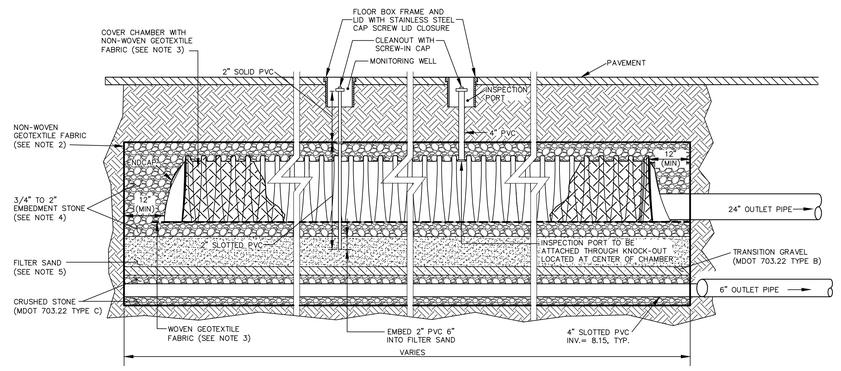
SUBSURFACE SAND FILTER PLAN VIEW

SUBSURFACE SAND FILTER NOTES:
1. THE STORMWATER CHAMBER SHALL BE A STORMTECH SC-740 OR EQUIVALENT SUBSURFACE STORAGE CHAMBER APPROVED BY THE ENGINEER.
2. THE ENTIRE SUBSURFACE SYSTEM, INCLUDING THE CRUSHED STONE STORAGE VOLUME, THE FILTER MEDIA, AND UNDERDRAIN MATERIALS, SHALL BE WRAPPED IN A NON-WOVEN GEOTEXTILE FABRIC (MIRAFI 160N OR EQUIVALENT).
3. TWO STRIPS OF WOVEN GEOTEXTILE (MIRAFI FW 404) SHALL BE INSTALLED BETWEEN THE BOTTOM OF THE ISOLATOR ROW CHAMBER AND ITS STONE FOUNDATION. THIS FABRIC TRAPS SEDIMENTS AND PROTECTS THE UNDERLYING CRUSHED STONE. A SECOND STRIP OF NON-WOVEN AASHTO M288 CLASS 2 GEOTEXTILE (MIRAFI 160N OR EQUIVALENT) SHALL BE DRAPED OVER THE ENTIRE LENGTH OF THE CHAMBERS. THIS FABRIC WILL ALSO TRAP SEDIMENTS AND PROVIDE SEPARATION BETWEEN THE CHAMBERS AND SURROUNDING STONE.
4. THE EMBEDMENT STONE SURROUNDING THE CHAMBERS SHALL BE A WASHED, ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 3/4 INCH AND 2 INCH. THE BOTTOM 6 INCH LAYER OF STONE THAT ACTS AS THE FOUNDATION BELOW THE CHAMBERS SHALL BE COMPACTED TO ACHIEVE A 95% STANDARD PROCTOR DENSITY.
5. THE SAND FILTER MATERIAL SHALL BE A UNIFORM MIX, FREE OF STONES LARGER THAN 2 INCHES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS. THE MATERIAL SHALL MEET THE SPECIFICATIONS FOR MDOT AGGREGATE SAND (MDOT #703.01). HOWEVER, THIS AGGREGATE SAND SHALL BE MIXED WITH LOAM TO ACHIEVE A MATERIAL WITH BETWEEN 8% AND 10% PASSING THE #200 SIEVE. THE LOAM USED IN THIS MIXTURE SHALL HAVE LESS THAN 2% CLAY CONTENT. THIS 18 INCH LAYER OF SAND FILTRATION MEDIA SHALL BE PLACED TO ACHIEVE A LEVEL OF COMPACTION BETWEEN 92% AND 95% STANDARD PROCTOR DENSITY.
6. THE CONTRACTOR SHALL PERFORM PERMEABILITY TESTS FOR THE SAND FILTER MATERIAL TO ENSURE A STORMWATER RELEASE TIME RANGING BETWEEN 24 AND 48 HOURS.
7. INSTALL 3" ORIFICE AT DRAIN MANHOLE AS SHOWN ON SUBSURFACE SAND FILTER PLAN.

