

1. Legal Ad

Documents:

[PB LEGAL AD 10-4-17.PDF](#)

2. Agenda

Documents:

[PB AGENDA 10-4-17.PDF](#)

3. 1700 Westbrook Street (Stroudwater Preserve) - Workshop, Wednesday, 10/4/17, 4:30 P.m.

3.I. Memo And Attachments

Documents:

[1700 WESTBROOK ST. \(MEMO\).PDF](#)
[1700 WESTBROOK ST. \(MEMO ATTACHMENTS\).PDF](#)
[1700 WESTBROOK ST. \(APPLICANTS SUBMITTAL 1 OF 2\).PDF](#)
[1700 WESTBROOK ST. \(APPLICANTS SUBMITTAL 2 OF 2\).PDF](#)
[1700 WESTBROOK ST. \(PLANS\).PDF](#)

4. 0 Hancock Street (WEX Office)

4.I. Report

Documents:

[HANCOCK STREET \(REPORT\).PDF](#)

4.II. Report Attachments

Documents:

[HANCOCK STREET \(REPORT ATTACHMENTS\).PDF](#)

4.III. Applicants Submittal

Documents:

[HANCOCK STREET \(APPLICANTS SUBMITTAL\).PDF](#)

4.IV. Plans

Documents:

[HANCOCK STREET \(PLANS\).PDF](#)

5. 0 Hancock Street (WEX Office) Planning Board Report Addendum

Documents:

6. 1728 Washington Avenue (Knights Farm 9 Lot Subdivision)

6.I. Report And Attachments

Documents:

[1728 WASHINGTON AVE. \(REPORT\).PDF](#)
[1728 WASHINGTON AVE. \(REPORT ATTACHMENTS\).PDF](#)
[1728 WASHINGTON AVE. \(APPLICANTS SUBMITTAL 1 OF 2\).PDF](#)
[1728 WASHINGTON AVE. \(APPLICANTS SUBMITTAL 2 OF 2\).PDF](#)
[1728 WASHINGTON AVE. \(PLANS\).PDF](#)
[1728 WASHINGTON AVE. \(PUBLIC COMMENT\).PDF](#)

**LEGAL ADVERTISEMENT
PORTLAND PLANNING BOARD
MEETING AGENDA**

The Portland Planning Board will hold a meeting on **Wednesday, October 4, 2017**, 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 Subdivision and Site Plan and Conditional Use for Inclusionary Zoning Applications, Stroudwater Preserve Residential Development, 1700 Westbrook Street, Stroudwater Development Partners, LLC., Applicant. (estimated time 4:30 – 6:30 p.m.) The Board will hold a workshop on an application for a housing development with 98 single family house lots, a separate lot for a planned residential unit development with 25 townhouses, and twenty-four acres of open space within the development. Twelve affordable home ownership units are proposed under the City's inclusionary zoning regulations. The 55.3 acre site is zoned Residential R-3 and Recreation Open Space. It is subject to review under Portland's Subdivision, Site Plan, Shoreland Zoning, and Affordable Housing Ordinances. The proposal is also subject to review under Maine's Site Location of Development Act and Maine's DEP Chapter 500 rules for stormwater management.

Public Hearing 7:00 p.m.

- i. Level III Site Plan, Thames Street Property (WEX office), 0 Hancock Street, LLC, Applicant. (estimated time 7:00- 8:00 p.m.) The Portland Planning Board will hold a public hearing on a proposal for a 4 story 102,027 sq. ft. office building with retail use on part of the first floor to be located at the corner of Hancock and Thames Streets. The proposal is for WEX corporate offices with 450 employees. Parking for the offices would be located within the existing Ocean Gateway Parking Garage. The proposal includes a ground level public plaza at the east end of the building and a roof deck for use by the occupants. The proposal is located in the B6 zone and is also subject to review under the standards for a traffic movement permit, stormwater quality permit, and shoreland zoning.
- ii. Level III Subdivision, Knights Farm 9 lot subdivision; 1728 Washington Avenue, Greenlight Enterprises, LLC., Applicant. (8:00 p.m. estimated time) The Portland Planning Board will hold a public hearing to consider a proposed residential subdivision with eight (8) new lots while retaining the existing home on a separate ninth lot. A new dead-end public street is proposed off of Washington Avenue. The site is split between Residential R-2 and R-3 zones.

ELIZABETH BOEPPLE, CHAIR – PORTLAND PLANNING BOARD

PLANNING BOARD



Elizabeth Boepple, Chair
Sean Dundon, Vice Chair
Carol Morrisette
David Eaton
Brandon Mazer
Maggie Stanley
Lisa Whited

AGENDA
PORTLAND PLANNING BOARD MEETING

The Portland Planning Board will hold a meeting on **WEDNESDAY**, October 4, 2017, 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 Subdivision, Site Plan and Conditional Use for Inclusionary Zoning Application; Stroudwater Preserve Residential Development; 1700 Westbrook Street; Stroudwater Development Partners, LLC., Applicant. (4:30 – 6:30 p.m. – **estimated time**) The Board will hold a workshop on an application for a housing development with 98 single family house lots, a separate lot for a planned residential unit development with 25 townhouses, and twenty-four acres of open space within the development. Twelve affordable home ownership units are proposed under the City's inclusionary zoning regulations. The 55.3 acre site is zoned Residential R-3 and Recreation Open Space. It is subject to review under Portland's Subdivision, Site Plan, Shoreland Zoning and Affordable Housing Ordinances. The proposal is also subject to review under Maine's Site Location of Development Act and Maine's DEP Chapter 500 rules for stormwater management.

BREAK FOR DINNER

PUBLIC HEARING – 7:00 p.m.

1. **ROLL CALL AND DECLARATION OF QUORUM**
2. **COMMUNICATIONS AND REPORTS**
3. **REPORT OF ATTENDANCE AT THE MEETINGS HELD ON SEPTEMBER 26, 2017:**
Workshop: Dundon, Eaton, Morrisette, Mazer, Stanley and Whited present; Boepple absent.
Public Hearing: Dundon, Eaton, Morrisette, Mazer, Stanley and Whited present; Boepple absent.
4. **REPORT OF DECISIONS AT THE MEETINGS HELD ON SEPTEMBER 26, 2017:**
Unfinished Business:
 - i. Institutional Development Plan and Regulatory Framework; Maine Medical Center, Applicant. Morrisette moved and Eaton seconded a motion to find the proposed Institutional Development

Plan (IDP) for Maine Medical in conformance with the Institutional Overlay Zone review standards and approved the IDP with 5 conditions of approval. Vote: 6-0, Boepple absent. Morrisette moved and Eaton seconded a motion to recommend to City Council that the conditional zones of #18 for 883-903 Congress Street and #41 in the vicinity of Western Promenade/Maine Medical Center, be rescinded. Vote: 6-0, Boepple absent. Morrisette moved and Eaton seconded a motion to find the proposed Institutional Overlay Zone Amendments are consistent with the Comprehensive Plan and recommends to City Council adoption of the amendments. Vote: 6-0, Boepple absent.

New Business

- i. Level II Subdivision and Site Plan, 12 Residential Units; 1 Joy Place, Onejoy Place, LLC., Applicant. Morrisette moved and Eaton seconded a motion waive the driveway separation standard of the Technical Manual (Section 1.7.2.7) to allow the existing condition remain. Vote: 6-0, Boepple absent. Morrisette moved and Eaton seconded a motion waive the light trespass standard to allow limited light trespass from the bollards for public safety. Vote: 6-0, Boepple absent. Morrisette moved and Eaton seconded a motion to approve the Conditional Use for inclusionary zoning with two conditions of approval. Vote: 6-0, Boepple absent. Morrisette moved and Eaton seconded a motion to approve the subdivision plan with five conditions of approval. Vote: 6-0, Boepple absent. Morrisette moved and Eaton seconded a motion to approve the site plan with nine conditions of approval. Vote: 6-0, Boepple absent.

5. **NEW BUSINESS – 7:00 p.m.**

- i. Level III Site Plan, Thames Street Property (WEX office), 0 Hancock Street, LLC., Applicant. (7:00 – 8:00 p.m. – **estimated time**) The Portland Planning Board will hold a public hearing on a proposal for a 4 story 102,027 sq. ft. office building with retail use on part of the first floor to be located at the corner of Hancock and Thames Streets. The proposal is for WEX corporate offices with 450 employees. Parking for the offices would be located within the existing Ocean Gateway Parking Garage. The proposal includes a ground level public plaza at the east end of the building and a roof deck for use by the occupants. The proposal is located in the B6 zone and is also subject to review under the standards for a traffic movement permit, stormwater quality permit, and shoreland zoning.
- ii. Level III Subdivision, Knights Farm 9 Lot Subdivision; 1728 Washington Avenue, Greenlight Enterprises, LLC., Applicant. (8:00 p.m. – **estimated time**) The Portland Planning Board will hold a public hearing to consider a proposed residential subdivision with eight (8) new lots while retaining the existing home on a separate ninth lot. A new dead-end public street is proposed off of Washington Avenue. The site is split between Residential R-2 and R-3 zones.



To: Elizabeth Boepple, Chair and Members of the Portland Planning Board
From: Shukria Wiar, Planner
Date: September 29, 2017
Re: Stroudwater Preserve, 1700 Westbrook Street, Stroudwater Development Partners LLC
Project #: 2017-193 CBL: 229 A002
Meeting Date: October 4, 2017

I. INTRODUCTION

Stroudwater Development Partners LLC has requested a preliminary review with the Planning Board to consider a proposed subdivision at 1700 Westbrook Street. The applicant is proposing a traditional single-family neighborhood with ninety-eight (98) house lots and a planned residential unit development with twenty-five (25) townhouses adjacent to the Maine Turnpike. Stroudwater Preserve includes one open space lot for a total of twenty-four acres of open space within the project limits.

The development is proposing to include a minimum of 10% workforce housing units in accordance with Division 30, Affordable Housing of the Land Use Ordinance. The Planning Board is being requested to review the application under Portland's Subdivision Ordinance and the Conditional Use standards to ensure workforce housing under the Affordable Housing Ordinance.

Property Owner: Stroudwater Preserve
Applicant: Michael Barton, Stroudwater Development Partners, LLC
Agent and Engineer: William Savage, Acorn Engineering Inc.
Architect: Ryan Senatore, Senatore Architecture
Surveyor: David Titcomb, Titcomb Associates

II. PUBLIC COMMENT

Notices were sent to ninety-six (96) residents and the interested citizen list. The notice also appeared in the Portland Press Herald on October 2nd and 3rd, 2017, as well as being posted on the City's web page. E-mail notices were sent at the same time as the mailed notices as well as being posted on the City's web page and posted on the legal ad. No written public comments have been received by the Planning Office.

The applicant held a neighborhood meeting, as required as part of this application, on September 19th meeting with the neighborhood with over thirty (30) attendees (Attachment ZK to ZN).

III. REQUIRED REVIEWS

<i>Waiver Requests</i>	<i>Applicable Standards</i>
Sidewalk Waivers	Section 14-498 8a
<i>Review</i>	<i>Applicable Standards</i>
Subdivision (creation of 3 or more lots)	Section 14-497
Workforce Housing Inclusionary Zoning	14-484 (Applicant is required to have one unit, which is being proposed)
Design Review of PRUD	Planned Residential Unit Developments (PRUDs) in the R-3, R-5, And R5-A Residential Zones and Manufactured Housing Parks in Any Zone.

*Two-Family, Special Needs Independent Living Units,
Multiple-Family, Lodging Houses, Bed and Breakfasts,
And Emergency Shelters*

IV. PROJECT DATA

Existing Zoning	Residential R-3		
Existing Use	Single-family home and PRUD		
Proposed Use	Ninety-eight (98) single-family lots and 25 Townhouses		
Parcel Size	2,408,860 SF (55.3 acres)		
	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Impervious Surface Area	34,715 SF	182,657 SF	147,942 SF
Building Footprint	8,928 SF	22,400 SF (Based on the PRUD only)	13,472 SF
Number of Residential Units	One Lot	100- 98 single family lots, one open space, and one PRUD lot	100
Number of Affordable Units	None	12	12
Proposed Bedroom Mix			
Three-bedroom	74		
Four-bedroom	49		
Estimated Cost of Project	\$2,054,400		

V. BACKGROUND

The Board reviewed the applicant's request for zoning map amendments to this site at a public hearing held on May 9th, 2017. The Board voted unanimously to recommend adoption of the map change to R-3 and Recreation and Open Space (ROS) for the area along outer Westbrook Street. The City Council enacted the map change on July 24th, 2017. The City Council adopted the zone change to R-3 and Recreation and Open Space (ROS) on August 23rd, 2017. The order as passed by the Council is included as [Attachment 4](#). In order to rezone a portion of the property to ROS, there were easements on the that portion of the site that were conveyed to Portland Trails as public access and preserved open space, see [Attachment 5](#).

Although the City understands that a lawsuit challenging the recent zoning decision may have been filed, that action does not in any way purport to stay the effectiveness of the Council's decision on the zoning this area. Therefore, the Planning Board can and should consider any application under the current zoning, including any recent amendment that is in effect and applicable to a particular application.

VI. EXISTING CONDITIONS

The development parcel is approximately 55.3 acres comprised of five different parcels. The property has frontage along Westbrook Street and extends to the Maine Turnpike and Stroudwater River. Presently the parcel has a single-story ranch house and a small barn on it, built in 1961. The majority of the site is pervious with dense overgrowth and some mature tree growth. The average grade, closer to Westbrook Street, is relatively flat. The surface drops off closer to the



Figure 1: Proposed Site

A portion of the site is zoned Resource Protection along the river and the Shoreland Overlay Zone extends 250 feet from the high-water line, which is subject to Shoreland Zone site development standards. The site has two existing utility easements for the Portland Water District and Portland Pipeline Company, which bisect the property. There are single-family homes along both sides of Westbrook Street in the vicinity of the site.

The project proposes to develop a traditional single-family development for the majority of the site and a planned residential unit development near the Turnpike. Ninety-eight (98) single family house lots are proposed, ranging in size between 6,500 sf to 20,000 SF. The planned residential unit development (PRUD) lot will include twenty-

[illegible]

Figure 3: Proposed Design of PRUD Building

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the property to be used for passive recreation with connection into the neighborhood trail system and to offer other shared amenities. The open space area provides direct waterfront access to the river. The open space easement extends from the Stroudwater River high water line to the single-family subdivision.

The property is subject to the Shoreland Overlay Zone, which requires that development be 75 feet from high watermark and additional development standards apply within 250 feet from the river. The Resource Protection Zone, does allow for some limited development, but does not permit residential structures and in general, is a conservation zone. The site does have steep slopes around the bank of the Stroudwater River; it is the intent of the applicant to keep most of the development away from these slopes develop on the more level portion of the site. The parcel also has flood plain areas identified on the FEMA maps which will further regulate construction of any proposed structures.

VIII. RIGHT, TITLE, & INTEREST AND FINANCIAL & TECHNICAL CAPACITY

a. The owner of the property is Onex Company by deeds recorded at the Cumberland County Registry of Deeds (Book 14598 Page 346). The applicant has provided a copy of a purchase and sale agreement, which demonstrates their right, title and interest in the property.

b. The estimated cost of the development is \$2,054,400. The applicant has submitted a letter from Bath Savings Institution, dated August 18, 2017, as demonstration of their financial and technical capacity to complete the proposed development.

IX. ZONING ANALYSIS

The proposed subdivision is within Residential R-3 zone. The proposed project is to develop approximately 31 acres of the 55.3 acres site into a traditional single-family housing development and planned residential development. The proposed development includes 100 lots of which 98 are single family house lots, one planned unit residential lot and one open space lot. A preliminary review of the zoning for the site been conducted and additional staff review may be required. It appears that all of the proposed single family lots are meeting the minimum lot size, minimum street frontage, and lot width requirements. Each lot has the potential to meet all of the other setback requirements, parking requirements, lot coverage requirements, and building height. Following is the zoning assessment included on the proposed application.

	<i>R-3 Zone</i>	<i>Proposed</i>
Single Family House Lots		
Minimum Lot Size	6,500 SF	Min 6,500 SF
Minimum Street Frontage	50'	Min 50'
Front Yard	25'	25'
Rear Yard – Principal	25'	25'
Rear Yard – Accessory	5'	5'
Side Yard – 2 ½ Stories	16'	16' ¹
Side Yard – 2 Stories	14'	14'
Side Yard – 1 & 1 ½ Stories	8'	8'
Maximum Lot Coverage	35%	Max 35%
Minimum Lot Width ²	65'	Min 65'
Maximum Building Height	35'	< 35'
Maximum Accessory Height	18'	< 18'
Planned Residential Unit Development (PRUD)		
Minimum Lot Area Per Dwelling Unit	6,500 SF	Min 6,500 SF
Maximum Number of Units Per Building (> 5 ac.)	6	6
Maximum Number of Units Per Building (< 2 ac.)	2	N/A
Maximum Length of Building without Garages	100'	100'
Maximum Length of Building with Integral Garages	140'	140'
Minimum Building Setback from External Property Lines (> 4 Units Per Building)	35'	36.59'
Minimum Distance Between Buildings	16'	16'
Minimum Recreational Open Space Per Dwelling Unit	300 SF	Min 300 SF
Minimum Contiguous Area of Recreational Use ³	6,000 SF	Min 6,000 SF
Minimum Recreational Use Setback from Buildings	25'	25'

Included below is a summary of the unit area calculations for the PRUD lot per the definitions for gross and net land area provided in Section 14-47 of the Land Use Ordinance.

	SF	AC
PRUD Lot Size	310,193	7.12
Lot Area within 1700 Westbrook Street	276,133	6.34
Areas of Special Flood Hazard	0	0
Gross Land Area	276,133	6.34
Existing Watercourses	0	0
Wetlands	20,073	0.46
Slopes of 25% or greater	0	0
Net Land Area	256,060	5.88

The allowable dwelling units per zoning for the PRUD portion of the project is 36 units. The applicant is proposing 25 units.

The southernmost edge of the property resides along the Stroudwater River and is located within the Shoreland Overlay Zone; the Shoreland Overlay Zone applies to areas within 250 feet (horizontal distance) of the normal high-water line of any river. Staff review of the overlay zone is pending.

X. ENSURE WORKFORCE HOUSING CONDITIONAL USE

Conditional Use is authorized by Division 30, Section 14-487, Ensuring Workforce Housing, to secure the creation of Workforce Housing Units as part of new residential projects that propose 10 or more units. The ordinance requires a minimum of 10% of the project to be restricted for Workforce Households and that the number of bedrooms required under Section 14-487(e)3 be at least 10% of the total number of bedrooms made available as part of the project. Based on the total number of lots and units the project will be required to provide at least twelve (12) workforce unit with a minimum of three bedrooms affordable to households earning up to 100% of area median income (AMI), which the applicant is proposing.

XI. SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The applicant has provided evidence of the trail easement that they have signed with Portland Trails, which is being held in escrow until the time of closing ([Attachment 5](#)). The easement gives Portland Trails permission to construct and maintain unpaved footpath or walking trails within the ROS portion of the site. A condition of approval will be suggested at the public hearing that requires evidence that the easement has been recorded at the Cumberland County Registry of Deeds.

A final subdivision plat that addresses the requirements of the subdivision ordinance will need to be submitted as part of the final review. The final plat will need to be revised to reflect any waivers, conditions of approval, and open space easements that relate to the subdivision plan.

XII. SUBDIVISION REVIEW (14-497(a). Review Criteria; 14-198. Technical and Design Standards; & 14-499. Required Improvements)

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 plan and has a couple of recommendations, see below:

- *According to the Construction Management Plan on Sheet C-03, the use of an erosion control mix berm is proposed in some locations. Please provide a detail for the erosion control mix berm.*
- *On Sheet C-03, ensure that perimeter erosion control is located downgradient of all site work. Specifically, perimeter erosion control should be extended to include the area east of Pond 1, west of (or surrounding) the earthen berm, and in the low spot along the eastern property boundary near the 42" water main.*

2. *Sufficient Water Available (Section 14-497 (a) 2 and 3)*

The development will be serviced by the existing 8" municipal water within Westbrook Street supplied by the Portland Water District. The Applicant has contacted the Portland Water District and the City Department of Public Services requesting ability to serve water and sewer demand, and awaits response. Confirmation of ability to serve water and sewer from PWD and DPS should be forwarded to the Planning Authority upon receipt.

3. *Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)*

Currently there is an existing curb cut along Westbrook Street that provide access to the single-family home on the site. The applicant is proposing to have two access points from Westbrook Street to the site, one right across from Swan Street and the other is approximately 500 feet west of the entrance of Old Westbrook Street. The latter entrance has changed since the conceptual site plans that Board saw as part of the rezone application. According to the applicant, sight distance and driveway clearance are the reasons for the change. The two looped streets are being proposed as part of the subdivision will have access at these points; the roads are to be built to City standards. The majority of the lots' driveways will have access off the new roads, except six lots will have driveways off Westbrook Street. The road accessing the PRUD project will be private. The City's Traffic Engineering Reviewer Tom Errico has reviewed the plans and offers preliminary comments below:

- *The applicant has submitted a Traffic Movement Permit Application and I have found the contents to be complete. A Scoping Meeting for the traffic impact study has been scheduled for October 10th.*
 - *All proposed public roads shall meet City standards regarding cross-section details. The applicant has provided a waiver request for some roadways to have sidewalks on only one side. I will review the waiver analysis with City staff and provide direction in the future.*
 - *The applicant has provided a construction management plan for the project. The applicant should provide greater detail for any work (sidewalk/utility construction) to be conducted in Westbrook Street that would impact traffic conditions.*
 - *The applicant should provide greater detail on the proposed crosswalks on Westbrook Street. Given traffic conditions, enhanced crosswalks – from a safety perspective - may be warranted. Additionally, the crosswalks shall be designed to be fully ADA compliant (the site plan does not provide ramp details).*
 - *The proposed slip-form concrete curbing material on Westbrook Street is not permitted. The plans shall be revised to meet City standards.*
 - *The applicant should confirm the proposed location of driveways, driveway separation, and sight distance for the lots that access from Westbrook Street.*
 - *Sight distance information should be provided at both roadway intersections.*
 - *All crosswalks located along the proposed public roads shall be block style design, not two parallel lines.*
4. *The applicant should note if City corner clearance standards are met as it relates to the proposed Westbrook Street intersections and nearby driveways.*
5. *The applicant shall provide proposed driveway locations for each lot to ensure both driveway separation and corner clearance standards are met.*

Sidewalk Requirement

The applicant is sidewalks on both sides of the two streets connecting with Westbrook Street and then proposing bituminous sidewalks on one side of the street throughout the subdivision. In lieu of the second sidewalk, esplanades are proposed to be constructed to better manage stormwater runoff. The

Subdivision Ordinance includes a number of provisions that the applicant will need to consider carefully as the final plans are being developed, Section 14-498 8a:

Sidewalks and curbs: 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 walks away from streets in common open space in block interiors.

The applicant will need to submit documentation, as part of the final submission, addressing the sidewalk waiver criteria for the staff and Board to evaluate.

6. 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 has applied for several state permits. The applicant will need to provide the City with evidence of approval upon receipt for the following permits per Sec 14-527. Content of Site Plan Applications (c) 5:

- a. Maine DEP Construction General Permit
- b. Maine DEP Tier 2 NRPA Permit
- c. Maine DEP Chapter 305 – Permit by Rule for Section 2. Activities adjacent to protected natural
- d. resources and Section 7 - Outfall pipes.

The subdivision is subject to review under Maine's Site Location of Development Act. The City has submitted the required paperwork to DEP in order to conduct the delegated review of this subdivision and DEP's decision is pending.