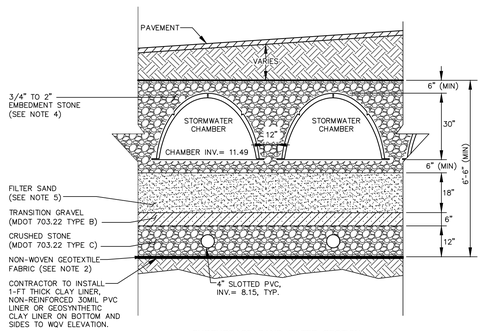
CONSTRUCTION OVERSIGHT NOTES FOR SUBSURFACE SAND FILER:
1. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE CHAMBERS AND ITS FILTER COURSE MATERIAL TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBGRADE, FILTER BED MATERIAL PLACEMENT, INSTALLATION OF EMBEDMENT STONE, ISOLATOR ROW AND CHAMBER, SURROUNDING STONE, FABRIC PLACEMENT AND STORMWATER OVERFLOW BYPASS CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO BACKFILL OVER CHAMBERS.
2. CONTRACTOR TO ENSURE THE ISOLATOR ROWS ARE INSTALLED UNDER THE SUPERVISION OF THE MANUFACTURER'S REPRESENTATIVE.

SUBSURFACE SAND FILTER TABLE

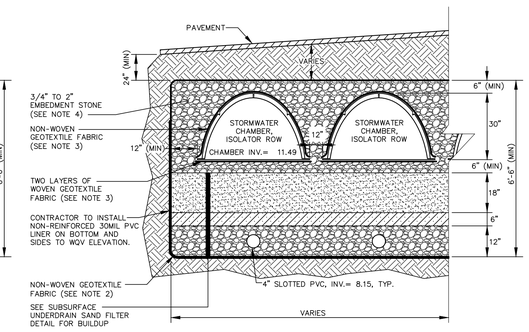
	SUBSURFACE SAND FILTER (SSF-1)
CHAMBER INV.	11.49
CHAMBER OUTLET PIPE INV.	11.49
UNDERDRAIN INV.	8.15
WQV. ELEV.	13.10



SUBSURFACE SAND FILTER ELEVATION VIEW



SUBSURFACE SAND FILTER SECTION



SUBSURFACE UNDERDRAINED SAND FILTER ISOLATOR ROW
NOT TO SCALE

SUBSURFACE SAND FILTER
NOT TO SCALE

CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
09/14/19

DESIGNED	CHECKED
WTC	WTC

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DETAILS
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	NTS

SHEET 20 OF 21

99607D.dwg, TABLE04

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	**-**	**246,946**	**25,892**	**272,838**	**-**

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

SOIL TYPES

SYMBOL	SOIL SERIES	HSG	DRAINAGE CLASS
BgB	BELGRADE	B	MODERATELY WELL DRAINED
BgC2	BELGRADE	B	MODERATELY WELL DRAINED
Cu	CUT AND FILL	–	MODERATELY WELL DRAINED
Tm	TIDAL MARSH	–	VERY POORLY DRAINED
W	WATER	–	

NOTES:
SOIL INFORMATION FOR THE SITE WAS OBTAINED VIA THE USDA UNITED STATES DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES CONSERVATION SERVICE'S WEB SOIL SURVEY. THE HYDROLOGIC SOIL GROUP (HSG) OF THE SITE SOILS ARE CLASSIFIED BY TECHNICAL RELEASE TR_55 OF THE SOIL CONSERVATION SERVICE.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE DEPTH (FT.)	EXISTING SEASONAL HIGH WATER TABLE ELEV (FT.)	FINAL DEPTH OF TEST PIT
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORNIG LOGS FOR MORE INFORMATION.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE · CRAIG A. BURGESS No. 12638 · PROFESSIONAL ENGINEER · 09/14/18

DESIGNED	CHECKED
WTC	WTC

REV:	BY:	DATE:	STATUS:
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Tel. 207-200-2100

POST DEVELOPMENT DRAINAGE PLAN

OF:
PORTLAND TRANSPORTATION CENTER

THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

99607SWP-POST.dwg TAB:SWP-POST

SOIL TYPES

SYMBOL	SOIL SERIES	HSG	DRAINAGE CLASS
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Tm	TIDAL MARSH	–	VERY POORLY DRAINED
W	WATER	–	

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CRAIG A. BURGESS
No. 12638
PROFESSIONAL ENGINEER
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PRE DEVELOPMENT DRAINAGE PLAN
OF:
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THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

99607SWP-PRF.dwg TAB:SWP-PRF

Portland Maine | Yes. Google's good here.