The project is also subject to review for a Stormwater Permit. Under Section 5 of the City of Portland Technical Manual, a subdivision 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. The MDEP Chapter 500 rules describe stormwater management requirements for new development projects. The City's Consultant Engineering Review (see Attachment 2 for complete list of recommendations) and offer the following summary comments:

From a regulatory perspective, the Applicant has chosen to evaluate the stormwater for the subdivision for the roadway only, and not for the individual lots. Further discussion between the Applicant and the City will be required. Per the State statutes, it appears that this may be acceptable, and prior projects have been evaluated by the DEP in this way. City of Portland Technical Standards require conformance with the stormwater standards for Subdivisions, and the definition of Subdivisions per the Code of Ordinances, refers to the division of a lot into multiple lots (not just the roadway). There has been some reservation expressed about the need to review each individual house lot as a separate permit in a development of this size. We do acknowledge that the treatment systems that have been specified will provide treatment for portions of the lots as well, and a preliminary review of the stormwater system shows that it will meet the Flooding Standards for the entire subdivision. However, a more detailed stormwater evaluation of the site, including the road, the lots, and adjacent properties, will be required, to ensure that drainage can be adequately managed on the entire site. This will require additional detail for each lot. The grading and drainage plan currently shows grading at the frontages of some lots that seems to preclude the installation of driveways. The design should account for roadway culverts, as required, and should provide stormwater stubs sized for foundation drains as well as any other necessary stormdrain connections. Field drains, swales, or other stormwater systems as required to manage stormwater off of the roadway should be identified. We understand that some of these items are likely being considered as part of final design, and suggest that discussions between the Applicant and the City continue to ensure that the subdivision is designed in such a way to allow for acceptance of the streets.

The project is required to include stormwater management features for stormwater quality control. The Applicant is proposing Filterra units and a Vegetated Underdrained Soil Filter to provide stormwater treatment. It is noted that

the City of Portland is no longer allowing stormwater treatment systems to be installed within road right-of- ways. More detailed information on locations of the Filterra treatment systems is necessary, but it appears that they are proposed within the right-of- way at this time. Additional information on the layout of the Filterras is necessary.

7. Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)

The proposal site is not within an historic district. The proposed lots do not impact the natural beauty of the area, which is an open field, or adversely affect any significant wildlife habitat, rare or irreplaceable natural areas, or any public access to the shoreline.

The proposed subdivision includes approximately twenty-four (24) acres of open space, located along the Stroudwater River with the proposed stormwater management (two detention ponds) areas. The maintenance and management of this open space area needs to be clarified in the context of the Subdivision Ordinance (14-498):

(i) *Public open space:*

1. In all subdivisions open space may be provided for parks, recreational and other public areas. Where no public open space or recreational areas exist in close proximity to the subdivision, or where a lack of such areas in the subdivision would require its disapproval under section 14-497(a), general requirements, the Planning Board may require provision of land for park or recreational purposes. Such lands may be designated for public or private ownership in accordance with the conditions stated in this section, subject to the approval of the Planning Board.

If a tract or parcel is designed or intended to be owned and used in common for recreational or other public or semipublic purposes and such intent is so designated on the subdivision plat, appropriate documents in form approved by the corporation counsel shall be submitted to the Planning Board. Such documents shall clearly:

- a. Set forth the nature of the permanent organization under which common ownership is to be established, including its purpose; how it shall be governed and administered; the provisions made for permanent care and maintenance of the common property for its share of the cost of administering and maintaining such common property;*
- b. Set forth the extent of common interest held by the owner of each individual parcel in the tract held in common with others.*

The applicant is proposing one hundred and ninety-eight (198) street trees as part of the project. Per the subdivision standards, the single-family lots are required to have two street trees per lot and the PRUD requires one tree per unit. A landscaping plan is not included in the applicant's preliminary submission and will needed to be submitted as part of the final plans. On September 28, 2017, Jeff Tarling, City Arborist, and Planning Staff met with the applicant and his consultant to discuss the proposed landscaping on site. A preliminary landscaping plan will be presented at the workshop.

8. Comprehensive Plan (Section 14-497 (a) 9)

The staff has identified goals and policies which are relevant to the proposed housing development and finds the proposal in conformance with the adapted Comprehensive Plan.

Housing: A Livable City

State Goals: To encourage and promote affordable decent, housing opportunities for all Maine citizens

Local Goals:

- Increase, preserve, and modify the overall supply of housing City-wide to meet the needs, preferences and financial capabilities of all Portland households.

- 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.
- Pursue policies to enable people who work in Portland to have the option to live in Portland.
- Encourage quality, sustainable design in new housing development.

Goals from Future Strategies:

9. Adopt Affordable Housing

- Pursue new opportunities for increased energy efficiency, increased densities, mixed incomes, and greater connectivity to surrounding neighborhoods.

9. Financial Capability (Section 14-497 (a) 10)

As noted above, the applicant has submitted a letter from Bath Savings Institution, dated August 18, 2017 indicating the intent to finance the project.

10. Wetland and Groundwater Impacts, Flood-Prone Area

Portions of the site is located in the Shoreland Zone and in the FEMA Flood Zone A. The Zoning Administrator will be reviewing the project against the FEMA standards. There will be no groundwater use or underground wastewater disposal. Potable water will be provided by Portland Water District.

11. Review of PRUD

The site plan ordinance contains specific standards for PRUDs. These standards relate to design relationship to site, internal design character and relationship to surrounding neighborhoods, and recreation and open space. Staff requests that the applicant address each of these standards and how they will be met by this proposed development.

XIII. NEXT STEPS (PRIOR TO FINAL PLAN SUBMISSION)

1. Submit draft Subdivision Plat
2. Submit Landscape Plan to include tree saves
3. Clarify maintenance and management of open space and stormwater systems
4. Submit sidewalk waiver addressing sidewalk waiver criteria
5. Address the staff review, Memo and Planning Board comments
6. Board's guidance on whether to proceed to a public hearing or second workshop

XIV. ATTACHMENTS

PLANNING BOARD MEMO ATTACHMENT

1. Traffic Engineer review (memo from Thomas Errico, 09.28.2017)
2. Civil Engineer and Department of Public Services review (memo from Lauren Swett, 09.28.2017)
3. Fire Department (memo from John Brennan, 09.28.2017)
4. Rezone Council Orders
5. Open Space and Trail Easements

APPLICANT'S SUBMITTAL

- A. Cover Letter
- B. Table of Contents
- C. Level III Site Subdivision Plan Application
- D. Site Location of Development Permit Application
- E. Wastewater Capacity Application
- G. Section 2 - Title, Right or Interest
- H. Section 3 - Financial Capacity
- I. Section 4 - Technical Ability
- J. Section 5 – Noise

- K. Section 6 - Visual Quality & Scenic Character
- L. Section 7 - Wildlife and Fisheries
- M. Section 8 - Historic Sites
- N. Section 9 - Unusual Natural Areas
- O. Section 10 – Buffers
- P. Section 11 - Soils
- Q. Section 12 - Stormwater Management
- R. Section 13 - Urban Impaired Stream Submissions
- S. Section 14 - Basic Standards Submissions
- T. Section 15 – Groundwater
- U. Section 16 - Water Supply
- V. Section 17 - Wastewater Disposal
- W. Section 18 - Solid Waste
- X. Section 19 – Flooding
- Y. Section 20 – Blasting
- Z. Section 21 - Air Emissions
- ZA. Section 22 – Odors
- ZB. Section 23 - Water Vapor
- ZC. Section 24 - Sunlight
- ZD. Section 25 – Notices
- ZE. Section 26 - Fire Department Letter
- ZF. Section 27 - Conformity with Applicable Zoning Standards
- ZG. Section 28 - Utility Cover
- ZH. Section 29 - Written Request for Waivers
- ZI. Section 30 - Construction Management Narrative
- ZJ. Section 31 - Conformity with Shoreland Standards
- ZK. Neighborhood Meeting Letter
- ZL. Neighborhood Meeting Certification
- ZM. Neighborhood Meeting Minutes
- ZN. Neighborhood Meeting Sign-In Sheet

PLANS

- PLAN 1. Cover Sheet
- PLAN 2. General Notes
- PLAN 3. Existing Conditions Plan
- PLAN 4. Construction Management Plan
- PLAN 5. Site Plan
- PLAN 6. Utility Plan
- PLAN 7. Grading & Drainage Plan
- PLAN 8. Site Details 1
- PLAN 9. Site Details 2
- PLAN 10. Site Details 3
- PLAN 11. Utility Details 1
- PLAN 12. Utility Details 2
- PLAN 13. Utility Details 3
- PLAN 14. Drainage Details
- PLAN 15. Stormwater Pond Bmp Details
- PLAN 16. Filterra Bmp Details
- PLAN 17. Erosion Control Notes
- PLAN 18. Erosion Control Details
- PLAN 19. Photometric Plan
- PLAN 20. PRUD Rendering



Shukria Wiar <shukriaw@portlandmaine.gov>

Stroudwater Preserve - Preliminary Traffic Comments

Tom Errico <thomas.errico@tylin.com>

Thu, Sep 28, 2017 at 4:26 PM

To: Shukria Wiar <shukriaw@portlandmaine.gov>

Cc: "kgray@portlandmaine.gov" <kgray@portlandmaine.gov>, Katherine Earley <kas@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Swett, Lauren" <lszett@woodardcurran.com>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

Hi Shukria – I have reviewed the application materials and offer the following preliminary traffic comments.

- The applicant has submitted a Traffic Movement Permit Application and I have found the contents to be complete. A Scoping Meeting for the traffic impact study has been scheduled for October 10th.
- All proposed public roads shall meet City standards regarding cross-section details. The applicant has provided a waiver request for some roadways to have sidewalks on only one side. I will review the waiver analysis with City staff and provide direction in the future.
- The applicant has provided a construction management plan for the project. The applicant should provide greater detail for any work (sidewalk/utility construction) to be conducted in Westbrook Street that would impact traffic conditions.
- The applicant should provide greater detail on the proposed crosswalks on Westbrook Street. Given traffic conditions, enhanced crosswalks – from a safety perspective - may be warranted. Additionally, the crosswalks shall be designed to be fully ADA compliant (the site plan does not provide ramp details).
- The proposed slip-form concrete curbing material on Westbrook Street is not permitted. The plans shall be revised to meet City standards.
- The applicant should confirm that no driveways are proposed on Westbrook Street.
- Sight distance information should be provided at both roadway intersections.
- All crosswalks located along the proposed public roads shall be block style design, not two parallel lines.
- The applicant should note if City corner clearance standards are met as it relates to the proposed Westbrook Street intersections and nearby driveways.
- The applicant shall provide proposed driveway locations for each lot to ensure both driveway separation and corner clearance standards are met.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director

TYLIN INTERNATIONAL

[12 Northbrook Drive](#)

Falmouth, ME 04105

[+1.207.781.4721](#) main

[+1.207.347.4354](#) direct

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thomas.errico@tylin.com

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[Twitter](#) | [Facebook](#) | [LinkedIn](#) | [Google+](#)

"One Vision, One Company"

MEMORANDUM



TO: Shukria Wiar, Planner
FROM: Lauren Swett, P.E., and Amy LeBel, E.I.T.
DATE: September 28, 2017
RE: Stroudwater Preserve Subdivision Preliminary Site Plan Peer Review

Woodard & Curran has reviewed the Level III Site Plan Application for the proposed subdivision development project located at 1700 Westbrook Street in Portland, Maine. The project involves the construction of a new subdivision for 98 single family house lots, one planned unit residential development (PRUD) lot for 25 townhomes, and one 24-acre open space lot.

Documents Reviewed by Woodard & Curran

- Level III & Subdivision Preliminary Site Plan Application and Attachments, dated August 25, 2017, prepared by Acorn Engineering, Inc., on behalf of Stroudwater Development Partners, LLC.
- Engineering Plans; Sheets C-01 – C-03, C-10 – C-11, L-1, C-20, C-30, C-40 – C-43, and C-50 – C-60; dated August 25, 2017, prepared by Acorn Engineering, Inc., on behalf of Stroudwater Development Partners, LLC.
- Existing Conditions Plan, Sheet EX, dated June 16, 2017, prepared by Titcomb Associates, on behalf of Stroudwater Development Partners, LLC.

Comments

- 1) The application is preliminary. As such, additional documents will be submitted for the final application, including waiver approvals and letters from utilities confirming capacity to serve the proposed development. Woodard & Curran will perform a review of the Final Application upon receipt of those documents. Some of our following comments are items that will likely be completed or clarified in the final plans.
- 2) The amount of developed area and impervious area are both listed as 55.3 acres on Form A Page 1 of the Site Development Permit Application. This area should be clarified.
- 3) Please check detail reference for the earthen berm depicted on Sheet C-10 of the plan set. The detail seems to be located on Sheet C-50.
- 4) Index contours (30', 40', 50') for proposed grading are missing in the plan view details on Sheet C-57.
- 5) Please indicate snow storage locations per Sec. 14-526. Site Plan Standards (a) 4. d. This would apply to the PRUD parking area.
- 6) The Applicant has applied for several state permits. Please provide the City with evidence of approval upon receipt for the following permits per Sec 14-527. Content of Site Plan Applications (c) 5.:
 - a) Maine DEP Construction General Permit
 - b) Maine DEP Tier 2 NRPA Permit
 - c) Maine DEP Chapter 305 – Permit By Rule for Section 2. Activities adjacent to protected natural resources and Section 7 - Outfall pipes.
- 7) From a regulatory perspective, the Applicant has chosen to evaluate the stormwater for the subdivision for the roadway only, and not for the individual lots. Further discussion between the Applicant and the City will be required. Per the State statutes, it appears that this may be acceptable, and prior projects have been evaluated by the DEP in this way. City of Portland Technical Standards require conformance with the stormwater standards for Subdivisions, and the definition of Subdivisions per the Code of Ordinances, refers to the division of a lot into multiple lots (not just the roadway). There has been some reservation expressed about the need to review each individual house lot as a separate permit in a development of this size. We do acknowledge that the treatment systems that have been specified will provide treatment for portions of the lots as well, and a preliminary review of the stormwater system shows that it will meet the Flooding Standards for the entire subdivision. However, a more detailed stormwater



evaluation of the site, including the road, the lots, and adjacent properties, will be required, to ensure that drainage can be adequately managed on the entire site. This will require additional detail for each lot. The grading and drainage plan currently shows grading at the frontages of some lots that seems to preclude the installation of driveways. The design should account for roadway culverts, as required, and should provide stormwater stubs sized for foundation drains as well as any other necessary stormdrain connections. Field drains, swales, or other stormwater systems as required to manage stormwater off of the roadway should be identified. We understand that some of these items are likely being considered as part of final design, and suggest that discussions between the Applicant and the City continue to ensure that the subdivision is designed in such a way to allow for acceptance of the streets.

- 8) Additional detail will be required as part of the final plans for utilities within the street. Pipe sizes and structure invert information should be provided for any sewer and stormwater systems. Sizing confirmation of the stormwater piping should also be provided.
- 9) In accordance with Section 5 of the City of Portland Technical Manual, a 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 Standard: The Applicant has provided a plan, notes, and details to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. The following comments should be addressed:
 - According to the Construction Management Plan on Sheet C-03, the use of an erosion control mix berm is proposed in some locations. Please provide a detail for the erosion control mix berm.
 - On Sheet C-03, ensure that perimeter erosion control is located downgradient of all site work. Specifically, perimeter erosion control should be extended to include the area east of Pond 1, west of (or surrounding) the earthen berm, and in the low spot along the eastern property boundary near the 42" water main.
 - b) General Standard: The project is required to include stormwater management features for stormwater quality control. The Applicant is proposing Filterra units and a Vegetated Underdrained Soil Filter to provide stormwater treatment. The following comments should be addressed:
 - It is noted that the City of Portland is no longer allowing stormwater treatment systems to be installed within road right-of-ways. More detailed information on locations of the Filterra treatment systems is necessary, but it appears that they are proposed within the right-of-way at this time. Additional information on the layout of the Filterras is necessary.
 - Sizing information on the Filterra systems, ponds, and soil filters should be provided as part of the final submission and will be reviewed at that time.
 - c) Flooding Standard: The project is required to control the rate or quantity of stormwater runoff from the site. The Applicant has provided documentation to demonstrate compliance with the Flooding Standard. However, the following comments should be addressed:
 - We have not done a detailed review of the HydroCAD model. We recommend that the Applicant revisit the pre- and post-development plans to provide additional clarity – it is difficult to differentiate between lines on the plan to evaluate subcatchment areas. We will do a detailed review of the system with the final submission.
 - An evaluation of culvert sizing within the stormdrainage system should be provided.
- 10) The Applicant has noted that a Post- Construction Stormwater Inspection and Maintenance Plan will be provided under separate cover.

MEMORANDUM

To: FILE
From: Shukria Wiar
Subject: Application ID: 2017-193
Date: 9/29/2017

Comments Submitted by: John Brennan/Fire on 9/28/2017

Construction Management Plan

Fire Hydrants shall not be blocked or enclosed by fencing. A 3' foot clearance must be kept at all times around the fire hydrant.

If gates are locked, a Portland Fire Department Knox padlock must be purchased by the applicant to allow access for the Fire Department.

The Construction Company' emergency contact information shall be posted on the property in case of an after hours emergency.

Comments Submitted by: John Brennan/Fire on 9/28/2017

Premises Identification

The main entrance of the building must be the address for the property. This should be consistent with 911, tax assessor, Inspections Division and future mailing address.

Street addresses shall be marked on the structure and shall be as approved by the City E-911 Addressing Officer.

If the building entry faces a different street, both the street name and number should be large enough to read from the street.

Address numbers must be a minimum of 6 inches high.

The number should be in Arabic numerals rather than spelled out (for example, "130" instead of "One Hundred and Thirty").

Color: Addresses should be in a color that contrasts with the background.

Whenever possible, should be illuminated.

Provide additional address signs at entrances to the property when the building address is not legible from the public street.

Buildings set back in groups that share common entrances can make quickly locating a specific building and the shortest route difficult. On such sites, additional signs with directional arrows and/or diagrams of the buildings and access layout should be posted.

Comments Submitted by: John Brennan/Fire on 9/28/2017

Per City Code, all new construction of residential occupancies shall be sprinkled in compliance of NFPA 13.

Comments Submitted by: John Brennan/Fire on 9/28/2017

Per City Technical Standards, a hydrant shall be placed within five hundred (500') feet of all structures.

Comments Submitted by: John Brennan/Fire on 9/28/2017

Street width per City Standards must be a minimum width of 28 feet.

Order 272-16/17

Postponed to July 24, 2017: 9-0 on June 19, 2017

Amended to exclude Planned Residential Unit Developments as defined in Portland City Code Section 14-87(a)2 in an overlay zone depicted in "Amendment to Order 272-16/17" attached: 7-2 (Thibodeau and Strimling) on 7/24/2017

Passage as amended: 5-4 (Brenerman, Batson, Costa and Strimling) on 7/24/2017

Effective 8/23/2017

ETHAN K. STRIMLING (MAYOR)
BELINDA S. RAY (1)
SPENCER R. THIBODEAU (2)
BRIAN E. BATSON (3)
JUSTIN COSTA (4)

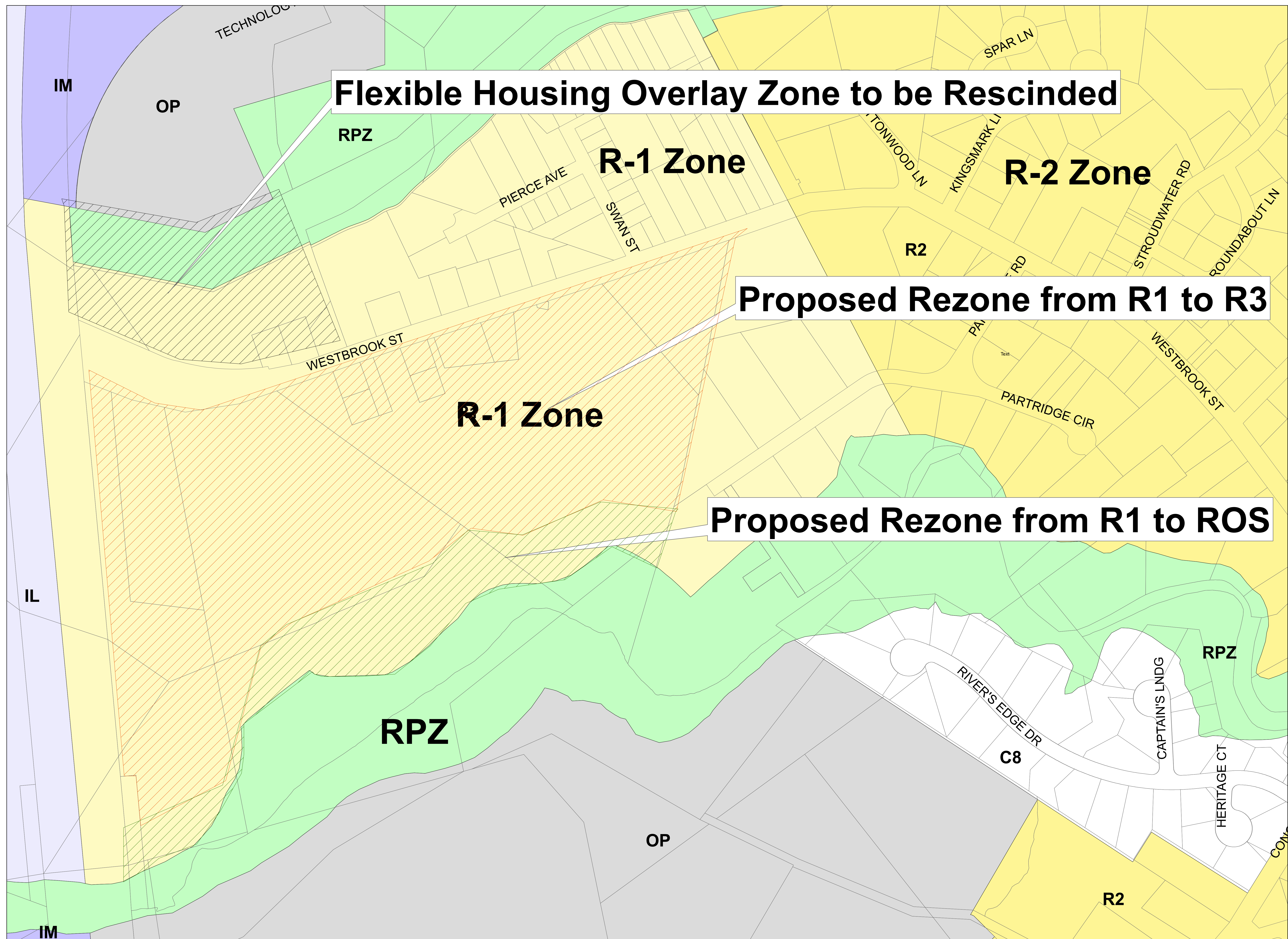
**CITY OF PORTLAND
IN THE CITY COUNCIL**

DAVID H. BRENERMAN (5)
JILL C. DUSON (A/L)
PIOUS ALI (A/L)
NICHOLAS M. MAVODONES, JR (A/L)

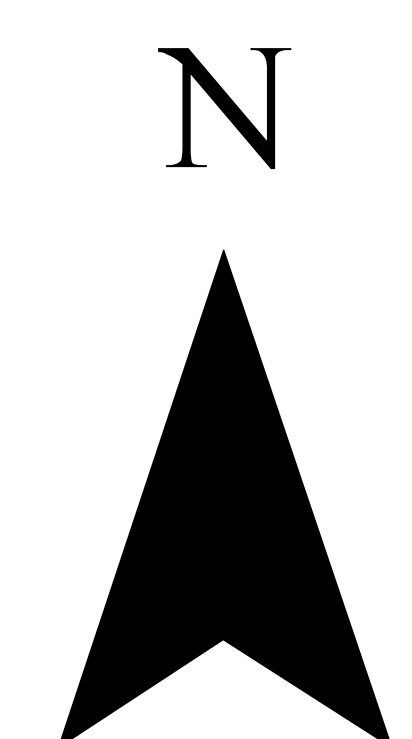
**AMENDMENT TO ZONING MAP
RE: CAMELOT FARM**

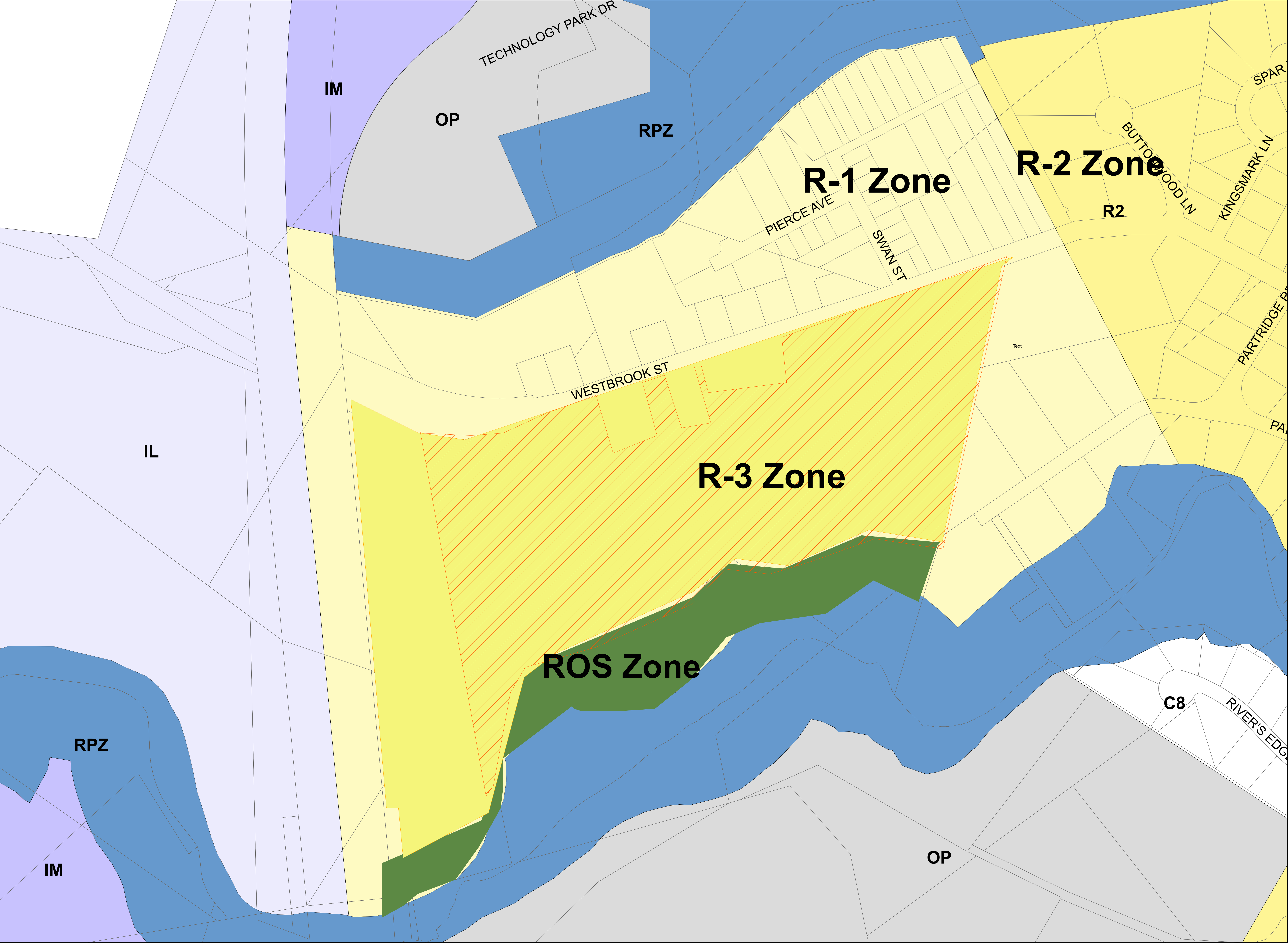
**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF PORTLAND, MAINE
IN CITY COUNCIL ASSEMBLED AS FOLLOWS:**

That the Zoning Map of the City of Portland, dated December 2000, as amended and on file in the Department of Planning and Urban Development, and incorporated by reference into the Zoning Ordinance by §14-49, be and hereby is amended by adopting the following map change amendment and specifically rezoning property known as Camelot Farm and four single family adjacent lots from R1 to R3 and rezoning land bordering Stroudwater River from R1 to ROS, as shown on Exhibit A, attached hereto.



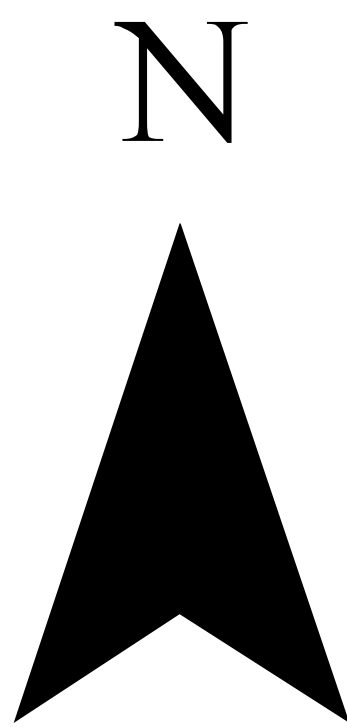
Proposed Zoning Map Amendment
Residential R1 to Residential R3 and Recreational Open Space (ROS)
May 2017





Proposed Zoning Map Amendment
Residential R1 to Residential R3 and Recreational Open Space (ROS)
July 2017

**In Reference to Shaded Area- In this portion of the R-3 zone,
Planned Residential Unit Developments per 14-87 (a) 2 are not permitted.**



After recording return to:

 Space Above This Line For Recording Data

EASEMENT DEED

(Open Space Easement – 1714 Westbrook Lot)

KNOW ALL PERSONS BY THESE PRESENTS, that **DIVERSACORP, LLC**, a Maine limited liability company with a place of business in Portland, Maine and mailing address of 5 Stone Pony Circle, Saco, Maine (the “Grantor”), FOR CONSIDERATION PAID, hereby GRANTS to the **CITY OF PORTLAND**, a Maine body corporate and politic, with a mailing address of City Hall, 389 Congress Street, Portland, Maine (the “Grantee” or the “City”), a non-exclusive open space easement for the purpose described below, over portions of Grantor’s property at or about 1714 Westbrook Street, in Portland, Maine, said easement area being the greater of either: (a) the area shown falling within the bounds of the ROS zone as depicted on Exhibit A, or; (b) the Open Space as so defined on any subdivision plan recorded by Grantor or any affiliate or subsidiary thereof, or any successor in title thereto, for development of 1700 Westbrook Street (in the case of (a) or (b) the “Easement Area”. For the avoidance of doubt, the Easement shall initially encumber the ROS zone in Exhibit A, and shall automatically extend to encumber the subdivision “Open Space” contemplated in (b) above immediately upon filing said subdivision plan. Grantee shall not be obligated to take any further action in order for this Easement to extend beyond the ROS zone.

The purpose of the open space easement granted herein is to provide public pedestrian access to meaningful areas of undeveloped open space along the Stroudwater River corridor. Land within the Easement area may be disturbed, graded, regraded, seeded, or otherwise managed by Grantor for all purposes necessary for development of the Camelot Farm lot located generally at 1700 Westbrook Street, Portland, Maine, or in any fashion otherwise permitted by land-use and zoning laws, but in all cases, the disturbance shall be in form and scope which is the least intrusive as commercially reasonable. This easement is not a conservation easement. Neither Grantor nor Grantee has any obligation to maintain the Easement Area, except as Grantor may be required to repair or replant areas disturbed during development. The Easement Area shall remain publicly accessible, free of permanent buildings, permanent fences, and other permanent structures. Grantor shall not permit any use, condition, or state of disrepair that would be contrary to or otherwise materially inhibit access to or use of the Easement Area. The parties agree that this Easement shall in no way impair any restrictions or requirements imposed by local ordinance, state statute, or federal law, as the same relate to activities within the Easement Area. Nothing in this easement shall prevent the pipeline company having prior rights through the Easement Area from exercising its rights to the pipeline. Nothing in this open space easement shall inhibit the public access easement granted prior hereto to Portland Trails for access to and from said Stroudwater River.

This easement is given for recreational use and the Grantor and Grantee claim to the maximum extent permitted by law, all the rights and protections against liability in accordance with the Maine Tort Claims Act, Title 14 MRS § 8101 *et seq.*, Title 14 MRS §159-A, and other applicable law.

TO HAVE AND TO HOLD the aforegranted and bargained public access easement, with all privileges and appurtenances thereof, to the Grantee, its successors and assigns, to its and their use and behoof, forever.

(Signature & Exhibit Appear Below)

IN WITNESS WHEREOF, Diversacorp, LLC, the Grantor has caused this instrument to be executed by Michael Barton, its Manager, thereunto duly authorized, this 24th day of July, 2017.



Witness

Diversacorp, LLC

By: 

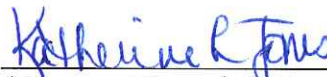
Michael Barton, its Manager

STATE OF MAINE
Cumberland County, ss.

Date: 07/24/2017

Personally appeared the above-named Michael Barton, Manager of Diversacorp, LLC, and acknowledged the foregoing instrument to be his free act and deed duly authorized in said capacity, and thereby, the free act and deed of Diversacorp, LLC.

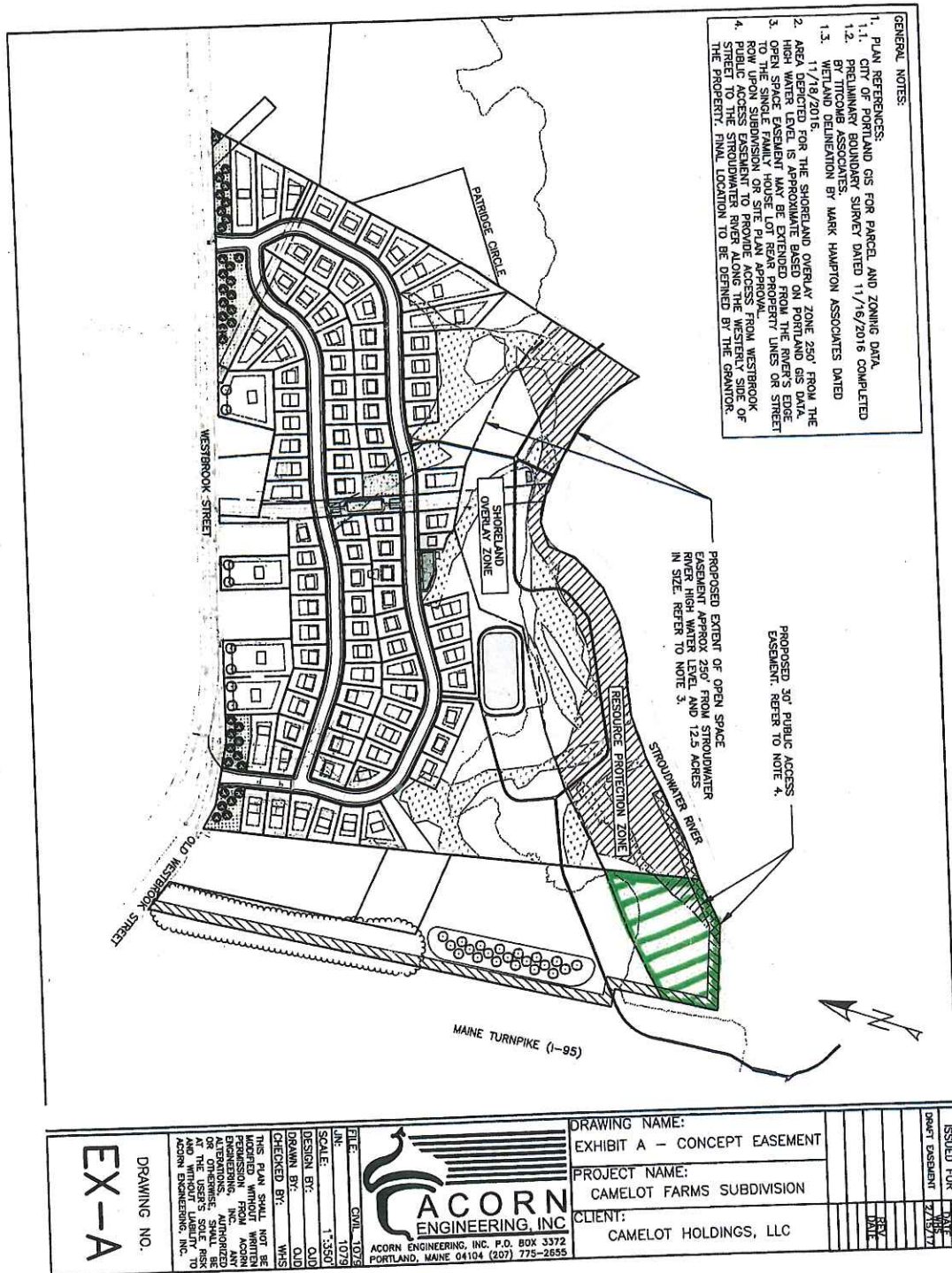
Before me,



Attorney at Law / Notary Public
Print: Katherine L. Jones
[SEAL] My commission expires 12-28-2020

(Exhibit A Appears Below)

EXHIBIT A



Received
Recorded Register of Deeds
Aug 23, 2017 01:29:49P
Cumberland County
Nancy A. Lane

***Recreation Trail Easement
On Land Of DiversaCorp, LLC
City of Portland, Cumberland County, Maine***

DIVERSACORP, LLC, a Maine limited liability company with a place of business in Portland, Maine and mailing address of 5 Stone Pony Circle, Saco, Maine (hereinafter referred to as the "Grantor" which word is intended to include jointly and severally, unless the context clearly indicates otherwise, the above-named Grantor, its successors and assigns),

GRANTS, with Quitclaim Covenant, as a gift, to **PORTLAND TRAILS**, a nonprofit corporation existing under the laws of the State of Maine, with a mailing address of 305 Commercial Street, Portland, Maine 04101, (hereinafter referred to as the "HOLDER," which word shall, unless the context clearly indicates otherwise, include the Holder's successors and assigns),

in perpetuity, a **RECREATION TRAIL EASEMENT** on a portion of real property situated in the City of Portland, Cumberland County, Maine (hereinafter referred to as the "Trail Corridor,"), being a 30-foot (30') wide corridor across the parcel(s) granted to Grantor by deed from Diversacorp, LLC, dated February 17, 2017 and recorded at the Cumberland County Registry of Deeds at Book 33834, Page 269; which Trail Corridor is more particularly described in Exhibit A, and depicted on Exhibit B, attached hereto and made a part hereof by reference.

1. RECREATION PURPOSE

This Recreation Trail Easement is made exclusively for the following recreational purpose (hereinafter the "Recreation Purpose"): To provide non-motorized recreational opportunities for the residents of and visitors to the City of Portland to the shore of the Stroudwater River within the Easement Area.

2. STRUCTURES, SURFACE ALTERATIONS, VEGETATION MANAGEMENT

A. On the date of this Recreation Trail Easement, there are no structures or man-made objects on the Trail Corridor except for: game fencing, as depicted on Exhibit B. Grantor shall not establish or maintain any structures or man-made objects on the Trail Corridor without the prior written consent of Holder.

3. HOLDER'S RIGHTS

A. Holder, its successors and assigns, and its authorized representatives, are hereby granted the right to enter the Trail Corridor at any reasonable time and in any reasonable manner that is consistent with the purposes hereof, including the right to enter over any rights-of-way pertaining to the Trail Corridor, to exercise its rights under this Recreation Trail Easement.

B. Holder is granted the exclusive right, but not the obligation, to establish, and maintain unpaved trails on the Trail Corridor. Holder is further granted the exclusive right to construct, install, and maintain without limitation: boardwalks, footbridges, and other low-impact outdoor recreational improvements on the Trail Corridor; such as steps; railings; paved or unpaved ramps; bollards; rip rap; benches; barriers to discourage use by motorized vehicles (except for motorized wheelchairs or other similar non-recreational vehicles); cairns; small unlighted signs, and minor erosion control structures. Holder's construction and maintenance rights may be delegated or assigned to another entity.

C. Holder is granted the exclusive right to selectively cut, prune and remove trees, leaners and blowdowns on the Trail Corridor for safety purposes, and the exclusive right to alter vegetation on the Trail Corridor for scenic and trail work purposes.

D. Holder is granted the right to assign this Recreation Trail Easement, but only to an entity that as a condition of transfer agrees to uphold the Recreational Purpose of this grant, and satisfies the requirements of Section 1581(1) of Title 33 of the Maine Revised Statutes Annotated, as amended (or successor provisions thereof).

E. Holder is hereby granted the right to enforce this Recreation Trail Easement by proceedings at law and in equity, including the right to require the restoration of the Trail Corridor to a condition in compliance herewith. If a Court (or other decision maker chosen by mutual consent of the parties) determines that this Recreation Trail Easement has been breached by a party hereto or his/her/its assigns, agents, employees, contractors, invitees, licensees, permittees, tenants, guests, or lessees, the breaching party will reimburse the non-breaching party for any reasonable costs of enforcement, including court costs, reasonable attorney's fees, and any other payments ordered by such Court or decision maker. Grantor is not responsible for injury to or change in the Trail Corridor originating from outside of the Trail Corridor or Grantor's abutting reserved land, or from natural causes, such as, but not limited to, fire, flood, storm, earth movement, natural evolution of plant and animal communities, or from any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Trail Corridor resulting from such causes.

4. PUBLIC USE

Holder has the right to permit, and the Grantor agrees to refrain from taking any action to prohibit or discourage or to exact a fee for, non-motorized access and low-impact outdoor recreational use by the general public on the Trail Corridor, including, without limitation, walking, picnicking, nature observation, bicycling, fishing, snowshoeing and cross country skiing.

This grant prohibits motorized vehicles of any nature on the Trail Corridor except in connection with trail work by Holder or its authorized representatives, or in emergency circumstances, or by motorized wheelchairs or other similar non-recreational vehicles.

Holder has the right to require that public use is conducted in a manner that does not unreasonably disturb plants, wildlife, or other lawful users of the Trail Corridor. Holder has the

right to temporarily limit, restrict or prohibit public use of all or any part of the Trail Corridor and to close and reroute trails to assure safety or for maintenance purposes; provided, however, this right does not grant Holder any rights to use other land of Grantor's not shown on Exhibits A or B. Nothing herein should be construed to prohibit Grantor from using the Trail Corridor in common with public recreational users, as a member of the general public, and in accordance with the rules and regulations for general public use, provided that such use shall not unreasonably interfere with the public uses contemplated hereunder.

5. GENERAL PROVISIONS

A. This Recreation Trail Easement shall only be extinguished or terminated by judicial order in a court of competent jurisdiction, upon an express finding that all of the purposes of this Recreation Trail Easement have been rendered impossible to accomplish due to events independent of the actions of the Grantor; except, however, if all or any interest in the Trail Corridor is threatened by the exercise of the power of eminent domain, Holder, in its sole discretion, may issue prior written consent, without a judicial order, to a partial or complete extinguishment or termination, upon payment of reasonable compensation for Holder's right herein. In the event that this Recreation Trail Easement is extinguished or terminated, Holder is entitled to a share of the proceeds of the next subsequent sale, exchange or involuntary conversion of the property encumbered or formerly encumbered by this Recreation Trail Easement, according to Holder's proportional interest in the Trail Corridor as determined by Treasury Regulations 1.170-A-14(g)(6)(ii). Holder's proportional interest is determined as of the date of this Grant but will not include value attributable to the improvements to the Trail Corridor Property made after the date of this Grant. In the event Holder acquires proceeds under any of the conditions of this paragraph, Holder will use such proceeds for its conservation and recreation purposes.]

B. This Recreation Trail Easement may be amended by written agreement of the Holder and Grantor, provided that Holder determines in its sole and exclusive judgment that the amendment furthers or is not inconsistent with the Recreation Purpose of this Easement, as stated hereinabove.

C. This Recreation Trail Easement is created pursuant to the Maine Trail Easement Act at Title 33, M.R.S.A. Sections 1581 through 1585, as amended This Recreation Trail Easement is not intended to be construed as a conservation easement pursuant to Title 33 M.R.S.A. Section 476 *et seq.*

D. The interpretation and performance of this Recreation Trail Easement shall be governed by the laws of the State of Maine. Any general rule of construction to the contrary notwithstanding, this Recreation Trail Easement shall be liberally construed in favor of the grant to effect the Recreational Purposes of this Easement. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the Recreational Purpose of this Recreation Trail Easement shall govern.

E. Notwithstanding any restriction or obligation contained in any provision of this Recreational Trail Easement, it is expressly understood by Grantor and Holder that Grantor will develop residential units in certain areas adjacent to, or in the general proximity of, the Trail

Corridor, and that doing so may at times require removing certain foliage, or moving earth, or the like. All provisions which may otherwise prevent the disturbance of land, earth, vegetation, and the like within or about the Trail Corridor shall not be applicable to Grantor for so long as Grantor is developing residential dwelling units on land commonly called 1700 & 1714 Westbrook Street, Portland, Maine (the "Development Exception"). Further, the Development Exception shall apply to Grantor post-development to the extent Grantor is required to conduct certain modifications, repairs, or the like, by either the City of Portland, or a court of law. Notwithstanding the Grantor Exception, the Grantor nonetheless covenants that Grantor shall, to the greatest extent commercially reasonable, avoid disturbing land, earth, vegetation, and the like within or about the Trail Corridor and all disturbances shall be repaired, restored, or replanted with vegetation consistent with the surroundings, at the Grantor's discretion.

IN WITNESS WHEREOF, MICHAEL BARTON, has caused these presents to be signed and sealed by Douglas Wilcox, its FRIDAY, this 18TH day of AUGUST, 2017.

Signed Sealed and Delivered
In the Presence of

[Signature]
Witness

DiversaCorp, LLC

[Signature]

By: MICHAEL BARTON
Its: MANAGER

STATE OF MAINE
COUNTY OF Cumberland

Date: 8/18/17

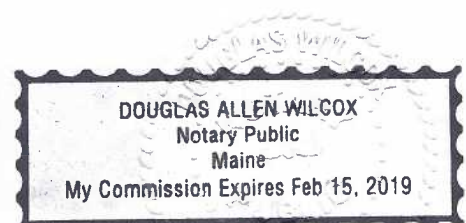
Personally appeared before me the above-named Michael Barton, Manager of DiversaCorp LLC, and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of said Trail Easement.

Before me,

[Signature]
Notary Public/Attorney

Douglas Wilcox

Please type or print name of notary
My commission expires:



HOLDER ACCEPTANCE.

The above and foregoing Recreation Trail Easement was authorized to be accepted by Portland Trails, Holder as aforesaid, and the said Holder does hereby accept the foregoing Recreation Trail Easement, by and through Kara Wooldrik, its Executive Director hereunto duly authorized, this 10 day of August, 2017.

Portland Trails

Kara Wooldrik
Its Executive Director

STATE OF MAINE

COUNTY OF Cumberland

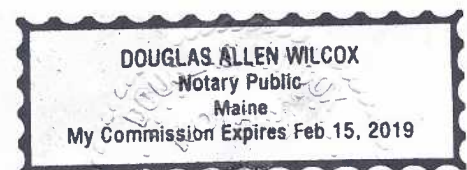
, 2008

Personally appeared Kara Wooldrik, Executive Director and authorized representative of the above-named Holder, Michael Burton, and acknowledged the foregoing instrument to be her free act and deed in her said capacity, and the free act and deed of said corporation.