Jennifer Munson <jmy@portlandmaine.gov>

Fwd: 100 Sewall/PTC comments – sidewalk gap on Thompson's Point connector

Jean Fraser <jf@portlandmaine.gov> Tue, Sep 25, 2018 at 2:00 PM
To: Jennifer Munson <jmy@portlandmaine.gov>

Jen

I not already printed, could you print this for the board as public comment #1 on the PTC project 100 Sewell Street.

thanks
Jean

Jean Fraser, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street
Portland, ME 04101
phone: (207) 874-8728
email: jf@portlandmaine.gov

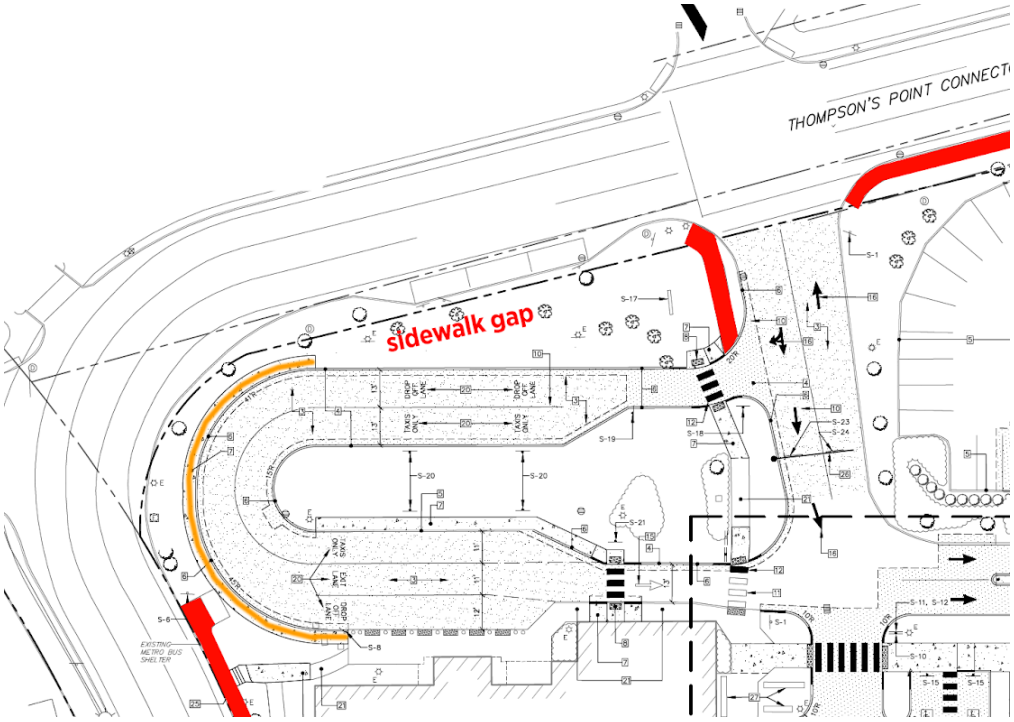
---------- Forwarded message ---------
From: **Christian MilNeil** <c.neal.milneil@gmail.com>
Date: Sat, Sep 22, 2018 at 5:38 PM
Subject: 100 Sewall/PTC comments – sidewalk gap on Thompson's Point connector
To: Jean Fraser <JF@portlandmaine.gov>, Bruce Hyman <BHYMAN@portlandmaine.gov>
Cc: Zack Barowitz <zbarowitz@gmail.com>, Damon Yakovleff <damon.yakovleff@gmail.com>

(please add this to the planning board's materials re: the PTC project)

Hi Jean and Bruce,

My understanding of Portland's site plan approval ordinance is that applicants are required to build sidewalks on public rights of way where none currently exist, except in extremely unusual circumstances where construction barriers are too high and pedestrians are scarce.

Pedestrian traffic is increasing on Thompson's Point, so shouldn't the PTC site plan fill in the short sidewalk gap between the METRO shelter (a significant pedestrian origin/destination) and the existing sidewalk 200' feet to the northeast, at the PTC driveway?



There appear to be no obstacles or major grade changes obstructing its construction. In fact, the applicant has proposed a new sidewalk (in orange above) that would cover roughly 1/2 the distance, but would only serve the new taxi queue lanes. Extending that sidewalk another 130' to the NE, and expanding it somewhat to the west to connect to the METRO shelter, would make it much more useful.

By my recollection, the city wanted to build a complete set of sidewalks on both sides of the Thompsons Point Connector a few years ago when the street was improved with the EDC grant, but ROW issues with the PTC landowner prevented that work from getting done. This site plan approval seems like our best chance to get that work done.

This path is a clear pedestrian desire line between Thompson's Point and the Fore River Parkway trail:

What do you think?

A couple of other comments on this application:

- As a regular user of the PTC, I'm happy to see more bike racks being added in this project.
- However, I would really, really, really like to see the applicant add some kind of basic shelter over those bike racks so I wouldn't need to worry about leaving my bike out in the rain when I take a weekend trip on the bus. Heck, I'd even pay Concord Coach a couple bucks per night for the use of "premium" bike parking.
- Along the same lines, it would be helpful to PTC users if they added automated announcements of METRO arrivals and departures based on the real-time bus information, to give METRO more visibility at the PTC (this would also help break up the monotony of the automated security recordings, which I'm sure passengers and especially employees would appreciate)

Christian MilNeil
- - - - - - - - - - - - -
double u double u double u dot christianmilneil dot com