Before me,

Douglas A Wilcox
Notary Public

Douglas Wilcox
(Please type or print name of notary)
My commission expires:



***Recreation Trail Easement
On Land Of DiversaCorp, LLC
City of Portland, Cumberland County, Maine***

EXHIBIT A

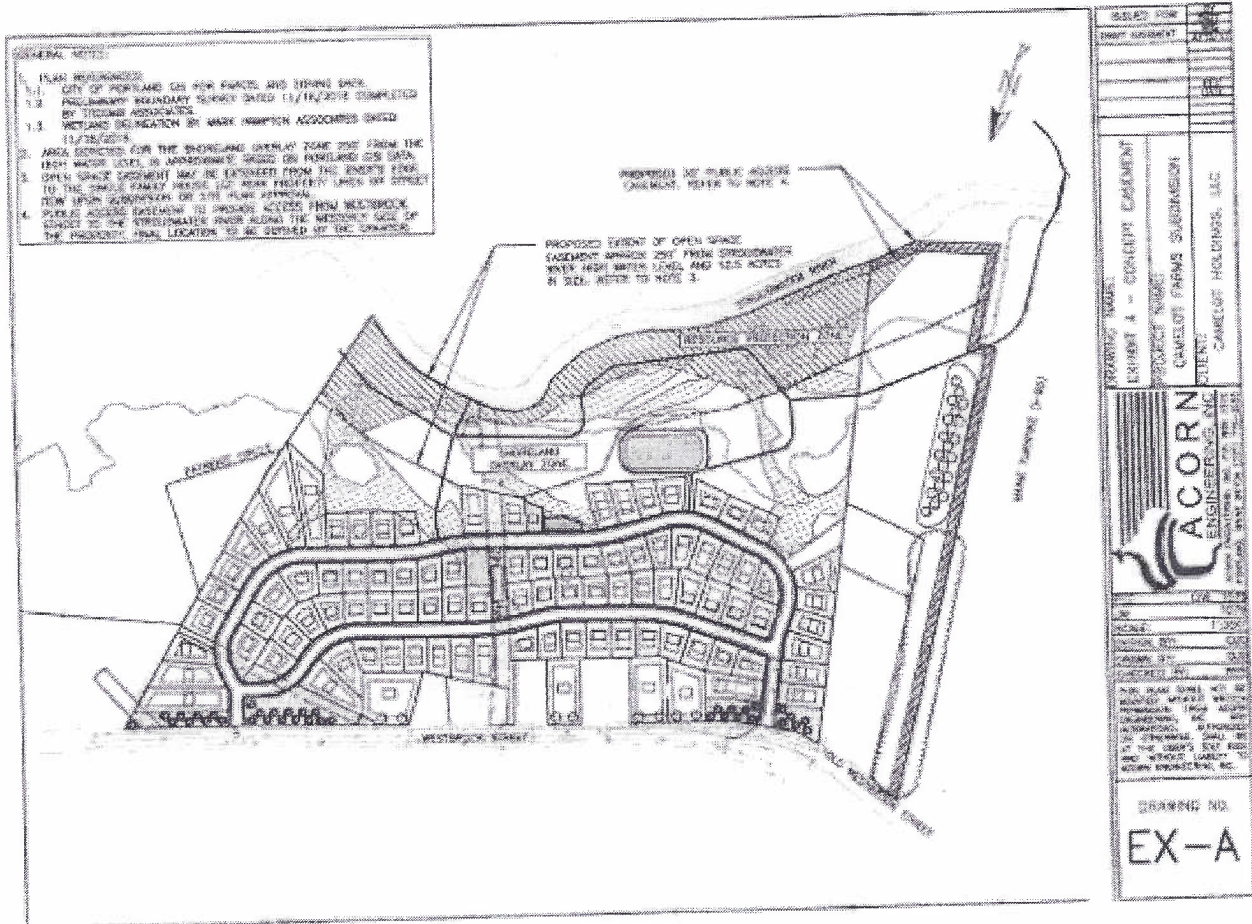
Legal Description of the Trail Corridor

“Proposed 30’ Public Access Easement” in Exhibit A attached hereto (“Easement Area”), said actual traveled paths or surfaces to be determined by Portland Trails.

The proposed 30’ Public Access Easement extends easterly 30’ along the entire length of the westerly bound to the edge of the Stroudwater River and again northerly 30’ along the entire length of Stroudwater River to the easterly bound

***Recreation Trail Easement
On Land Of DiversaCorp, LLC
City of Portland, Cumberland County, Maine***

EXHIBIT B



***Recreation Trail Easement
On Land Of CAMELOT HOLDINGS, LLC,
City of Portland, Cumberland County, Maine***

CAMELOT HOLDINGS, LLC,, a Maine limited liability company with a place of business in Portland, Maine and mailing address of 5 Stone Pony Circle, Saco, Maine (hereinafter referred to as the "Grantor" which word is intended to include jointly and severally, unless the context clearly indicates otherwise, the above-named Grantor, its successors and assigns),

GRANTS, with Quitclaim Covenant, as a gift, to **PORTLAND TRAILS**, a nonprofit corporation existing under the laws of the State of Maine, with a mailing address of 305 Commercial Street, Portland, Maine 04101, (hereinafter referred to as the "HOLDER," which word shall, unless the context clearly indicates otherwise, include the Holder's successors and assigns),

in perpetuity, a **RECREATION TRAIL EASEMENT** on a portion of real property situated in the City of Portland, Cumberland County, Maine (hereinafter referred to as the "Trail Corridor,"), being a 30-foot (30') wide corridor across the parcel(s) granted to Grantor by deed from _____, dated _____ and recorded at the _____ County Registry of Deeds at Book _____, Page _____; which Trail Corridor is more particularly described in Exhibit A, and depicted on Exhibit B, attached hereto and made a part hereof by reference.

1. RECREATION PURPOSE

This Recreation Trail Easement is made exclusively for the following recreational purpose (hereinafter the "Recreation Purpose"): To provide non-motorized recreational opportunities for the residents of and visitors to the City of Portland to the shore of the Stroudwater River within the Easement Area.

2. STRUCTURES, SURFACE ALTERATIONS, VEGETATION MANAGEMENT

A. On the date of this Recreation Trail Easement, there are no structures or man-made objects on the Trail Corridor except for: game fencing, as depicted on Exhibit B. Grantor shall not establish or maintain any structures or man-made objects on the Trail Corridor without the prior written consent of Holder.

3. HOLDER'S RIGHTS

A. Holder, its successors and assigns, and its authorized representatives, are hereby granted the right to enter the Trail Corridor at any reasonable time and in any reasonable manner that is consistent with the purposes hereof, including the right to enter over any rights-of-way pertaining to the Trail Corridor, to exercise its rights under this Recreation Trail Easement.

B. Holder is granted the exclusive right, but not the obligation, to establish, and maintain unpaved trails on the Trail Corridor. Holder is further granted the exclusive right to construct, install, and maintain without limitation: boardwalks, footbridges, and other low-impact outdoor recreational improvements on the Trail Corridor; such as steps; railings; paved or unpaved ramps; bollards; rip rap; benches; barriers to discourage use by motorized vehicles (except for motorized wheelchairs or other similar non-recreational vehicles); cairns; small unlighted signs, and minor erosion control structures. Holder's construction and maintenance rights may be delegated or assigned to another entity.

C. Holder is granted the exclusive right to selectively cut, prune and remove trees, leaners and blowdowns on the Trail Corridor for safety purposes, and the exclusive right to alter vegetation on the Trail Corridor for scenic and trail work purposes.

D. Holder is granted the right to assign this Recreation Trail Easement, but only to an entity that as a condition of transfer agrees to uphold the Recreational Purpose of this grant, and satisfies the requirements of Section 1581(1) of Title 33 of the Maine Revised Statutes Annotated, as amended (or successor provisions thereof).

E. Holder is hereby granted the right to enforce this Recreation Trail Easement by proceedings at law and in equity, including the right to require the restoration of the Trail Corridor to a condition in compliance herewith. If a Court (or other decision maker chosen by mutual consent of the parties) determines that this Recreation Trail Easement has been breached by a party hereto or his/her/its assigns, agents, employees, contractors, invitees, licensees, permittees, tenants, guests, or lessees, the breaching party will reimburse the non-breaching party for any reasonable costs of enforcement, including court costs, reasonable attorney's fees, and any other payments ordered by such Court or decision maker. Grantor is not responsible for injury to or change in the Trail Corridor originating from outside of the Trail Corridor or Grantor's abutting reserved land, or from natural causes, such as, but not limited to, fire, flood, storm, earth movement, natural evolution of plant and animal communities, or from any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Trail Corridor resulting from such causes.

4. PUBLIC USE

Holder has the right to permit, and the Grantor agrees to refrain from taking any action to prohibit or discourage or to exact a fee for, non-motorized access and low-impact outdoor recreational use by the general public on the Trail Corridor, including, without limitation, walking, picnicking, nature observation, bicycling, fishing, snowshoeing and cross country skiing.

This grant prohibits motorized vehicles of any nature on the Trail Corridor except in connection with trail work by Holder or its authorized representatives, or in emergency circumstances, or by motorized wheelchairs or other similar non-recreational vehicles.

Holder has the right to require that public use is conducted in a manner that does not unreasonably disturb plants, wildlife, or other lawful users of the Trail Corridor. Holder has the

right to temporarily limit, restrict or prohibit public use of all or any part of the Trail Corridor and to close and reroute trails to assure safety or for maintenance purposes; provided, however, this right does not grant Holder any rights to use other land of Grantor's not shown on Exhibits A or B. Nothing herein should be construed to prohibit Grantor from using the Trail Corridor in common with public recreational users, as a member of the general public, and in accordance with the rules and regulations for general public use, provided that such use shall not unreasonably interfere with the public uses contemplated hereunder.

5. GENERAL PROVISIONS

A. This Recreation Trail Easement shall only be extinguished or terminated by judicial order in a court of competent jurisdiction, upon an express finding that all of the purposes of this Recreation Trail Easement have been rendered impossible to accomplish due to events independent of the actions of the Grantor; except, however, if all or any interest in the Trail Corridor is threatened by the exercise of the power of eminent domain, Holder, in its sole discretion, may issue prior written consent, without a judicial order, to a partial or complete extinguishment or termination, upon payment of reasonable compensation for Holder's right herein. In the event that this Recreation Trail Easement is extinguished or terminated, Holder is entitled to a share of the proceeds of the next subsequent sale, exchange or involuntary conversion of the property encumbered or formerly encumbered by this Recreation Trail Easement, according to Holder's proportional interest in the Trail Corridor as determined by Treasury Regulations 1.170-A-14(g)(6)(ii). Holder's proportional interest is determined as of the date of this Grant but will not include value attributable to the improvements to the Trail Corridor Property made after the date of this Grant. In the event Holder acquires proceeds under any of the conditions of this paragraph, Holder will use such proceeds for its conservation and recreation purposes.]

B. This Recreation Trail Easement may be amended by written agreement of the Holder and Grantor, provided that Holder determines in its sole and exclusive judgment that the amendment furthers or is not inconsistent with the Recreation Purpose of this Easement, as stated hereinabove.

C. This Recreation Trail Easement is created pursuant to the Maine Trail Easement Act at Title 33, M.R.S.A. Sections 1581 through 1585, as amended This Recreation Trail Easement is not intended to be construed as a conservation easement pursuant to Title 33 M.R.S.A. Section 476 *et seq.*

D. The interpretation and performance of this Recreation Trail Easement shall be governed by the laws of the State of Maine. Any general rule of construction to the contrary notwithstanding, this Recreation Trail Easement shall be liberally construed in favor of the grant to effect the Recreational Purposes of this Easement. If any provision in this instrument is found to be ambiguous, an interpretation consistent with the Recreational Purpose of this Recreation Trail Easement shall govern.

E. Notwithstanding any restriction or obligation contained in any provision of this Recreational Trail Easement, it is expressly understood by Grantor and Holder that Grantor will develop residential units in certain areas adjacent to, or in the general proximity of, the Trail

Corridor, and that doing so may at times require removing certain foliage, or moving earth, or the like. All provisions which may otherwise prevent the disturbance of land, earth, vegetation, and the like within or about the Trail Corridor shall not be applicable to Grantor for so long as Grantor is developing residential dwelling units on land commonly called 1700 & 1714 Westbrook Street, Portland, Maine (the "Development Exception"). Further, the Development Exception shall apply to Grantor post-development to the extent Grantor is required to conduct certain modifications, repairs, or the like, by either the City of Portland, or a court of law. Notwithstanding the Grantor Exception, the Grantor nonetheless covenants that Grantor shall, to the greatest extent commercially reasonable, avoid disturbing land, earth, vegetation, and the like within or about the Trail Corridor and all disturbances shall be repaired, restored, or replanted with vegetation consistent with the surroundings, at the Grantor's discretion.

IN WITNESS WHEREOF, Michael Barton, has caused these presents to be signed and sealed by Douglas Wilcox, its President, this 19th day of August, 2017.

Signed Sealed and Delivered
In the Presence of

[Signature]
Witness

Camelot Holdings, LLC

[Signature]
By: Michael Barton
Its: Manager

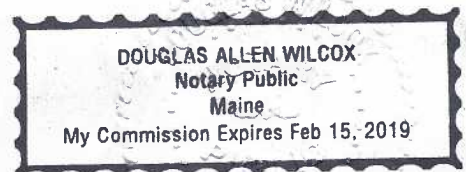
STATE OF MAINE
COUNTY OF Cumberland

Date: 8/19/17

Personally appeared before me the above-named Michael Barton, Manager of Camelot Holdings, LLC, and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of said Trail Extension.

Before me, Douglas A. Wilcox
Notary Public/Attorney

Douglas Wilcox
Please type or print name of notary
My commission expires:



HOLDER ACCEPTANCE.

The above and foregoing Recreation Trail Easement was authorized to be accepted by Portland Trails, Holder as aforesaid, and the said Holder does hereby accept the foregoing Recreation Trail Easement, by and through Kara Wooldrik, its Executive Director hereunto duly authorized, this 10 day of August, 2017.

Portland Trails

Kara Wooldrik
, Its Executive Director

STATE OF MAINE

COUNTY OF Cumberland

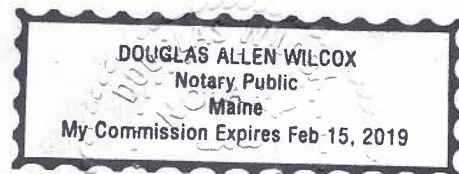
, 2008

Personally appeared Kara Wooldrik, Executive Director and authorized representative of the above-named Holder, Michael Burton, and acknowledged the foregoing instrument to be her free act and deed in her said capacity, and the free act and deed of said corporation.

Before me,

Douglas A. Wilcox
Notary Public

Douglas A. Wilcox
(Please type or print name of notary)
My commission expires:



***Recreation Trail Easement
On Land Of CAMELOT HOLDINGS, LLC,
City of Portland, Cumberland County, Maine***

Att. 5d

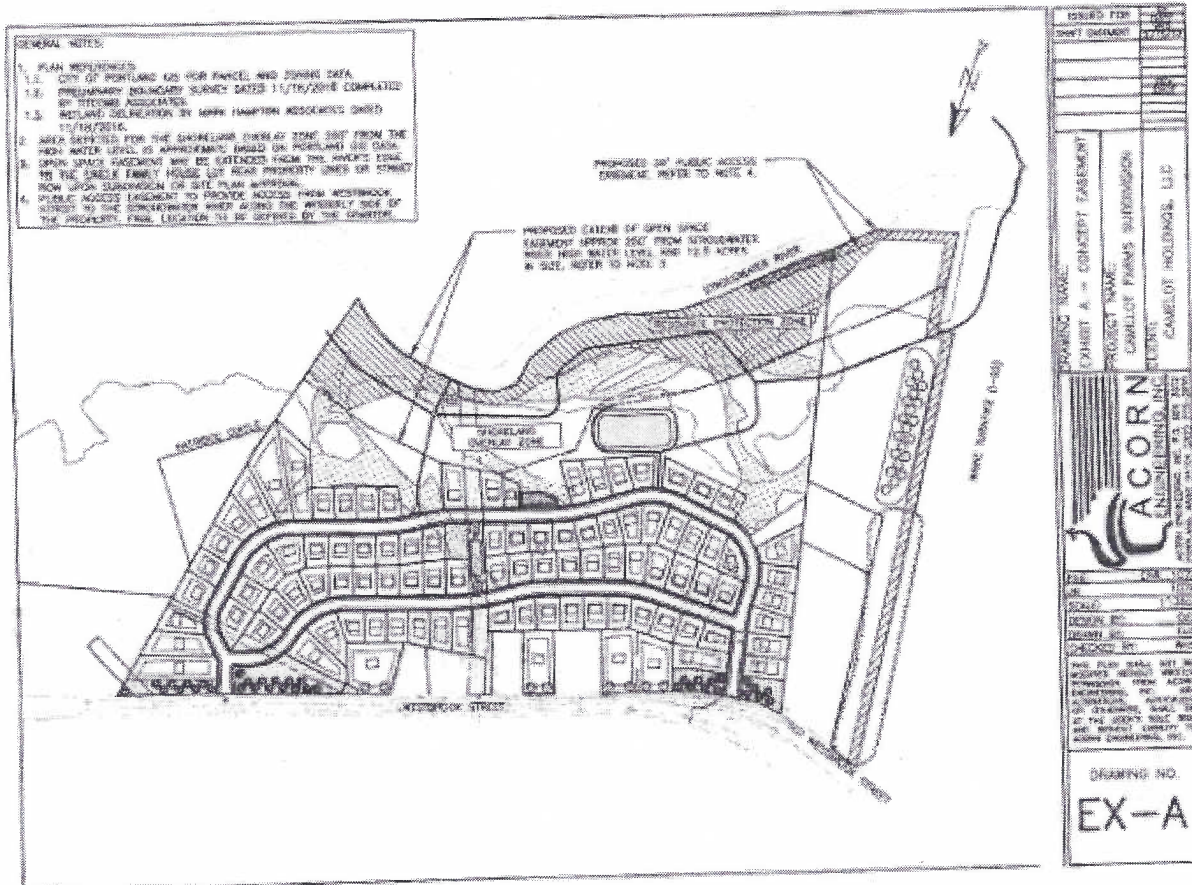
EXHIBIT A

Legal Description of the Trail Corridor

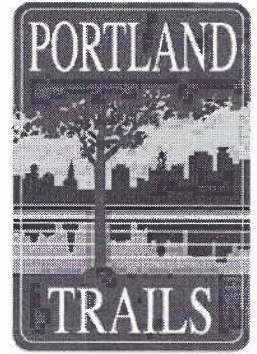
“Proposed 30’ Public Access Easement” in Exhibit A attached hereto (“Easement Area”), said actual traveled paths or surfaces to be determined by Portland Trails.

The proposed 30’ Public Access Easement extends northerly 30’ along the length of Stroudwater River to a point not greater than 300’ from the westerly bound.

EXHIBIT B



August 17, 2017



To Camelot Holdings, LLC:

Portland Trails agrees to hold the Recreation Trail Easement between Camelot Holdings, LLC and Portland Trails in escrow until after deed for the property at 1700 Westbrook Street is held by Camelot Holdings, LLC. At that time, we will take the easement to the Cumberland County Registry of Deeds to be recorded. If the sale of the property does not take place, the Recreation Trail Easement document will be destroyed.

Sincerely yours,

Kara Wooldrik
Kara Wooldrik
Executive Director

Officers

Wendy Suehrstedt, President
Kate O'Brien, Vice President
Matt Bahl, Treasurer
Rachael Alfond, Secretary
Rob Levin, President Emeritus

Trustees

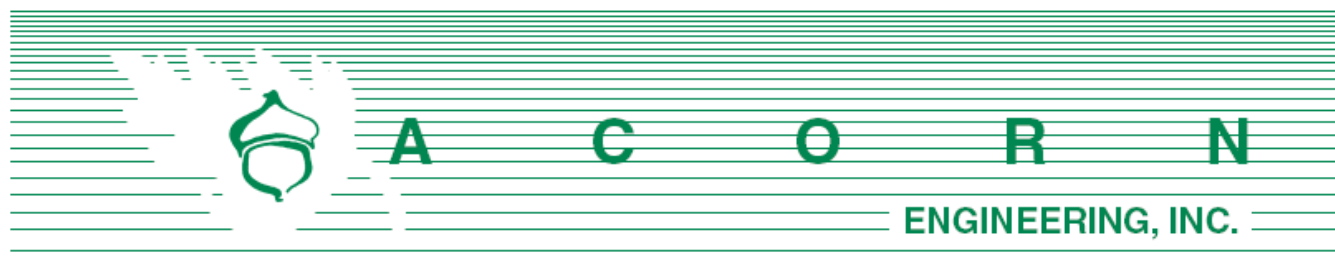
Andy Abrams
Mark Arienti
Jennifer Cutshall
Nate Dyer
Matthew Forsyth
Laura Greenstein
Bill Hall
Alex Jaegerman
Yvonne Mumme
John Osborn
Stephen Wells

Advisory Trustees

Colin Baker
Ellen Belknap
Roger Berle
Michael Brennan
Heather Chandler
Jim Cohen
Elizabeth Ehrenfeld
Tom Farmer
Stephen Gaal
Bruce Hyman
Tom Jewell, Co-Founder
Susy Kist
Bob Krug
Bree LaCasse
Wendell Large
David Littell
Burnham Martin
J. Peter Monro
Phil Poirier
Eliza Cope Nolan
Aurelia C. Scott
Nathan Smith, Co-Founder
Richard Spencer, Co-Founder
Phil Thompson
Lois Winter

Executive Director

Kara Wooldrik



Planning Division
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

August 25, 2017

Subject: Preliminary Site Plan and Subdivision Application
Stroudwater Preserve - Portland, Maine

Dear Planning Board & Staff,

Stroudwater Development Partners, LLC is pleased to submit the accompanying package of submission materials related to the proposed redevelopment of 1700 Westbrook St into a traditional single-family neighborhood with a townhouse development adjacent to the Maine Turnpike. Stroudwater Preserve includes ninety-eight single family house lots, one planned unit residential development (PRUD) lot that will include twenty-five townhomes, and one open space lot for a total of twenty-four acres of open space within the project limits. The single-family house lots will range in size between 6,500 sf to 20,000 sf. The Site Plan has been further refined from the R3/ROS Concept provided during the rezone phase to create a more intimate neighborhood while further minimizing and avoiding environmental impacts. The rezone provided the designer with the tools to implement these smart growth principals.

Stormwater quality and quantity will exceed the requirements set forth within the Maine Department of Environmental Protection Chapter 500 Rules. The stormwater runoff from new roadways and sidewalks will be treated by high-performance filtration systems before being redirected towards detention basins. The detention basins will provide stormwater flood control with the center basin designed to provide the community with an ice skating pond. Thirty-foot-wide landscape buffers are proposed along Westbrook Street within additional landscape buffers within the center of each of the loop roads. The project anticipates being completed over three phases starting with the single-family homes, followed by townhouses, and ending with the remaining single-family homes.

The development will include a minimum of 10% workforce housing units in accordance with Division 30, Affordable Housing of the Land Use Ordinance. This submission package is intended to meet the City's Preliminary Submission Requirements as outlined in the Level III Application procedures.

Stroudwater Development Partners, LLC and the design team look forward to your review of this project and are requesting to be placed on the next available workshop meeting with the Planning Board. If you have any questions regarding these materials or the completeness of the application materials, please contact us within the next five (5) days.

Sincerely,

William H. Savage, P.E.
Principal - Project Manager
Acorn Engineering, Inc.

Table of Contents

- Section 1: Development Description
- Section 2: Title, Right or Interest
- Section 3: Financial Capacity
- Section 4: Technical Ability
- Section 5: Noise
- Section 6: Visual Quality and Scenic Character
- Section 7: Wildlife and Fisheries
- Section 8: Historic Sites
- Section 9: Unusual Natural Areas
- Section 10: Buffers
- Section 11: Soils
- Section 12: Stormwater Management
- Section 13: Urban Impaired Stream Submissions
- Section 14: Basic Standards Submissions
- Section 15: Groundwater
- Section 16: Water Supply
- Section 17: Wastewater Disposal
- Section 18: Solid Waste
- Section 19: Flooding
- Section 20: Blasting
- Section 21: Air Emissions
- Section 22: Odors
- Section 23: Water Vapor
- Section 24: Sunlight
- Section 25: Notices
- Section 26: Fire Department Letter
- Section 27: Conformity with Applicable Zoning Standards
- Section 28: Utility Cover
- Section 29: Request for Waivers
- Section 30: Construction Management Plan
- Section 31: Conformity with Applicable Shoreland Overlay Standards

Attachment A: Civil Site Plan Set

Attachment B: Photometric Plan – By Swaney Lighting 8/18/17

Attachment C: Preliminary Renderings – By Ryan Senatore Architecture 8/22/17





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:	Stroudwater Preserve
Proposed Development Address:	1700 Westbrook Street, Portland ME, 04102
Project Description:	See Project Description Attached
Chart/Block/Lot:	229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3, 246-A-6, 247-A-2 and 245-B-5
Preliminary Plan	See Preliminary Plans Attached
Final Plan	Forthcoming

II. Contact Information (Please enter n/a on those fields that are not applicable)**APPLICANT**

Name:	Michael Barton
Business Name:	Stroudwater Development Partners, LLC
Address:	62 Portland Road, Suite 25
City/State:	Kennebunk, ME
Zip Code:	04043
Work #:	N/A
Home #:	N/A
Cell #:	207-939-5432
Fax #:	N/A
E-mail:	michael.cobett.barton@gmail.com

OWNER

Name:	Stroudwater Preserve
Address:	62 Portland Road, Suite 25
City/State:	Kennebunk, ME
Zip Code:	04043
Work #:	N/A
Home #:	N/A
Cell #:	207-939-5432
Fax #:	N/A
E-mail:	michael.corbett.barton@gmail.com

AGENT/REPRESENTATIVE

Name:	Acorn Engineering, Inc
Address:	P.O. Box 3372
City/State:	Portland, ME
Zip Code:	04104
Work #:	207-775-2655
Home #:	N/A
Cell #:	207-317-1884
Fax #:	N/A
E-mail:	wsavage@acorn-engineering.com

BILLING (to whom invoices will be forwarded to)

Name:	Stroudwater Development Partners, LLC
Address:	62 Portland Road, Suite 25
City/State:	Kennebunk, ME
Zip Code:	04043
Work #:	N/A
Home #:	N/A
Cell #:	207-939-5432
Fax #:	N/A
E-mail:	michael.corbett.barton@gmail.com

ENGINEER

Name:	Acorn Engineering, Inc
Address:	P.O. Box 3372
City/State:	Portland, Me
Zip Code:	04104
Work #:	207-775-2655
Home #:	N/A
Cell #:	207-317-1884
Fax #:	N/A
E-mail:	wsavage@acorn-engineering.com

SURVEYOR

Name:	David Titcomb, PLS, Titcomb Associates
Address:	133 Gray Road
City/State:	Falmouth, ME
Zip Code:	04105
Work #:	207-797-9199
Home #:	N/A
Cell #:	N/A
Fax #:	207-878-3142
E-mail:	dtitcomb@titcombsurvey.com

ARCHITECT

Name:	Ryan Senatore (PRUD Design)
Address:	565 Congress Street #304
City/State:	Portland, ME
Zip Code:	04104
Work #:	207-747-5159
Home #:	N/A
Cell #:	207-650-6414
Fax #:	N/A
E-mail:	ryan@senatorearchitecture.com

ATTORNEY

Name:	Jason Howe
Address:	62 Portland Road, Suite 25
City/State:	Kennebunk, ME
Zip Code:	04043
Work #:	207-985-7000
Home #:	N/A
Cell #:	N/A
Fax #:	N/A
E-mail:	jhowe@bergenparkinson.com

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Olivia Dawson
E-mail:	odawson@acorn-engineering.com
Name:	William Savage
E-mail:	wsavage@acorn-engineering.com
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 [124] x \$25.00 each	\$ 3,100
☒	Site Location	\$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [124] x \$200.00 each	\$ 24,800
☐	Change of Use	
☒	Flood Plain	
☒	Shoreland	
☒	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
TOTAL APPLICATION FEE DUE:		\$ 34,400

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	2,408,860	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	1,459,260	sq. ft.
<i>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.</i>		
IMPERVIOUS SURFACE AREA		
Impervious Area (Total Existing)	34,715	sq. ft.
Impervious Area (Total Proposed)	182,657	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	8,928	sq. ft.
Building Footprint (Total Proposed)	22,400 *	sq. ft.
Building Floor Area (Total Existing)	8,928	sq. ft.
Building Floor Area (Total Proposed)	44,800 *	sq. ft.
ZONING		
Existing	R3: Residential	
Proposed, if applicable		
LAND USE		
Existing	Residential	
Proposed	Residential	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)	1	
# of Residential Units (Total Proposed)	123	
# of Lots (Total Proposed)	99 + 1 open space	
# of Affordable Housing Units (Total Proposed)	12	
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)	0	
# of One-Bedroom Units (Total Proposed)	0	
# of Two-Bedroom Units (Total Proposed)	0	
# of Three-Bedroom Units (Total Proposed)	74	
# of Four-Bedroom Units (Total Proposed)	49	
PARKING SPACES		
# of Parking Spaces (Total Existing)	0	
# of Parking Spaces (Total Proposed)	40	
# of Handicapped Spaces (Total Proposed)	0	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	0	
ESTIMATED COST OF THE PROJECT		
	\$ 2,054,400	

* Numbers are based off PRUD only

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:	
Date:	08/22/2017

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
✓		1	Completed Application form
✓		1	Application fees
✓		1	Written description of project
✓		1	Evidence of right, title and interest
Forthcoming		1	Evidence of state and/or federal approvals, if applicable
✓		1	Written assessment of proposed project's compliance with applicable zoning requirements
✓		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
✓		1	Written requests for waivers from site plan or technical standards, if applicable.
✓		1	Evidence of financial and technical capacity
✓		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST
✓		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
✓		1	Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)
✓			Proposed grading and contours;
✓			Existing structures with distances from property line;
✓			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;
✓			Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);
TBD			Preliminary infrastructure improvements;
✓			Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
✓			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);
✓			Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
✓			Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
✓			Exterior building elevations.

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.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:		Stroudwater Preserve		6. Name of Agent (if applicable):		Acorn Engineering, Inc	
2. Applicant's Mailing Address:		62 Portland Rd., STE 25, Kennebunk		7. Agent's Mailing Address:		P.O. Box 3372 Portland, ME 04104	
3. Applicant's Daytime Phone #:		207-939-5432		8. Agent's Daytime Phone #:		207-775-2655	
4. Applicant's Fax # (if available):				9. Agent's Fax # (if available):		207-358-7979	
5. Applicant's e-mail address (REQUIRED -license will be sent via: e-mail):		michael.corbett.barton@gmail.com		10. Agent's e-mail address (REQUIRED - license will be sent via e-mail):		wsavage@acorn-engineering.com	

PROJECT INFORMATION

11. Name of Development:		Stroudwater Development Partners, LLC					
12. Map and Lot #'s:		Map #:	Lot #:	13. Deed Reference #'s:		Book #: 14598	Page #: 346
14. Location of Project City/Town:		Portland		15. County:	Cumberland	16. UTM Northing	4834782
						17. UTM Easting	393202
18. Brief Description of Project including total parcel size:		Redevelop the existing parcel into a traditional single-family development. The house lots will range in size between 6,500 sf to 20,000 sf. The parcel is 55.3 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:		Stroudwater River					
21. Amount of Developed Area:		Total acres: 55.3	Existing Developed area: * _____ acres		New Developed area: * _____ acres		
22. Amount of Impervious Area:		Total acres: 55.3	Existing Impervious areas 0.8 _____ acres		New Impervious area: * _____ 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 ☐ Full Permit ☐ Tier 2	
28. Existing DEP Permit number (if applicable):							
29. Names of DEP staff person(s) present at the pre-application meeting:							
30. Does agent have an interest in project? If yes, what is the interest?		☐ Yes ☒ No					

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

See Development Description (Section 1) for "*" information

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: _____ Title _____ Date: _____

**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: _____

Name (print): _____

Date: _____

Re/Cert/Lic No.: _____

Engineer _____

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

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: August 21, 2017

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

Site Address: 1700 Westbrook Street

Chart Block Lot Number: _____

Proposed Use: Residential

Previous Use: Farm

Existing Sanitary Flows: N/A GPD

Existing Process Flows: N/A GPD

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

Sewer on Westbrook Street.

Site Category	Commercial (<i>see part 4 below</i>)	☐
	Industrial (<i>complete part 5 below</i>)	☐
	Governmental	☐
	Residential	☒
	Other (<i>specify</i>)	☐

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: Stroudwater Development Partners, LLC

Owner/Developer Address: 62 Portland Road, Kennebunk ME, 04043

Phone: 207-939-5432 Fax: N/A E-mail: michael.corbett.barton@gmail.com

Engineering Consultant Name: Acorn Engineering, Inc

Engineering Consultant Address: P.O. Box 3372

Phone: 207-775-2655 Fax: N/A E-mail: wsavage@acorn-engineering.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: 38,250 GPD

Peaking Factor/ Peak Times: Peaking Factor: 4 / Peak Times: 6:00AM - 8:00 AM

Specify the source of design guidelines: (*i.e.* "Handbook of Subsurface Wastewater Disposal in Maine," "Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify) State of Maine Subsurface Wastewater Disposal Rules, Effective 8/13/15

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.

* See derivation of design flows attached

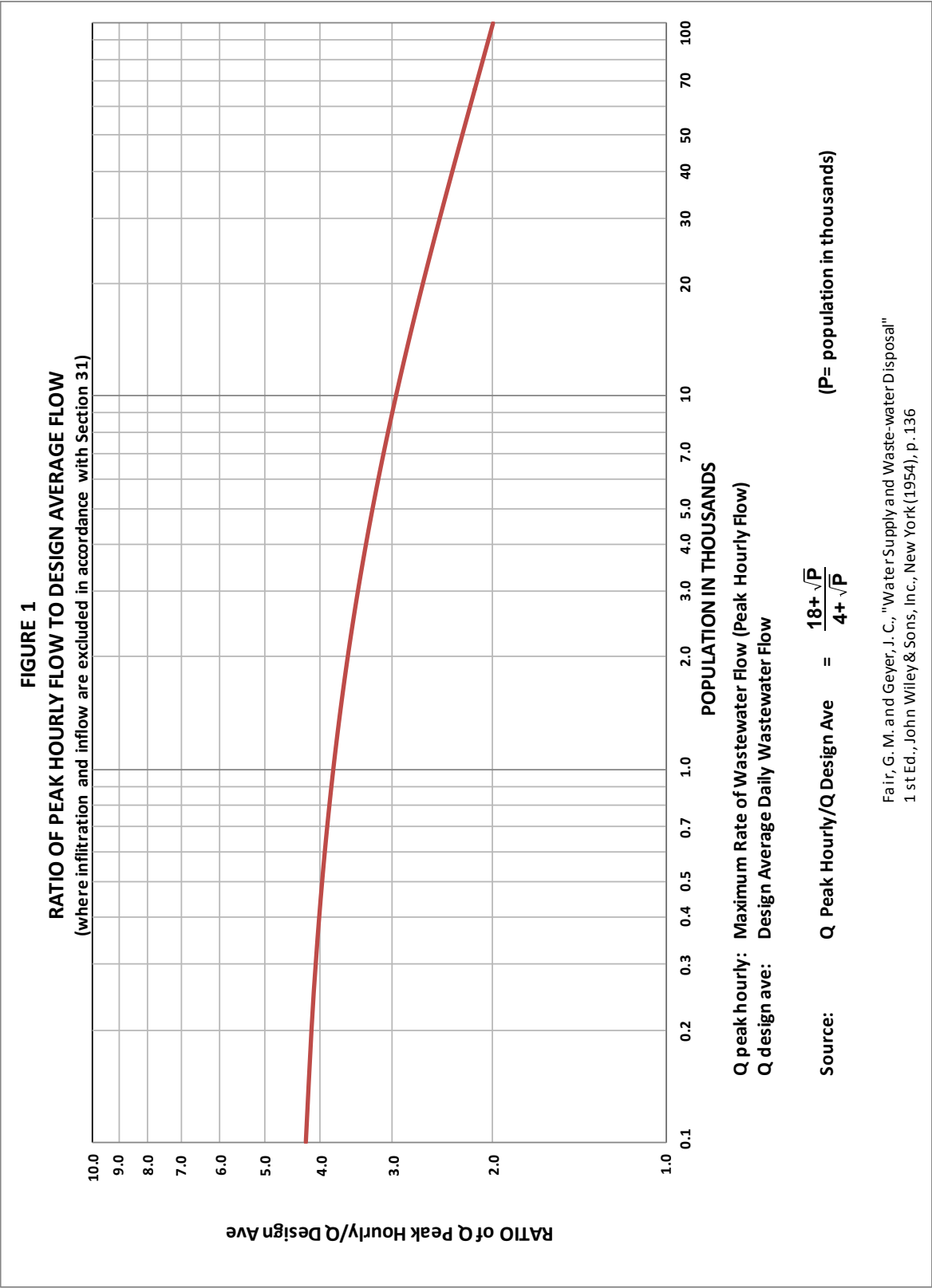
Total Drainage Fixture Unit (DFU) Values:	N/A
Size of External Grease Interceptor:	
Retention Time:	
Peaking Factor/ Peak Times:	

Calculation of Wastewater Flowrate for Stroudwater Preserve Subdivision

The proposed development will include up to 100 single-family housing lots along with a Planned Residential Unit Development (PRUD) area which would add another 25 units. Based upon the Section 4 of the Maine Subsurface Wastewater Disposal Rules, the project anticipates the following design flows on a daily basis:

Estimate of Anticipated Daily Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
None		0		
Proposed flow				
PRUD	3-Bedroom	25	270	6,750
Residential Units	3-Bedroom	50	270	13,500
Residential Units	4-Bedroom	50	360	18,000
Net Change				+ 38,250
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Sanitary wastewater from the development will be pumped to the existing 8-inch diameter gravity sewer line along Westbrook Street. Acorn estimates a peak hourly flowrate of 6,375 gallons entering the city sewer based on use of a peaking factor of 4.0 applied to the average daily flow quantity. The 4.0 peaking factor comes from Figure 1 in the 2014 edition of, *Recommended Standards for Wastewater Facilities*, published by the Great Lakes - Upper Mississippi River Board Of State And Provincial Public Health And Environmental Managers. Figure 1 plots the ratio of peak hourly flow to design average flow vs. population served. For the estimated 425 residents of the proposed development the factor is 4.0.



Section 2

Title, Right or Interest



2. Title, Right or Interest

The record owners of the parcels of interest are Onex Company by Deeds in Book 14598 and Page 346, Dated August 8, 2016, and Diversacorp by Deeds in Book 33834 and Page 269, Dated February 17, 2017. A copy of the Purchase And Sale Agreement for the Onex Company parcel and a copy of the Right To Information (RTI) for the Diversacorp parcel are included in this section.

ASSIGNMENT OF PURCHASE AND SALE AGREEMENT

CAMELOT HOLDINGS, LLC hereby assigns to **STROUDWATER DEVELOPMENT PARTNERS, LLC**. all of its right, title and interest in, to, and under a certain a Purchase & Sale Agreement, originally by and between seller Onex, Co. and buyer Diversacorp, LLC, all as amended by First Addendum to P&S (naming the undersigned as Buyer in place of Diversacorp) (all as amended the "P&S"), for real property located at 1700 Westbrook Street, Portland, Maine.

The undersigned Camelot Holdings, LLC, makes reference to the unilateral assignment provisions of the said P&S as the basis of assignability hereunder.

Dated at Kennebunk, Maine as of the 22rd day of August, 2017

CAMELOT HOLDINGS, LLC

By: 

Michael Barton, its Manager
Thereunto duly authorized

PURCHASE AND SALE AGREEMENT
(Real Estate)

Agreement made and entered into this day by and between ONEX CO., a/k/a Onex Company, a Maine business corporation having a mailing address of 399 Old Brunswick Rd., Bath, ME ("Seller") and DIVERSACORP, LLC, a Maine limited liability company having a mailing address of 5 Stone Pony Circle, Saco, ME, or its assigns ("Buyer"). In consideration of the mutual covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereby agree as follows:

1. **PURCHASE AND SALE OF PREMISES.** Seller agrees to sell and Buyer agrees to buy, on the terms and conditions hereinafter set forth, the land and buildings commonly known and designated as "Camelot Farm," located generally at 1700 Westbrook Street, Portland, Maine, and consisting of roughly 44.8 acres of real property, together with all improvements and fixtures thereon and all rights appurtenant thereto, being more particularly described in a Warranty Deed recorded in the Cumberland County Registry of Deeds in Book 14598, Page 346 (the "Deed") ("Premises" or "Property"). A copy of the deed is attached hereto as **EXHIBIT A** and made a part hereof. The description of the Premises in the Deed is understood to be general in nature and the description in the deed of conveyance contemplated herein shall be subject to approval by Buyer.

2. **PURCHASE PRICE.** Subject to any adjustments and prorations hereinafter described, Buyer agrees to pay for the Premises the sum of [REDACTED] payable as follows:

a. The sum of [REDACTED] as Deposit payable upon the signing of this Agreement by both parties ("Deposit"). This Deposit shall be held by ~~State of Maine~~ ("Escrow Agent") in a non-interest bearing account. It shall be applied as credit to the purchase price at closing or disposed of as set forth herein. In the event of a dispute over the return or forfeiture of any deposit held by the Escrow Agent, the Escrow Agent shall continue to hold the deposit until it has received a written release from the parties consenting to its disposition, or until a final order. Regardless of its representation of any party to this Agreement, Escrow Agent shall not, as Escrow Agent, have any responsibility or liability to any party beyond the proper disposition of the escrow funds actually paid over to it. All parties agree to indemnify and hold the Escrow Agent harmless from any and all costs, actions, failure to act, or payment or refusal to pay, so long as said actions are made in good faith and are not a result of willful misconduct, including any defense costs or attorney's fees. The Escrow Agent shall incur no liability in acting upon any signature, notice, request, waiver, consent or other document believed by the Escrow Agent to be genuine.

b. The BALANCE of the purchase price, the sum of [REDACTED] by bank check, wire transfer or equivalent, at the time of closing subject to adjustment and as set forth in the Prorations.

Onex Initials _____

Diversacorp _____

KD
8-15-16
ADL
8-18-16

3. **VESTING OF DEPOSIT.** The Deposit set forth in Section 3 above shall be refundable in full until the following occurrences, at which point, such portions of the deposit shall become non-refundable and shall vest in, and be released to, Seller: (a) [REDACTED] shall become non-refundable upon final approval of the subdivision plan by the City of Portland; (b) [REDACTED] shall become non-refundable upon satisfaction of the financing contingency set forth below.

4. **CLOSING.** The closing shall take place at the offices of Bergen & Parkinson, 62 Portland Road, Kennebunk, Maine within sixty (60) days after the later of: a) receipt of final subdivision approval from the City of Portland, or; b) satisfaction of any of the conditions precedent to buyers obligation to purchase set forth below. Notwithstanding the intended deadline set forth in the preceding sentence, Buyer and Seller agree that Buyer may extend the closing date up to sixty (60) additional days.

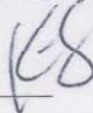
5. **TRANSFER OF TITLE.** Seller shall convey the Premises to Buyer at the closing in fee simple with good and marketable title, free and clear of liens and encumbrances, subject to the following:

a. Buyer shall have until thirty (30) days after the Effective Date to determine if title to the Premises is acceptable and notify Seller of the same. In the event that Buyer determines that Seller would be unable to convey title to the Premises as aforesaid and Buyer properly notifies Seller, then Seller shall have thirty (30) days notice from Buyer in which either to: notify Buyer that Seller via its own counsel shall remedy such title defects, to the satisfaction of Buyer's Counsel, at Seller's expense, or; notify Buyer that Seller shall reimburse Buyer at closing all Buyer's legal and other costs associated with remedying such title defects. If Seller fails to provide notice to Buyer within 30 days as set forth in the preceding sentence, then Seller hereby agrees that Buyer's costs of curing such title issues, including legal and other fees and costs, shall be offset against the purchase price at closing. Any period of time ninety (90) days after Seller received notice of a title defect, and the final recording or filing of any curative documents shall toll all deadlines and periods for any contingencies set forth anywhere in this agreement. In the event that said defects cannot be corrected or remedied within said time period to the satisfaction of Buyer's counsel, Buyer may terminate this Agreement by written notice to the parties and any non-vested portion of the Deposit shall be returned to Buyer. Buyer may, however, at its sole discretion elect to close notwithstanding such defects as may exist. Seller and Buyer understand and agree that any mortgages and liens on the Premises shall not be considered title defects provided that the same shall be discharged at or prior to the closing at Seller's expense. Seller may use purchase money proceeds for this purpose.

b. Seller agrees 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.

c. At the closing, Seller shall execute and deliver to Buyer, against payment of the purchase price, a Quitclaim Deed with Covenants to the Premises, in accordance

Onex Initials



Diversacorp



with the Short Form Deeds Act, 33 M.R.S.A. § 761 et seq., (the "Deed") together with a Bill of Sale for personal or intangible property, and such other rights as may be associated with the Property, if any. If Seller fails to execute and deliver a separate Bill of Sale or Assignments, then this Agreement shall be deemed to convey the same and this Provision survives closing, and in such instance, Seller hereby grants and assigns to Buyer all such personal property as of the date of Closing.

d. Seller further agrees to execute and deliver to Buyer at the closing such Affidavits and Certificates as are reasonably necessary for Buyer's acquisition and financing of the Premises, including without limitation a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations), an affidavit regarding underground storage tanks (as required by Maine Laws), and a title insurance "Seller's Affidavit" regarding mechanics liens and persons in possession.

e. Seller is a corporation and Seller certifies that it is duly authorized and validly existing under the Laws of the State of Maine and agrees to provide evidence satisfactory to Buyer of due organization, authority, and good standing, including an opinion of counsel evidencing the same, which opinion may be required at Buyer's sole discretion.

6. **CONDITION OF IMPROVEMENTS.** Improvements at the Premises shall be delivered to Buyer at closing in "broom clean" condition. The improvements shall be sold and conveyed strictly on an "as is", "where is" and "with all defects" basis. Notwithstanding the foregoing, Seller covenants that it has no knowledge that the improvements violate any federal, state, municipal or local statutes, laws, rules, regulations or ordinances, including, without limitation, those pertaining to land use (or permits issued in connection therewith), zoning, lead paint, urea formaldehyde foam insulation, asbestos, hazardous or toxic wastes or substances, pollutants, contaminants or other environmental matters. The provisions of this paragraph shall survive the Closing and delivery of the Deed (as hereinafter defined) or any expiration or termination of this Agreement.

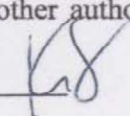
7. **RISK OF LOSS, DAMAGE AND INSURANCE.**

a. All risk of loss to the Premises prior to the closing shall be borne by Seller. Seller shall keep the Premises fully insured against fire and other extended coverage risks until the closing.

b. In the event that, prior to the closing, the improvements which are part of the Premises are destroyed or, in the opinion of Buyer, substantially damaged, Buyer may either (i) terminate this Agreement and receive back any non-vested earnest money deposit, or (ii) accept the insurance proceeds payable by reason of such damage, destruction or taking and close this transaction notwithstanding the same. Seller agrees and hereby assigns any proceeds payable pursuant hereto to Buyer, and shall name Buyer as an additional insured as Buyer's interest may appear.

8. **INSPECTION/DUE DILIGENCE.** So long as Buyer is accompanied by Seller's Broker or another authorized agent of the Broker and upon reasonable advance notice, Buyer

Onex Initials



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may enter into any part of the Premises at all reasonable times prior to the closing in order to inspect the Premises, conduct surveys, soil tests and engineering studies and to do such things as are reasonably necessary with respect to its acquisition, improvement or development of the Premises. Nothing in this paragraph shall limit the inspections necessary to complete due diligence and to meet any contingencies precedent to Buyer's obligation to close as set forth below. Except as otherwise set forth elsewhere in this Agreement, Buyer shall have one hundred twenty (120) days within which to complete general due diligence.

9. **POSSESSION OF THE PREMISES AND LEASES.** The Premises shall be delivered to the Buyer at the time of the closing free and clear of all tenancies or occupancies by any person or entity.

10. **REPRESENTATIONS AND WARRANTIES OF SELLER.** Seller represents and warrants to Buyer that the following are true as of the date of this Agreement and will be true as of the closing:

a. Seller has no knowledge, after reasonable investigation, that the Premises violates any applicable laws, ordinances, or regulations.

b. Seller has no knowledge, after reasonable investigation, that the Premises contains any special wastes, underground storage tanks urea-formaldehyde foam insulation, radon, asbestos containing materials, lead-based paint, waste oil, petroleum and any other hazardous, biomedical, radioactive or toxic, substances, materials or wastes. 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. Notwithstanding the foregoing, Seller believes there is or may have been an underground oil storage tank located in the front yard of the Premises, being further described in the Disclosure Form Delivered to Buyer.

c. There are no outstanding pending or threatened liens, claims, rights of first refusal, or encumbrances against the Premises.

d. All outstanding bills and/or accounts payable concerning the Premises are either paid or will be paid prior to or at the time of closing.

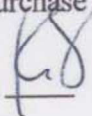
e. There are no outstanding claims, losses or demands against Seller by any tenant or other person respecting Seller's ownership, use and/or occupancy of the Premises.

f. There are no leases on the Premises.

g. No portion of the Premises is currently classified as Farm land or Tree Growth under applicable provisions of Title 36 M.R.S.A.

h. The Premises, is classified as Open Space the City of Portland and shall be withdrawn from such classification prior to or at closing at Seller's expense. Seller may use purchase money proceeds for this purpose.

Onex Initials



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i. To the best of Seller's knowledge, there are rights of ingress and egress in perpetuity from the Premises to public highways or roads for both vehicular and pedestrian traffic and utilities.

j. Seller has provided Buyer with a copy of a survey made by Nadeau & Lodge, Inc., dated Feb. 21, 2003 entitled "Plan Depicting the Results of a Standard Boundary Survey Made for Onex Company [sic], Southerly Sideline of Westbrook Street, Portland, Maine" (the "Onex Plan"). Other than encroachments listed on the Onex Plan, there are no known boundary disputes or other encroachments affecting the Premises. For the avoidance of doubt, Buyer's knowledge of encroachments on the Onex Plan is not a waiver of Buyer's right to require reasonable curative boundary work as a condition hereof.

k. Seller has transacted business under the name "Onex Co." as registered with the Maine Secretary of State, and also as "Onex Company," as identified in a certain deed by which it took title (CCRD Book 14598, Page 346), and Seller certifies that that "Onex Co." and "Onex Company" as listed on said deed are one and the same.

l. Seller shall obtain authorization from its shareholders to enter into this Agreement, and to take all actions required hereunder, and further, that any notices given in advance of such meeting for the approval of this agreement shall be timely and duly given in accordance with the Bylaws, and any other governing documents, of the Seller.

11. **DEFAULT AND REMEDIES.** Upon default by either party, the non-defaulting party shall have all rights and remedies available to it in equity or at law, including Buyer's right to specific performance under this Agreement.

12. **CONDITIONS PRECEDENT TO BUYER'S OBLIGATION TO CLOSE.** The obligation of Buyer to close is subject to the satisfaction at or before the closing of all of the following conditions:

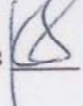
a. All representations and warranties of Seller contained in this Agreement shall be true as of the closing.

b. Buyer may, at its sole option, order its own survey of the Property, and any boundary encroachments, whether on Buyer's survey, or the Onex Plan, or otherwise, shall have been cured.

c. Buyer shall have determined within the timeframe set forth in Section 5 above that Seller can convey title in form and substance satisfactory to Buyer and Buyer's counsel.

[REDACTED] Effective Date, Buyer shall have satisfactorily completed all inspections, testing, permit applications, or other requirements necessary to receive subdivision approval ("Necessary Investigations"), it being understood that each such Necessary Investigation constitutes its own condition precedent.

Onex Initials



Diversacorp



Buyer shall have received final subdivision approval, granted in full and without any remaining contingencies to be fulfilled. In the event this condition is not met at the end [REDACTED] and provided further that Buyer has diligently pursued the same, then Buyer may extend this contingency deadline by [REDACTED] by giving Seller or its agents notice thereof, and paying to Seller an additional [REDACTED] which payment shall be in addition to the purchase price.

f. Within 60 days after final subdivision approval, Buyer shall have received financing for a mortgage loan in such amount and upon such terms and conditions as are satisfactory to Buyer.

g. Within the first 120 days after the Effective Date, Buyer shall have obtained an inspection of the Premises and determined them to be free of wetlands, endangered or threatened wildlife or plant habitats, coastal sand dunes, great ponds, rivers and streams and in compliance with all applicable laws, ordinances, and regulations. In the event the Premises or a portion thereof is determined to be in wetlands, etc. as described above, then so long as such condition does not materially or adversely impair the Buyer's development of the Premises then this condition shall be deemed satisfied.

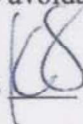
h. Within 90 days after the Effective Date, Buyer shall have obtained a general building inspection of any structures on the Premises disclosing the Premises to be structurally sound (except for a leak in the roof, some rot in the exterior wood on the house, and some rotten wood in the stable, all as disclosed to the Buyer) and in good repair and all of the mechanical systems, including without limitation, plumbing, heating, electrical, drainage, water, sewer/septic to be in working order and repair and adequate to serve the premises, all to the satisfaction of the Buyer.

i. Within the first 90 days after the Effective Date, Buyer shall have obtained an environmental site assessment of the Premises disclosing the Premises to be free of urea-formaldehyde foam insulation, hazardous substances, underground storage tanks (other than as disclosed by the Buyer on Seller's Property Disclosure), asbestos containing materials, lead-based paint, radon and special wastes. The terms used in the foregoing sentence shall have those meanings ascribed to them under Federal, State and/or Local Law.

j. Within 60 days after final subdivision approval, Buyer shall have obtained an appraisal of the Premises with a valuation equal to or greater than the purchase price hereunder.

k. Prior to closing, any action by any officer, director, or shareholder of Seller, or any other party claiming via rights to, through, or associated with Seller challenging this Agreement or the proposed sale or subdivision development contemplated hereunder shall thereafter toll all deadlines set forth herein, which deadlines shall remain tolled until either final settlement, bonding off, or final adjudication of such matter, which, for the avoidance of doubt, includes the passage of any appeals period.

Onex Initials



Diversacorp



1. Prior to closing, Seller shall have conducted necessary tests to locate the buried tank referenced in its disclosure, and shall have removed such tank at its sole expense in compliance with any applicable laws, evidence of which compliance is a condition precedent to closing.

13. **BROKERAGE.** Seller is responsible for the payment of all fees and commissions due any real estate brokers with respect to this transaction. Seller agrees to indemnify and hold Buyer harmless from any and all claims made by real estate brokers with respect to this transaction. This indemnity shall include all costs and expenses including attorney's fees incurred by Buyer in defense against any such claim, and shall include claims made post-closing.

14. **ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.**

a. Real estate taxes, assessments, rentals and utilities shall be prorated as of the closing.

b. The Maine real estate transfer tax shall be paid by Seller and Buyer in accordance with 36 M.R.S.A. § 4641-A.

c. The recording fee for the deed of conveyance will be paid by Buyer.

d. A portion of the purchase price shall be withheld at the closing by Buyer if required by 36 M.R.S.A. § 5250-A.

e. Utilities shall be prorated as of the closing date and Buyer shall reimburse Seller for any unused fuel oil or gas.

f. Seller shall pay any penalties due to the City of Portland which relate to Seller's removal of the Premises from any Open Space, Tree Growth, Farmland, or other such tax program set forth under Title 36 of the Maine Revised Statutes.

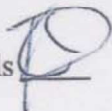
15. **CONFIDENTIALITY.** Seller and Buyer covenant and agree to keep confidential the terms of the transaction contemplated hereby and not to disclose to any person either the fact that discussions or negotiations are taking place (other than Buyer's lender or attorney) concerning the acquisition of the Property or the substance or status thereof, except as is necessary to perform obligations pursuant hereto.

16. **MISCELLANEOUS.** The parties further agree as follows:

a. **Binding Agreement / Assignment.** This Agreement shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, legal representatives, successors, and assigns. Buyer reserves the right to assign this Agreement to an entity to be formed.

b. **Joint & Several.** Seller shall refer to each selling party as their interests

Onex Initials



Diversacorp



appear but each Seller shall be responsible for all warranties and representation on a joint and several basis.

c. Amendment. This Agreement shall not be changed in any respect except by written instrument signed by the parties hereto.

d. Governing Law / Jurisdiction. This Agreement and all rights and obligations hereunder, including matters of construction, validity, and performance, shall be governed by the laws of the State of Maine and parties recognize Maine as the courts of Cumberland County having sole forum having jurisdiction hereover.

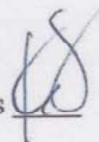
e. Severability. If any term, condition, or provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be held invalid or unenforceable according to the law, then the remaining terms, conditions, and provisions of his Agreement, or the application of any such invalid or unenforceable terms, condition or provision to persons or circumstances other than those to which it is held invalid or unenforceable shall not be affected thereby, and each term, condition, and provision of this Agreement shall be valid and enforced to the fullest extent permitted by law.

f. Headings. The descriptive headings of the sections of this Agreement have been inserted for the convenience and reference only and shall not control or affect the meaning or construction of any of the contents hereof.

g. Integration. This Agreement may be executed in multiple originals and embodies the entire understanding of the parties. All prior discussions and representations are merged herein.

h. Notice. Any demand or notice required or permitted hereunder, shall be effective if either: (i) hand-delivered to the addressee, or (ii) deposited in the mail, registered or certified, return receipt requested and postage prepaid, or delivered to a private express company addressed to the addressee: (A) at the address shown below, or (B) if such party has provided the other in writing with a change of address, at the last address so provided. Any notice or demand mailed as provided in this paragraph shall be deemed given and received on the earlier of: (i) the date received, or; (ii) the dated of delivery, refusal or non-delivery as indicated on the return receipt, if sent by mail or private express as provided above. All notices required to be given, or which may be given hereunder, shall be in writing and if mailed, shall be sent by mail to the party to be notified as follows:

Onex Initials



Diversacorp



Seller: Onex Co.
Attn: Kerrin Dorne.
68 Old Farm Road
Newton, MA 02459

With a copy to:
Alexandra E. Caulfield
Drummond Woodsum
84 Marginal Way, Suite 600
Portland, Maine 04101-2480

Buyer: Diversacorp, LLC
Attn: Nate Libby
5 Stone Pony Cir.
Saco, ME 04072

With Mandatory Copy To:
Jason G. Howe, Esq.
Bergen & Parkinson, LLC
62 Portland Road, Suite 25
Kennebunk, ME 04043

or to such other addresses as one party may from time to time hereafter designate by like notice to the other.

i. Gender and Number. All words denoting gender or number shall be construed to include any other gender or number as the context and facts require.

j. Survival / Merger. All representations of Seller survive closing unless extinguished in writing by agreement of the parties signed at closing. For the avoidance of doubt, acceptance of the Deed by Buyer does not merge the provisions of this Agreement or satisfies all obligations and representations of Seller.

k. Time. Time is of the essence in this Agreement.

l. Survey. Survey means a map of a staked survey of the Real Property and Improvements constituting the Property prepared by a surveyor who prepared one or both of the Existing Surveys (as defined herein), such Survey to comply with the ALTA/ACSM Survey Requirements 1999 for ALTA/ACSM land title surveys jointly established and adopted in 1999, by the American Land Title Association, American Congress on Surveying and Mapping, and the National Society of Professional Engineers, including optional items 1, 2, 3, 4, 6, 7, 8, 9, 19 and 11 of Table "A" thereof, which meets the accuracy standards (as adopted by ALTA and ACSM and in effect on the date of the Survey), or a state standard which is comparable to the foregoing ALTA/ACSM standard.

Onex Initials



Diversacorp



m. Professional Advice. Each party hereby acknowledges that they have read and understand this Agreement and have had an opportunity to obtain professional advice regarding the same.

n. Recording. Buyer reserves the right to record a memorandum of this agreement at the Cumberland County Registry of Deeds at its expense, and Seller agrees to sign a memorandum hereof.

o. Authority. Seller warrants and represents that it / they have full authority to execute this Agreement and perform all obligations contained herein. All such actions have been properly authorized by any required votes and the party signing on behalf of Seller is duly appointed to so act in said capacity to make this Agreement binding upon Seller.

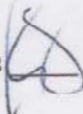
p. Signatures/Counterparts. Facsimile or Electronic Signatures shall be deemed to be and treated as originals. This agreement may be signed in counterpart, the combination of which counterparts constitutes a binding final agreement.

q. Improvident Transfers. Seller warrants and represents that they have fully complied with the Improvident Transfer Act and that this Agreement is enforceable pursuant to the provisions thereof.

17. **AGREEMENT OF ESCROW AGENT.** In the event of any dispute regarding the disposition of the escrowed funds held by Escrow Agent, Escrow Agent shall have the right to deliver said funds to a court of competent jurisdiction and commence an interpleader action to determine the proper disposition of said funds. Seller and Buyer agree to reimburse Escrow Agent for all expenses incurred by Escrow Agent in the interpleader action, including, without limitation, attorney's fees. Seller and Buyer further agree to hold Escrow Agent harmless for any action taken in good faith pursuant to the terms of this Agreement.

(Signatures Below)

Onex Initials



Diversacorp



IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement as of this
day of August 2016 ("Effective Date").

ONEX CO.
("Seller")

Witness Kevin Capen

By: [Signature]

Print Name: Kerrin Dorne.
Its: Secretary
Thereunto Duly Authorized

DIVERSACORP, LLC
("Buyer")

Witness [Signature]

By: [Signature]

Nate Libby, its Manager
Thereunto Duly Authorized

Nate Libby
(President)

(Exhibit A Below)

Onex Initials [Signature]

Diversacorp [Signature]

EXHIBIT A

MAINE REAL ESTATE TAX PAID

P 10211 - Warranty deed, warranty deed form, 10-03

BK14598P6366

0017208

Warranty Deed

Peter J. Rogers and Mary K. Rogers
of Portland
Cumberland, County
(being married), for consideration paid,
grant to Onex Company, A Maine Corporation with a principal place of business
at 440 Forest Avenue
Portland, Cumberland, County
with Warranty Covenants,
the land in Portland
Cumberland, County, Maine.

See Exhibit A attached hereto and made a part hereof.

Witness our hands and seals this fourth day of March 1999

Peter J. Rogers
Peter J. Rogers

Mary K. Rogers
Mary K. Rogers

State of Maine, County of _____

Then personally appeared the above named Peter J. Rogers and Mary K. Rogers
and acknowledged the foregoing instruments to be their free act and deed.

Before me, Rachel Davis

☐ Justice of the Peace
☐ Attorney at Law
☒ Notary Public

RACHEL DAVIS
NOTARY PUBLIC MAINE
MY COMMISSION EXPIRES MARCH 31, 2001

Onex Initials

Diversacorp

BK 14598PG347

EXHIBIT A

A certain lot or parcel of land, together with the buildings thereon, situated in Portland, in the County of Cumberland and State of Maine, in that part of Portland which was formerly Deering, on the southerly side of the road leading from Stroudwater Village, so-called, to Westbrook formerly called Saccarappa; being all and the same property which was conveyed to Allura S. Castner by Rufus T. Boothby and Frank P. Tibbetts, et als., by their deeds of warranty dated March 11, 1899, as recorded in Cumberland County Registry of Deeds in Book 671, Pages 424 and 425, said property being bounded and described in said deeds as follows:

Northerly by said road, easterly by land now or formerly of N.H. Dole and land of the heirs of M. Quimby, southerly by the Stroudwater River and westerly by land now or formerly of Royal Burnham, containing forty-eight (48) acres, more or less, reference being made to said deeds and the record thereof for a more particular description of the premises.

Excepting from the above described premises those parcels of land conveyed by the grantor by the following conveyances: On June 7, 1938 to Carroll E. Hackett, recorded in Cumberland County Registry of Deeds in Book 1548, Page 418; on April 25, 1949 to Granville F. Allen et al., recorded in said Registry of Deeds in Book 1952, Page 354; on May 28, 1954 to Portland Water District recorded in said Registry of Deeds in Book 2198, Page 386; on July 14, 1955 to Frederick A. Butts et al., recorded in said Registry of Deeds in Book 2236, Page 405; on November 4, 1956 to Rosamond J. Allen, recorded in said Registry of Deeds in Book 2325, Page 358; on November 14, 1957 to Rosamond J. Allen, recorded in said Registry of Deeds in Book 2386, Page 205.

This conveyance is made subject to a right of way over the above described land taken by the Portland Pipe Line Corporation by condemnation proceedings and recorded in Cumberland County Registry of Deeds in Book 1655, Page 294 to which reference is hereby made.

This conveyance is also subject to an easement granted to the Portland Water District recorded in the Cumberland County Registry of Deeds in Book 1399, Page 462 to which reference is hereby made.

This conveyance is also made subject to an easement for a sewer pipe granted to Frederick A. Butts et al. in deed recorded in Cumberland County Registry of Deeds in Book 2236, Page 405.

Also excepting and reserving from the above described premises another certain lot or parcel of land adjoining and to the south of land of Lillian E. Hackett, formerly of Carroll E. Hackett mentioned above. Said lot or parcel of land being bounded and described as follows: Beginning at the southwest corner of said Hackett land; thence southerly projecting the line marking the western boundary of the said Hackett land and which projection would form a 90 degree angle with said Westbrook Street, one hundred (100) feet to an iron stake; thence at an angle of 90 degrees 46' easterly ninety-seven and sixty-two hundredths (97.62) feet to an iron stake; thence northerly one hundred (100) feet to a stake at the southeasterly corner of said Hackett land; thence westerly ninety-seven and sixty-two hundredths (97.62) feet along southern boundary of said Hackett land to the point of beginning.

Meaning and intending to convey and hereby conveying the same premises conveyed to the Grantors by deed of Ruby H. Young dated October 27, 1960, recorded in the Cumberland County Registry of Deeds in Book 2574, Page 161.

RECEIVED
RECORDED REGISTRY OF DEEDS

1999 MAR -9 PM 3:27

CUMBERLAND COUNTY

John B. O'Brien

M.H.R.
P.J.D.

Onex Initials

Diversacorp

Deed for Lots: 246-A-6, 247-A-2, 245-B-5

After recording return to:

Jason G. Howe, Esq.
Bergen & Parkinson, LLC
62 Portland Road, Suite 25
Kennebunk, ME 04043

Space Above This Line For Recording Data

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, that **JUDITH A. CAMINITI**, f/k/a Judith C. Green, having a mailing address of 67 Goose Cove Road, Trenton, ME 04605, FOR CONSIDERATION PAID, hereby grants to **DIVERSACORP, LLC**, a Maine limited liability company whose mailing address is 5 Stone Pony Circle, Saco, Maine, with Warranty Covenants, a certain lot or parcel of land, together with any improvements thereon and all rights appurtenant thereto, commonly know and designated as 1714 Westbrook Street, Portland, Maine; being more particularly described as follows:

SEE EXHIBIT A ATTACHED HERETO AND
INCORPORATED HEREIN BY REFERENCE

IN WITNESS WHEREOF, Judith A. Caminiti, f/k/a Judith C. Green, has hereunder set her hand and seal as of this _____ day of February, 2017.

WITNESS

Judith A. Caminiti

STATE OF MAINE

_____ County, ss.

Date: _____

Personally appeared the above-named Judith A. Caminiti, being formerly known as Judith C. Green, and acknowledged the foregoing instrument to be her free act and deed.

Before me,

Attorney at Law / Notary Public

Print: _____

[SEAL]

(Exhibit A Below)

EXHIBIT A
(1714 Westbrook St., Portland)

A certain lot or parcel of land, situated in Portland, Cumberland County, Maine and bounded and described as follows:

BEGINNING on the southeasterly side of Westbrook Street at a fir stump marked at the corner of land now or formerly of one Leavitt;

THENCE southeasterly by said Westbrook Street, ten (10) chains and sixty-three (63) links to land formerly of Solomon Conant, et als;

THENCE southerly by said Conant land twenty (20) chains eighty-seven (87) links to the Stroudwater River, across said river to land formerly of James Trickey, et als;

THENCE westerly by said River by said Trickey land and land formerly of George B. Leavitt to a stake;

THENCE by Leavitt land North 12° East (subject to variations since established) twenty-seven (27) chains and ninety-two (92) links to the first mentioned bounds, containing thirty (30) acres, more or less.

Excepting from the above-described premises those portions conveyed to Maine Turnpike Authority by Maurice S. Tomlinson, et al, by deed dated February 11, 1954, and recorded in the Cumberland County Registry of Deeds in Book 2166, Page 135; and by deed dated September 2, 1954, and recorded in said Registry of Deeds in Book 2166, Page 135.

Excepting from the above-described premises the parcel with a house thereon conveyed to Andrew D. Green and Judith C. Green by deed dated March 4, 1994, and recorded in the Cumberland County Registry of Deeds in Book 11319, Page 55.

Excepting from the above-described premises the 1 acre parcel conveyed to Andrew D. Green by deed dated December 20, 2004, and recorded in the Cumberland County Registry of Deeds in Book 22163, Page 81. Regarding this exception, further reference is made to a certain Agreement Concerning Marital Property recorded in said Registry in Book 22163, Page 80, and a certain Abstract of Divorce recorded in said Registry in Book 22735, Page 32.

After recording return to:
Jason G. Howe, Esq. *SM*
Bergen & Parkinson, LLC
62 Portland Road, Suite 25
Kennebunk, ME 04043

Doc#: 8080 Bk:33834 Pg: 269

Space Above This Line For Recording Data

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, that **JUDITH A. CAMINITI**, f/k/a Judith C. Green, having a mailing address of 67 Goose Cove Road, Trenton, ME 04605, FOR CONSIDERATION PAID, hereby grants to **DIVERSACORP, LLC**, a Maine limited liability company whose mailing address is 5 Stone Pony Circle, Saco, Maine, with Warranty Covenants, a certain lot or parcel of land, together with any improvements thereon and all rights appurtenant thereto, commonly know and designated as 1714 Westbrook Street, Portland, Maine; being more particularly described as follows:

SEE EXHIBIT A ATTACHED HERETO AND
INCORPORATED HEREIN BY REFERENCE

IN WITNESS WHEREOF, Judith A. Caminiti, f/k/a Judith C. Green, has hereunder set her hand and seal as of this 17 day of February, 2017.

WITNESS

Judith A. Caminiti
Judith A. Caminiti

STATE OF MAINE

York County, ss.

Date: 2/17/17

Personally appeared the above-named Judith A. Caminiti, being formerly known as Judith C. Green, and acknowledged the foregoing instrument to be her free act and deed.

Before me,

Jason G. Howe
Attorney at Law / Notary Public

Print:

[SEAL]

Jason G. Howe
ATTORNEY AT LAW

(Exhibit A Below)

MAINE REAL ESTATE TAX PAID

EXHIBIT A
(1714 Westbrook St., Portland)

A certain lot or parcel of land, situated in Portland, Cumberland County, Maine and bounded and described as follows:

BEGINNING on the southeasterly side of Westbrook Street at a fir stump marked at the corner of land now or formerly of one Leavitt;

THENCE southeasterly by said Westbrook Street, ten (10) chains and sixty-three (63) links to land formerly of Solomon Conant, et als;

THENCE southerly by said Conant land twenty (20) chains eighty-seven (87) links to the Stroudwater River, across said river to land formerly of James Trickey, et als;

THENCE westerly by said River by said Trickey land and land formerly of George B. Leavitt to a stake;

THENCE by Leavitt land North 12° East (subject to variations since established) twenty-seven (27) chains and ninety-two (92) links to the first mentioned bounds, containing thirty (30) acres, more or less.

Excepting from the above-described premises those portions conveyed to Maine Turnpike Authority by Maurice S. Tomlinson, et al, by deed dated February 11, 1954, and recorded in the Cumberland County Registry of Deeds in Book 2166, Page 135; and by deed dated September 2, 1954, and recorded in said Registry of Deeds in Book 2166, Page 135.

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Received
Recorded Register of Deeds
Feb 21, 2017 09:42:37A
Cumberland County
Nancy A. Lane

Section 3

Financial Capacity



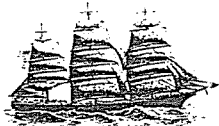
3. Financial Capacity

A. Estimated Costs

The anticipated cost of the proposed development is approximately \$2,054,400. The cost does not include mobilization or permit fees. The cost includes roadways, sidewalks and infrastructure to serve the proposed residential development.

B. Financing

A letter from the Applicant's bank conforming financial capacity is attached to this section.



Benj. F. Packard

Bath Savings Institution

Since 1852

August 18, 2017

City of Portland, Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

RE: Stroudwater Development Partners, LLC

To Whom It May Concern:

JHR Development, LLC is an established customer of Bath Savings Institution through several LLC's which it controls. JHR Development, LLC will be the managing member of Stroudwater Development Partners, LLC. Based on our review of the proposed project Stroudwater Development Partners, LLC and its members provide the experience, knowledge and financial capacity to develop the proposed project located at 1700 Westbrook Street in Portland, Maine.

Should you need further information or clarification, please feel free to contact me at (207) 442-7711.

Sincerely,

Theresa B. Hodge
Senior Vice President, Commercial Lending

Section 4

Technical Ability



4. Technical Ability

A. Prior Experience

Stroudwater Development Partners, LLC intends to hire qualified, experienced, and local contractors, consultants, and engineers to effectively deliver a quality product. All contractors will be properly insured and capitalized for the work required. Stroudwater Development Partners, LLC will be considering excavation contractors that have managed and effectively executed larger municipal utility projects, large commercial projects, and residential subdivisions to a high standard. The principals of Stroudwater Development Partners, LLC, Mike Barton, Hilary Rockett, and Nate Libby have overseen the construction of previous large scale residential projects including (Bath Riverwalk Residences, Brunswick Station Apartments, Orchard Estates & Rowley Housing Subdivision) in (Primarily Maine and Massachusetts). They have also overseen large commercial and mixed-use projects from start to completion.

Acorn Engineering, Inc. is a multi-discipline engineering firm established in 1988. Resumes for the following people have been included for reference:

Acorn Engineering has provided civil engineering services for numerous clients with diverse projects over the past decade. Acorn has proved engineering competency for projects including:

- Civil Engineering
- Environmental Engineering
- Site & Landscaping Design
- Permitting
- Stormwater Design & Retrofit
- Watershed Restoration
- Construction Administration
- Stormwater & Erosion Control Inspections

B. Personnel

Please see the attached resumes which outlines the following key personnel and their technical abilities.

Mike Barton, LEED AP - Stroudwater Development Partners, LLC

Hilary Rockett – Stroudwater Development Partners, LLC

Will Savage, PE – Acorn Engineering

Mark Arienti, PE – Acorn Engineering

Professional Work History Profile

Successfully secured and/or managed more than \$200 million in capital projects primarily in the greater Portland area. In addition to professional engagements, opportunities to serve as guest lecturer, adjunct faculty, and continuing education instructor fulfill a need to passionately engage others in the construction and real estate industries.

- Contract Negotiation
- Project Management
- Value Management
- LEED Process
- Preconstruction Management
- Constructability Review
- Cost Estimating
- Subcontractor Management
- Relationship Building
- Corporate Standards Compliance

Professional Accomplishments – Capital Projects Completed as Congress Group of Maine, LLC

Institutional Projects

- *Woodford's Family Services, Westbrook, ME – Training Facility Renovation/Addition – Cost Estimator*
- *Laura Foundation – Adaptive Education Center and Multi Purpose Barn, Madison, NH – Owner's Representative and volunteer framing carpenter – Completed March 2016*

Commercial Projects

- *MEMIC Office Renovations, Portland, ME – Ongoing – Master Scheduling Consultant*
- *CIEE Office Renovations, Portland, ME – Completed March 2016 – Value and Constructability Consultant*
- *Kepware Office Renovations, Portland, ME – Ongoing - Value and Constructability Consultant*

Hospitality Projects

- *Hotel & Tavern at Brunswick Station, Brunswick, ME – Capital Improvements – Owner's Representative*
- *Tomaso's Canteen, Portland, ME – 50 seat restaurant – Owner's Representative/General Contractor*
- *Tiqa Restaurant, Portland, ME – 300 seat restaurant fit out – Owner's Representative – Completed January 2015*

Multi-Family Housing Projects

- *Residences at Brunswick Station – Brunswick, ME – 24 market rate apartment units – Owner's Representative - Ongoing*
 - *Lincoln Mill, Biddeford, ME - redevelopment of 250,000 square foot mill – Owner's Representative – Ongoing*
 - *Riverwalk Residences, Bath, ME - 35 unit condominium development – Owner's Representative – Ongoing*
 - *Harborside Condominiums, Portland, ME – 14 condominium customizations and kitchens – Owner's Representative – Completed December 2015*
-

Residential Projects

- 78 Lincoln Street, Portland ME – Single family home renovations – gut rehab - Ongoing
- 184 Congress Street, Portland, ME – 3 unit apartment renovations into market rate product, Completed March 2013
- 88 Sheridan Street, Portland, ME – 2 unit apartment renovations, Completed December 2013.
- 15 Mackworth Street, Portland, ME – Kitchen and bathroom renovations – Completed March 2016
- 31 Carriage Lane, Cumberland Foreside, ME – basement in law suite conversion – Completed December 2014

*Projects completed as an employee of Wright-Ryan Construction, Inc. provided under separate cover.

Work History

Owner/Operator	Congress Group of Maine, LLC	August 2014-Present
Preconstruction Manager	Wright-Ryan Construction, Inc.	January 2009-June 2014
Project Manager	Wright-Ryan Construction, Inc.	April 2007-January 2009
Field Superintendent	Wright-Ryan Construction, Inc.	April 2005-April 2007
Assistant Field Superintendent	Wright-Ryan Construction, Inc	August 2004-April 2005

Education

B.S Construction Science & Management. Magna Cum Laude	Clemson University, Clemson, SC	May 2004
---	---------------------------------	----------

Affiliations

Maine Real Estate & Development Association, Member
Portland Society for Architecture, Member
US Green Building Council, Maine Chapter, Member
University of Southern Maine, Construction Management Advisory Committee & former Adjunct Professor
GPRO (Green Professional) Building Skills Training, Instructor
Efficiency Maine Construction Management Training, Instructor
Seeds of Independence, Volunteer

References

References are available upon request.

Project Listing for Michael Barton

207-939-5432

184 Congress Street Portland, ME 04101

michael.corbett.barton@gmail.com

Wright-Ryan Construction, Inc. Project Experience

Estimating/Preconstruction
2009-2014

- MidCoast Medical Office Building, Bath, ME. 22,000 sft Medical Office Building.
- Press Hotel, Portland, ME. Historic Hotel Conversion.
- Munjoy Heights, Portland, ME. 29 unit market rate townhouse
- Pen Bay Hospice House, Rockport, ME. Seven suite hospice care center
- Mayo Mill, Dover-Foxcroft, ME. 24 apartments, 10 hotel rooms, offices, café, and data center,
- Falmouth Middle School, Roof & Window Replacement, Falmouth, ME.
- TruChoice Park Ave, Portland, ME. Phased, occupied bank renovation.
- Agren Appliance, Topsham, ME. 14,000 sft retail showroom.
- Group Main Stream, Portland, ME. Five bedroom overnight facility for special needs residents. Prototype development.
- Riverside Apartments, Brunswick, ME. Life Safety and exterior egress rehab for 48 unit apartment complex.
- Preble Street Soup Kitchen, Portland, ME. Occupied flooring replacement.
- Drummond Woodsum Offices, Portland, ME. 6,000 sft legal office renovations.
- Leblanc & Young Offices, Portland, ME. 9,000 sft legal office renovations.
- Sheraton Harborside 3rd floor PIP, Portsmouth, NH. 58 room upgrade and ADA conversions.
- 5 Guys Burgers & Fries. Multiple restaurant build outs in Maine.
- Mechanic Savings Bank, Brunswick, ME. 2,200 sft branch renovations.
- Dead River Offices, South Portland, ME. 4,000 sft office renovations.
- Preble Street Teen Shelter, Portland, ME. 14,000 sft overnight facility and offices.
- Diversified Communications, Portland, ME. 42,000 sft phased office renovations.
- Fresenius Medical, Portland, ME. 4,000 sft medical office/dialysis renovations.
- Sanford Mills, Sanford, ME. 60,000 sft, mixed use.
- Maine Nephrology Associates, Portland, ME. 10,000 sft medical office renovations.
- Cumberland County Federal Credit Union, Falmouth Maine. 3,200 sft addition/renovation.
- Maine College of Art, Portland, ME – Annual rolling renovations since 2008
- Colonial Inn, Ogunquit, ME. 52,000 sft, 57 room historic renovation.
- Agren Appliance, South Portland, ME. 7,000 sft showroom renovations.
- Elm Terrace, Portland, ME. 48,000 sft, 38 unit multifamily.
- Pearl Place II, Portland, ME. 71,000 sft, 54 unit multifamily.
- TruChoice Credit Union, Portland, ME. 8,000 sft operations center.
- 43 Baxter Blvd, Portland, ME. 24,000 sft Gut/Rehab and medical office renovations.
- One Monument Square, Portland, ME - Multiple projects within 10 story office tower
- Maine Street Station – Building 4, Brunswick, ME. 20,000 sft new construction medical office building.
- Portland House, Portland, ME – New entrance pavilion.
- Inn at Brunswick Station, Brunswick, ME. 55 room boutique hotel.
- Ocean Park Meadows, Old Orchard Beach, ME. 94 unit exterior retrofit.
- Maine Medical Center, Portland, ME. Multiple renovation projects totaling more than

- Hampton Inn, Exeter, NH. 111 room inn.
- Prudential Insurance Offices, Portland, ME. 8,000 sft office renovation.
- Hedge & Roger Williams Hall, Bates College, Lewiston, ME. Rehab/Conversion of (2) original campus buildings.
- 216-218 Main Street, Rockland, ME. 8,400 sft Retail/Office/Residential renovations.
- Robie-Andrews Hall Renovations, Gorham, ME. Art education classroom renovations.
- Southern Maine Community College, South Portland, ME. Multiple summer renovation projects.
- Bowdoin College Summer Projects, Brunswick, ME. Multiple summer renovation projects.
- Deering Pavilion, Portland, ME. 200,000 sft, 200 apartment deep energy retrofit
- Peabody Center, Portland, ME. 6,000 sft office renovations.
- Intermed Offices, Portland, ME. Exam and X-Ray room renovations.

Project Management

2007-2009

- LEED Gold Wishcamper Center, University of Southern Maine (USM), Portland, ME. 55,000 sft new construction featuring geothermal, a green roof, and complicated curtainwall system.
- LEED Silver Osher Map Library, University of Southern Maine (USM), Portland, ME. Oversaw the new construction and tie-in to the existing building while on an occupied campus. The new building has been proclaimed one of the premier map libraries in the world.
- Coastal Studies for Girls, Freeport, ME. Significant renovation to existing building to add sleeping quarters and classrooms. Managed more than \$40,000 worth of supplies and services donated by vendors and community members. I also partnered with the school to host educational tours and community outreach programs.

Field Supervision

2005-2007

- Holocaust and Human Rights Education Center, University of Maine at Augusta. The prominent architect had won an international design competition, and the budget was extremely tight, with fundraising for the project continuing throughout construction. I worked with the team to develop and produce cost-effective construction details from the field such as scale mock-ups of parabolic wall sections.
- Tall Pines Assisted Living Facility, Belfast, ME. 34,000 sft. with a breakdown of 16 congregate and 14 assisted living units. The building contains a small rehabilitation center, beauty salon, full commercial kitchen and two dining rooms. The building also contains a library, crafts room and several informal sitting areas designed to bring a high level of social interaction to the residents. I went on to work with this client again to develop many hospitality and commercial projects.

Assistant Field Supervision

2004-2005

- Townhomes at Ocean East, Portland, ME. 88 unit, 18 building development.
- Watershed Center for the Arts, Damariscotta, ME. 6 cottage cohousing.



2014 Business of the Year

JHR Development, LLC, with nearly 350,000 square feet of developed space in the state of Maine, was honored by the Southern Midcoast Maine Chamber of Commerce with their Business of the Year Award. The Chamber, which serves more than 600 area businesses in 16 communities, chose JHR based on rigorous criteria. Cathy Barter, Immediate Past Chairman, said, "As you can well imagine with the number of businesses in our region, and the number of communities we serve, we had quite a list to choose from. The award is based on business growth and improvement, good financial health, quality customer service, staying power, and overall excellence in the marketplace. It was also important that the business be a good community member. JHR's Brunswick Station, The Brunswick Hotel & Tavern, and its other projects locally, especially the amazing project with Mid Coast Hospital in Bath, are real assets to the communities in which they are located."

J. Hilary Rockett, Jr., owner of JHR Development, became part of the local business landscape in 2007 as Brunswick, Maine's "real estate developer of choice" for Brunswick Station. Soon after the completion of this mixed-use, multi-modal project, it saw the arrival of Amtrak, which cemented Brunswick Station as a true hub of Brunswick, Maine, located adjacent to Bowdoin College.

Rockett moved forward to develop the 52-room Brunswick Hotel & Tavern, a 200,000 square-foot property in Portland that is home to Paradigm Windows and AdvancePierre Foods, and a 36,000-square-foot renovation of a former naval commissary in Topsham recently sold to Wicked Joe Coffee. JHR's latest project is a medical center in Bath for Mid Coast Hospital.

In Massachusetts, JHR won an RFP bid to work with Northshore Education Consortium of Beverly to redevelop a 35,000-square-foot school for children and adolescents with special needs.

William H. Savage, PE, CPESC



Engineering Experience:

President, Acorn Engineering, Inc.,

October 2007 - Present

- 🔩 Professional Engineer with technical and business development responsibilities at Acorn Engineering; providing urban redevelopment, civil/site design, construction administration and municipal consulting with a focus on the construction of marine and rail facilities, restoration of urban impaired watersheds, stormwater design & retrofits, low impact development (LID), and environmental stewardship.
- 🔩 Review project drawings, permit applications, stormwater reports, erosion and sedimentation control reports, construction inspections for residential, commercial, municipal and industrial developments.
- 🔩 Prepare proposals, interact with the client, state and local agencies, and engage with project stakeholders to deliver a successful project.

Projects – a partial list of representative projects include:

Intermodal Site & Stormwater Infrastructure Redevelopment - Eldredge Lumber & Hardware, Inc. – Portland, ME

- 🔩 The project includes the \$800,000 redevelopment and paving of approximately 7.5 acres of an existing gravel lumberyard. Work includes significant stormwater infrastructure retrofits and intermodal improvements to facilitate the future transfer of building products from rail for distribution throughout the State. Applied and successfully obtained an Industrial Rail Access Program (IRAP) grant to expand rail access on behalf of our client. The project was designed to be in accordance with the Maine DEP Chapter 500 Stormwater Management Standards, Maine Construction General Permit and City of Portland Site Plan Standards. Project responsibilities include management of the design team, development of permit and construction drawings, development and submission of permit applications, coordinating the bidding process, construction oversight and administration.

667 Congress St – Redfern Properties, LLC – Portland, ME

- 🔩 The \$28 million project includes the civil/site engineering design for the 8-story, first floor retail and 139-unit apartment building. Vehicle parking will be served by two levels with separate access from Vernon and Avon St. Services includes, but is not limited to, permitting with the City of Portland, layout and design of sanitary sewers, storm drains, water mains, pedestrian and vehicle entrances, building locations, parking lot design, and parking garage grading and drainage. Acorn provided significant coordination between the Architect, Structural Engineer, Geotechnical Engineer, Construction Management Company and Owner.

Munjoy Heights – Redfern Munjoy, LLC – Portland, ME

- 🔩 The \$22 Million project includes the civil/site engineering design of a 6-building, 29-unit development on steep slopes of Munjoy Hill in the City of Portland. This includes, but is not limited to, the layout design and permitting of sanitary sewers, storm drains, water mains, site driveway, retaining walls, building locations, and building drainage structures to be in accordance with the Maine DEP Chapter 500 Stormwater Management Standards, Maine Construction General Permit City of Portland Technical Standards.

2016 Portland International Marine Terminal Expansion – Portland, ME – MaineDOT

- 🔩 Provide full construction administration services including Resident, Senior Inspectors and Inspectors for the \$1 million pervious pavement installation. The project will include a total of 4.25 acres of pervious and traditional pavement installation. Work also includes a contract modification to install additional stormwater and drinking water infrastructure to serve the future Americold facility.
- 🔩 Class III Chief Inspector for the \$1 million International Marine Terminal environmental cleanup. Conducted construction inspection for a project in Portland to remove over 11,000 tons of soil contaminated with heavy metals, polynuclear aromatic hydrocarbons (PAHs) and petroleum. Class III Chief Inspector services included the inspection, measurement, and documentation of all work performed by the contractor and their subcontracts to document compliance with the project plans & specifications as well as Maine DOT standard details & specifications, Soil Management Plan, Health & Safety Plan (HASP), Temporary Soil Erosion and Water Pollution Control Plan (SEWPCP) and other appurtenant standards.

2015 Portland International Marine Terminal Expansion – Portland, ME – MaineDOT

- ☞ Class III Chief Inspector for the \$8.6 million IMT Rail Corridor and Existing Laydown Yard Expansion. Work includes 5,000 ft of new track, 18 acre container storage area, 2600 CY of concrete loading slab, 1,650 ft. of Commercial St. roadway improvements and replacement of the fender system (WIN #22809.20).
- ☞ Class III Chief Inspector services included the inspection, measurement, and documentation of all work performed by the contractor and their subcontracts to document compliance with the project plans & specifications as well as Maine DOT standard details & specifications, Soil Management Plan, Health & Safety Plan (HASP), Temporary Soil Erosion and Water Pollution Control Plan (SEWPCP) and other appurtenant standards.

Rangeley Branch Rail Restoration – Poland/Auburn, ME - Lewiston Auburn Railroad Company

- ☞ Provide full construction administration services including Resident, Senior Inspectors and Inspectors for the \$2.2 million restoration of 7,000 linear feet of mainline track and 2,000 linear feet of siding (WIN #17936.00). Work includes earthwork activities, stream relocation & restoration, surcharge & prefabricated vertical drains installation and track construction. Over 70% of the linear earthwork and track construction falls within a “limited design” section requiring a greater project reliance on the Resident.

Yarmouth Park & Ride - Stormwater BMP Specification Development - Maine Department of Transportation

- ☞ Development of Maine DOT stormwater BMP standard details and specifications for the \$6 million Route 295 Interchange Improvements and Park and Ride Lot in Yarmouth. The stormwater BMP's were designed to meet the specific needs of the Maine DOT. Provided Construction Administration; review of submittals, testing and construction.

Exit 45 - Maine Turnpike Approach Stormwater Design – Maine Department of Transportation

- ☞ The project involves investigating and designing stormwater treatment BMPs for the redevelopment of the existing Maine Turnpike Approach. This involved the development of details and written specifications for compost blankets and underdrained ditches.

Project Engineer, Gorrill-Palmer Consulting Engineers, Inc.

August 2003 – Sept. 2007

- ☞ Assisted with the design and permitting for numerous private developments ranging in size from house lots to retail developments with over 500,000 sf of leasable area.

Field Office Engineer, HNTB Corporation

Seasonal February 2002 – August 2003

- ☞ Field Office Engineer/Inspector for the Maine Turnpike Authority's - \$135 million modernization and widening.

Education:

Union College, Schenectady, NY **B.S. Civil Engineering**,
Czech Technical University, Prague, Czech Republic
Union College Water Resource Program, Sao Paulo, Brazil

December 2001
Fall 2001
December 2000

License: Maine Professional Engineering License #11419

Member: American Council of Engineering Companies (ACEC)
American Railway Engineering and Maintenance-of-Way Association (AREMA)
Maine Rail Group/New England Railroad Club

Committees/Awards:

- ☞ Long Creek Watershed Restoration - Models & Outreach/Technical Advisory Committee, April 2008 – April 2009
- ☞ 2015 Maine Stormwater Conference – Planning Committee October 2014 – November 2015
- ☞ Long Creek Watershed Management District - Technical Advisory Committee – Sept. 2016 – Present
- ☞ *Contractor of the Year* - The Cumberland County Soil & Water Conservation District recognized Acorn Engineering, Inc. as Contractor of the Year for its involvement with the Long Creek Restoration Project. This is the first time the District has recognized an engineering firm as the recipient for this award.



ENGINEERING EXPERIENCE:

Senior Environmental Engineer, Acorn Engineering November 2015 - Present

Mark is a professional engineer with technical and business development responsibilities at Acorn Engineering for environmental engineering and compliance functions including environmental site assessment, contaminated site investigation and remediation, stormwater management and monitoring, oil and hazardous materials spill prevention, control and countermeasure (SPCC), flammable material storage facility design.

He reviews project drawings, prepare permit applications, Voluntary Response Action Program (VRAP) documents, stormwater reports, erosion and sedimentation control reports, construction inspections for residential, commercial, municipal and industrial developments. He prepares proposals, interact with the client, state and local agencies, and engage with project stakeholders to deliver a successful project.

Projects – A partial list of representative projects include:

- 🔩 Class III Chief Inspector for the \$1 million International Marine Terminal environmental cleanup. Conducted construction inspection for a project in Portland to remove over 11,000 tons of soil contaminated with heavy metals, polynuclear aromatic hydrocarbons (PAHs) and petroleum. Class III Chief Inspector services included the inspection, measurement, and documentation of all work performed by the contractor and their subcontracts to document compliance with the project plans & specifications as well as Maine DOT standard details & specifications, Soil Management Plan, Health & Safety Plan (HASP), Temporary Soil Erosion and Water Pollution Control Plan (SEWPCP) and other appurtenant standards.
- 🔩 Conducted eight ASTM Phase I Environmental Site Assessments and one Phase II Environmental Site Assessment at commercial properties in southern Maine.
- 🔩 Civil site design and City of Portland Level II Site Plan Development permitting for installation of a 650,000-gallon stormwater detention system and landscaping upgrades to mitigate significant flooding at a hotel in downtown Portland.
- 🔩 Conducts quarterly comprehensive stormwater BMP inspections for two scrap metal recycling facilities in Southern Maine in accordance with Maine's Multisector General Permit (MSGP) for stormwater discharges from industrial facilities.
- 🔩 Designed and permitted new vehicle fueling system for contractor's office/shop facility in Westbrook, ME. Prepared plans and specifications for a 2,000-gallon fueling system with a double-wall steel tank and gasoline dispensing capability in accordance with City of Westbrook, Maine State Fire Marshall, and NFPA 30 requirements.
- 🔩 Oversaw the removal of underground piping for a petroleum storage tank system in Fryeburg Main in an area with a significant sand & gravel aquifer. Completed an assessment in accordance with MEDEP Ch. 691, and since the piping wasn't going to be replaced the assessment also followed the requirements of MEDEP standard operating procedure TS-004.
- 🔩 Prepared SPCC plans for four local oil suppliers for their bulk storage facilities to comply with EPA regulations at 40 CFR 112.

Senior Environmental Engineer, Acadia Environmental Technology January 2007 – October 2015

Mark managed the environmental engineering, assessment and compliance services provided by Acadia including projects dealing with contaminated site investigation and remediation, multi-media environmental compliance, flammable material storage facility design, environmental due diligence, stormwater management and permitting, and oil and hazardous material spill prevention and control. Conducted Phase I and Phase II Environmental Site Assessments for commercial and industrial sites and developed and implemented remedial action plans for sites impacted by oil and hazardous materials and prepared Voluntary Response Action Program (VRAP) applications and Soil Management Plans for contaminated sites undergoing redevelopment.

Projects – A partial list of representative projects include:

Environmental Assessments:

- 🔩 Conducted Phase I and Phase II Environmental Site Assessments at multiple commercial properties in Maine and New Hampshire including petroleum storage and distribution facilities, office buildings, retail establishments, manufacturing facilities, car dealerships and garages.

Remedial Investigation, Design & Construction Oversight

- ☞ Designed and oversaw installation of soil vapor extraction (SVE) system to remediate a large gasoline release from an underground storage tank (UST) at a convenience adjacent to Rte. 201 in Skowhegan. Most the release was remediated during soil excavation while removing the UST, but some of petroleum was migrating in the vadose zone toward the roadway. A pilot test was conducted and the system designed with three extraction wells connected to a regenerative blower. It operated 3 years and was shut down after levels met MEDEP approval requirements.
- ☞ Former Rail Yard Site Remediation and Redevelopment in Portland, ME. Prepared VRAP application to address ongoing liability associated with the impacts from the historical uses and obtained certificate of completion (COC). Installed test pits and conducted soil sampling to show that the levels of hazardous substances above RAGs was limited to lead-containing soils in one area. The implemented remedial action approved by MEDEP included capping impacted soils with asphalt pavement in one area and construction of a landscape berm in another.
- ☞ Designed and oversaw installation and operation of a groundwater extraction and treatment system in Acton, ME to prevent the migration of gasoline-contaminated groundwater into a lake during removal and replacement of a leaking underground storage tank. The groundwater treatment system consisted of extraction pumps, a gravity settling chamber, particulate filter, and dual granular activated carbon units to remove dissolved gasoline compounds. The system successfully treated the groundwater and allowed for replacement of the leaking tank with a new one.
- ☞ Conducted environmental investigation of former scrap storage and processing area at an Auburn, ME scrap metal recycling facility. Developed remedial action plan and oversaw the capping of over 10,000 cubic yards of heavy metal-impacted soils to help this facility comply with Maine solid waste processing facility requirements.
- ☞ Oversaw the closure of petroleum USTs and removal of contaminated soil at a closed gas station in South Portland, ME that included a Phase II Environmental Site Assessment including soil and groundwater monitoring and vapor intrusion evaluation. VRAP application and Soils Management Plan (SMP) prepared to address ongoing liability associated with the impacts from the historical uses and obtained certificate of completion (COC) that resulted in sale of the property.

Stormwater Management, Monitoring & Permitting

- ☞ Oversaw the construction of a new stormwater management system at a site in Auburn, ME that included 4 oil-water separators, a 100-ft long concrete settling basin and two underdrained wet ponds to detain and treat stormwater runoff and prevent flooding. Prepared an Erosion and Sediment Control Plan and conducted erosion control inspections for the duration of the project
- ☞ Prepared Stormwater Pollution Prevention plans (SWPPP) at 2 scrap metal facilities in Southern Maine to comply with the Maine's Multi-Sector General Permit (MSGP). Conducted quarterly stormwater monitoring and comprehensive compliance inspections.

SPCC Plans

- ☞ Conducted Phase I and Phase II Environmental Site Assessments at multiple commercial properties in Maine and New Hampshire including petroleum storage and distribution facilities, office buildings, retail establishments, manufacturing facilities, car dealerships and garages.

Petroleum Bulk Storage Facility Design

- ☞ Designed a new bulk petroleum storage facility with 120,000 gallons of storage capacity, a loading rack and spill containment system in compliance with SPCC rules. Permitted the facility in accordance with town site development rules and state fire marshal requirements and completed a NRPA permit by rule for the facility due to proximity to stream.

Environmental Manager, ecomaine, Portland, Maine, 1997-2006

Mark was responsible for multi-media environmental compliance for a regional waste management agency that provided waste management services for 28 communities. Responsibilities included maintenance of the Environmental Management System (EMS), environmental permitting, monitoring, and reporting for a 550 ton/day waste to energy (WTE) facility, a 30-acre ash landfill and 40 acres of closed municipal solid waste landfills.

- ☞ Led the effort to develop an Environmental Management System (EMS) at the WTE, landfill and recycling facilities. THE EMS all facilities were certified to the ISO 14001 standard.
- ☞ Directed ecomaine's environmental monitoring program at the landfill, which included triannual monitoring of approximately 20 groundwater wells and five surface water locations for organic and inorganic constituents.

- 🔗 Oversaw the application for ecomaine's first Title V (Part 70) Air Emissions License and conducted negotiations with MEDEP's Bureau of Air Quality to obtain a workable permit including manageable conditions for startup/shutdown and malfunctions.
- 🔗 Implemented the program for monitoring combustion and other sources at ecomaine's MWC and landfill facilities including continuous emission monitoring systems (CEMS) for opacity, NOx, SO2, and carbon monoxide and visible emissions monitoring for ash handling facilities; prepared MEDEP-required quarterly and annual reports; and implemented annual stack testing for heavy metals, dioxins and furans, NOx & SOx.

Environmental Engineer, Maine Metal Products Assoc., Portland, ME, 1994 - 1997

Under a contract with the Department of Energy on Environmentally Conscious Manufacturing, Mark provided training and assistance to small and large manufacturing firms in Maine's metal products industry on environmental compliance and pollution prevention.

Project Manager, ERM-New England, Boston, MA and Portland, ME, 1987 - 1994

His work with ERM was diverse and included providing environmental engineering services to a wide variety of industrial and commercial customers in New England and throughout the country on environmental due diligence audits, air permitting, remedial investigation/feasibility studies for contaminated site, and stormwater permitting and monitoring

Environmental Engineer, Alliance Technologies, Bedford, MA, 1984 - 1987

Mark was an environmental engineer that conducted remedial investigation/feasibility studies (RI/FS) and hazardous waste treatment technology evaluations under contracts with the Environmental Protection Agency.

EDUCATION:

Tufts University, M.S. Civil (Environmental) Engineering
Union College, B.S. Civil Engineering

May 1984
June 1982

LICENSES/CERTIFICATIONS:

- 🔗 Maine Registered Professional Engineer, #6807
- 🔗 New Hampshire Registered Professional Engineer, #12129
- 🔗 Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #73
- 🔗 Maine-certified Asbestos Site Inspector
- 🔗 Locally Administered Project (LAP) - MaineDOT
- 🔗 MaineDOT Construction Training – Certificate of Completion – 2016
- 🔗 OSHA 40-Hour HAZWOPER Training & Refreshers

CIVIC INVOLVEMENT

- 🔗 Portland Trails, Board Member and Trails Committee Chair
- 🔗 Portland Nordic, Nordic Ski Coach and Board Member

Section 5

Noise



5. Noise

The proposed project is residential and is not anticipated to have a noise impact. Temporary noise may arise during construction as a result of construction equipment working on the site. This noise is not expected to be significant.

The development and construction activity will maintain compliance with Chapter 17, Section 17-18 of the Portland Land Use Ordinance.

Section 6

Visual Quality & Scenic Character



6. Visual Quality & Scenic Character

The proposed use of the site is consistent with surrounding residential properties and is subject to the Land Use Code requirements of the City Zoning Ordinance.

Visual quality within the project development area will be preserved through minimal tree clearing for roadway and lot development, as well as landscaping near the project's entrance of Westbrook Street. Refer to the Site Plan for further details. The proposed project is consistent with this section of City and will not impact the visual quality of the area.

Section 7

Wildlife and Fisheries



7. Wildlife and Fisheries

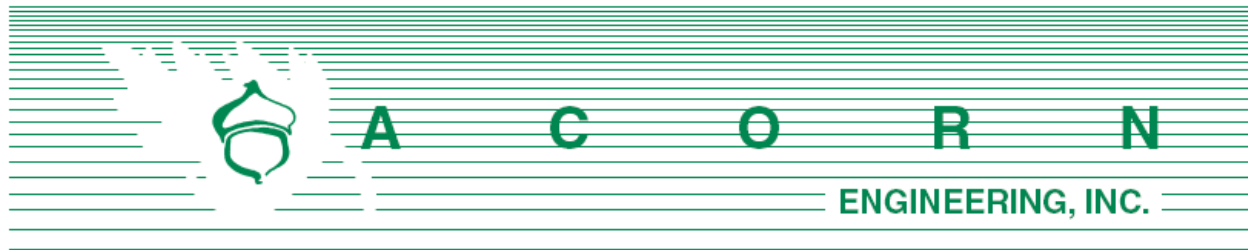
Acorn Engineering, Inc. sent a project description and copy of the development plans to Maine Natural Areas Program (MNAP), US Fish & Wildlife Service and Maine Inland Fisheries and Wildlife (IF&W), on November 10, 2016. A response letter was received from Don Cameron (MNAP) on November 10, 2016 and John MacLaine (IF&W) on December 2, 2016. The letter from Acorn and both response letters are included as parts of this Section.

MNAP did not find any rare botanical features within the project area.

IF&W did not map any Essential or Significant Wildlife Habitats that would be directly affected by the proposed project.

US Fish & Wildlife Service did not map any species would be directly affected by the proposed project.

Additionally, an Ecological Habitat Assessment was conducted by Gino Giumarro (Verdanterra, LLC) on March 13, 2017. The report was received on March 15, 2017 and is included as part of this Section.



Ms. Lisa St. Hilaire, Information Manager
Maine Natural Areas Program
17 Elkins Lane
93 State House Station
Augusta, Maine 04333

November 10, 2016

Mr. John Perry, Environmental Review Coordinator
Inland Fisheries & Wildlife
284 State Street
41 State House Station
Augusta, Maine 04333

Subject: Camelot Farms Subdivision
1700 Westbrook Street, Portland, Maine

Dear Ms. St. Hilaire and Mr. Perry,

Acorn Engineering, Inc. has been retained by Camelot Holdings, LLC to provide civil engineering services for the proposed subdivision project at 1700 Westbrook Street in Portland, Maine. The project proposes to redevelop the existing, small farm with a single-story home and accessory shed and barn structures into a traditional single-family neighborhood within the Stroudwater neighborhood; house lots will range in size between 6,500 sf to 20,000 sf. The property directly abuts the Stroudwater River and consists mostly of cleared farming pastures. The portion of the site adjacent to Westbrook Street is anticipated to be regraded to support a road network and the subdivided lots. Thus, there will be limited tree removal, stumping, and grubbing on-site due to the existing use. The proposed roads are to be paved and built to City standard. The project will require a Zoning Map/Text Amendment and Level III – Site Plan Application.

Per City Ordinance, a portion of the property resides within the Shoreland Overlay Zone in which construction and redevelopment activities are limited within 250 feet of the high-water line; it is proposed that all development associated with subdivision will remain greater than 250 feet from the river. The space is to be used recreationally with a passive, neighborhood trail system and other shared amenities; there is no proposed earthworking and grading to occur within this zone.

The project area is comprised of five separate parcels (Chart, Book, Lot 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3) with two existing utility easements for the Portland Water District and Portland Pipeline Company that bisect the property. The parcels have been previously subdivided so that there are four single-family sublots facing Westbrook Street.

Acorn Engineering appreciates your assistance with determining if there are any possible special or significant wildlife or fisheries habitats which might be impacted at the site. Please refer to the attached documents to facilitate your review.

Any response and supporting documents may be mailed to the address below or as a PDF file to odawson@acorn-engineering.com.

Sincerely,

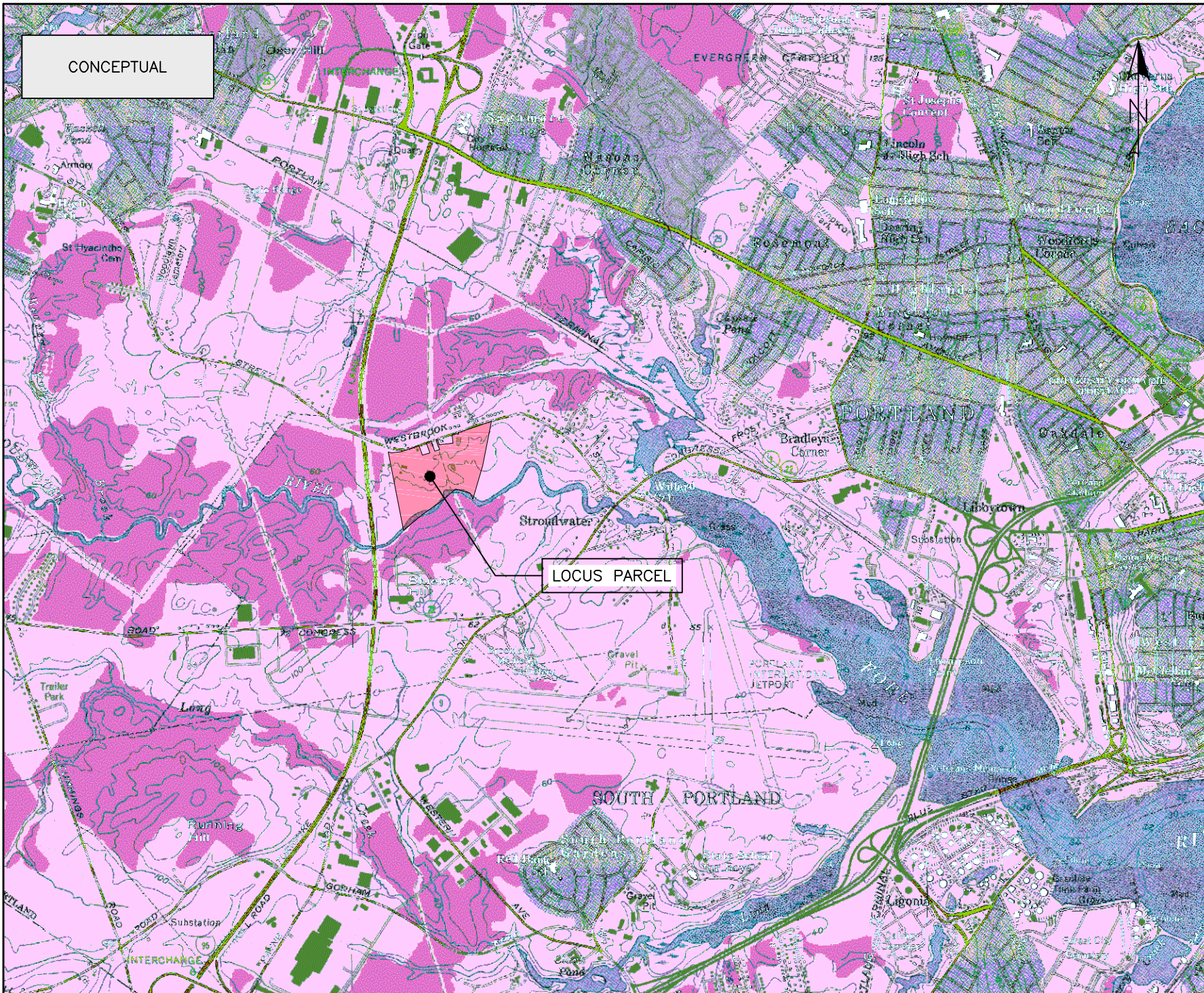


Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.
*158 Danforth Street
Portland, Maine 04102*

Attached:

EX-1 Vicinity Map
EX-2 Concept Site Plan





CONCEPTUAL

LOCUS PARCEL

ISSUED FOR		BY
SITE REVIEW		DATE
		WHS
		10/28/16
		REV
		DATE
DRAWING NAME: VICINITY MAP		
PROJECT NAME: CAMELOT FARMS SUBDIVISION		
CLIENT: CAMELOT HOLDINGS, LLC		
		
ACORN ENGINEERING, INC. P.O. BOX 3372 PORTLAND, MAINE 04104 (207) 775-2655		
FILE:	CIVIL	
JN:	1000	
SCALE:	1"=2500'	
DESIGN BY:	OJD	
DRAWN BY:	OJD	
CHECKED BY:	WHS	
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.		
DRAWING NO.		
EX-1		

1. PLAN REFERENCES:

- APPROXIMATE PROPERTY LINE PER CITY-
PARCEL MAPS, REFERENCE NOTE 1.2

APPROXIMATE STROUDWATER
RIVER HIGH WATER LINE

— APPROX. LOCATION OF EXISTING 50' ROW
AND EASEMENT TO THE PORTLAND PIPE LINE
COMPANY, PER REFERENCE NOTE 1.3

STORMWATER BMP
APPROX. AREA: 12,000 SF

PROPOSED 15' WIDE ROW FOR
DRAINAGE AND ACCESS EASEMENTS

PATRIDGE CIRCLE

APPROX. LOCATION OF
EXISTING 30' ROW AND
EASEMENT TO PWD, PER
REFERENCE NOTE 1.3

SHORELAND
OVERLAY ZONE

PROPOSED PUMP
STATION LOCATION

— STORMWATER BMP
APPROX. AREA:
30,000 SF

— NEIGHBORHOOD
TRAIL SYSTEM IN
COORDINATION WITH
PORTLAND TRAILS

PROPOSED
RECREATIONAL
OPEN SPACE

— PROPOSED 30'
WIDE ROW FOR
DRAINAGE AND
ACCESS EASEMENTS

— PROPOSED
LOT LINES,
TYP.

WESTBROOK STREET

PROPOSED LOTS TO BE
ACCESSED DIRECTLY FROM
WESTBROOK STREET

POSSIBLE CONNECTION TO EXISTING
PORTLAND TRAILS FORE RIVER SANCTUARY
TRAIL NETWORK

— LANDSCAPED BUFFER SPACE, TYP.

CONCEPTUAL

ISSUED FOR	BY DATE WHS
SITE REVIEW	10/28/16
REVISION	REV. DATE

DRAWING NAME: CONCEPT SITE PLAN

PROJECT NAME: CAMELOT FARMS SUBDIVISION

CLIENT: CAMELOT HOLDINGS, LLC
PORTLAND, MAINE 04101



158 DANFORTH ST
PORTLAND, MAINE 04104
(207) 775-2655

FILE:	CIVIL
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JN:	1000
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SCALE: 1"=200'

DESIGN BY: OJD

DRAWN BY:	OJD
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CHECKED BY:	WHS
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THIS PLAN SHALL NOT BE

MODIFIED	WITHOUT	WRITTEN
PERMISSION	FROM	ACORN

PERMISSION FROM ACORN
ENGINEERING, INC. ANY

ENGINEERING, INC. ANT
ALTERATIONS, AUTHORIZED OR

OTHERWISE, SHALL BE AT THE

**USER'S SOLE RISK AND
WITHOUT LIABILITY TO ACORN**

WITHOUT LIABILITY TO ACORN
ENGINEERING, INC.

ENGINEERING, INC.

DRAWING NO.

EX-2

EX-2

LA-2

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PAUL R. LePAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

WALTER E. WHITCOMB
COMMISSIONER

November 10, 2016

Olivia Dawson
Acorn Engineering
PO Box 3372
Portland, ME 04104

Via email: odawson@acorn-engineering.com

Re: Rare and exemplary botanical features in proximity to: Camelot Farms Subdivision, Portland, Maine

Dear Ms. Dawson:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received November 10, 2016 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. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

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.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM



PHONE: (207) 287-8044
FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

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.

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

Rare and Exemplary Botanical Features within 4 miles of Project: Camelot Farms Subdivision, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Allegheny Vine						
	E	S1	G4	1860-10	9	Rocky summits and outcrops (non-forested, upland),Dry barrens (partly forested, upland)
American Sea-blite						
	T	S2	G5	1932-09-12	5	Tidal wetland (non-forested, wetland)
	T	S2	G5	2011-08-15	17	Tidal wetland (non-forested, wetland)
Beach Plum						
	E	S1	G4	1933-05-19	10	Rocky coastal (non-forested, upland)
Broad Beech Fern						
	SC	S2	G5	1872-08	15	Hardwood to mixed forest (forest, upland)
Creeping Spike-moss						
	E	S2	G5	1924-08-20	3	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	E	S2	G5	1924-08-21	8	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
Dioecious Sedge						
	SC	S3	G4	1936-07-14	7	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
Ebony Spleenwort						
	SC	S2	G5	1910-06-06	10	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Engelmann's Spikerush						
	PE	SH	G4G5Q	1916-08-31	2	Open wetland, not coastal nor rivershore (non-forested, wetland)
Fern-leaved False Foxglove						
	SC	S3	G5	1902-09-02	13	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Great Blue Lobelia						

Rare and Exemplary Botanical Features within 4 miles of Project: Camelot Farms Subdivision, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	PE	SX	G5	1905-09	3	Forested wetland,Non-tidal rivershore (non-forested, seasonally wet)
Hollow Joe-pye Weed						
	SC	S2	G5?	2014-06-18	24	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	SC	S2	G5?	2007-10-22	18	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
Horned Pondweed						
	SC	S2	G5	1913-09-13	9	Tidal wetland (non-forested, wetland)
	SC	S2	G5	1972-06-13	3	Tidal wetland (non-forested, wetland)
Marsh Milkwort						
	PE	SH	G5T4	1903-08-18	1	Dry barrens (partly forested, upland),Open wetland, not coastal nor rivershore (non-forested, wetland)
Missouri Rockcress						
	T	S1	G5?Q	1905-06-11	5	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Mountain Honeysuckle						
	E	S2	G5	2015-07-16	16	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S2	G5	2015-07-07	17	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Parker's Pipewort						
	SC	S3	G3	1924-08-20	8	Tidal wetland (non-forested, wetland)
Pitch Pine Bog						
	<null>	S2	G3G5	2012-07-31	16	Forested wetland,Coastal non-tidal wetland (non-forested, wetland)
Tidal Marsh Estuary Ecosystem						
	<null>	S3	GNR	2011-08-25	8	Tidal wetland (non-forested, wetland)
Variable Sedge						

Rare and Exemplary Botanical Features within 4 miles of Project: Camelot Farms Subdivision, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	E	S1	G3	1911	8	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	1911-06-29	9	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Vasey's Pondweed						
	SC	S2	G4	1901-08-04	7	Open water (non-forested, wetland)
Water-plantain Spearwort						
	PE	SH	G4	1862-08	3	Open water (non-forested, wetland)
Wild Leek						
	SC	S3	G5	2006-05-10	19	Hardwood to mixed forest (forest, upland),Forested wetland

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>



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

December 2, 2016

Olivia Dawson
Acorn Engineering, Inc.
158 Danforth Street
Portland, ME 04102

RE: Information Request - Camelot Farms subdivision, Portland

Dear Olivia:

Per your request received November 10, 2016, 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 *Camelot Farms subdivision project* in Portland. For purposes of this review, we are assuming that the development will occur primarily within maintained fields and tree clearing will not be necessary. If tree clearing is ultimately proposed, please contact our Department for further guidance

Our information indicates no locations of Endangered, Threatened, or Special Concern species within the project area that would be directly affected by your project. Additionally, our Department has not mapped any Essential or Significant Wildlife Habitats that would be directly affected by your project.

Fisheries Habitat

Without details, it is difficult to know what impacts your project may have on the Stroudwater River. That being said, MDIFW makes the following general recommendations as they pertain to work around rivers and streams.

Maintaining buffers along coldwater fisheries is critical to the protection of water temperatures, water quality, and inputs of coarse woody debris necessary to support conditions required by brook trout. We generally recommend that a 100-foot undisturbed vegetated buffer be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work or work within 100 feet of streams occur between July 15 and October 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

Letter to Olivia Dawson
Comments RE: Camelot Farms subdivision, Portland
December 2, 2016

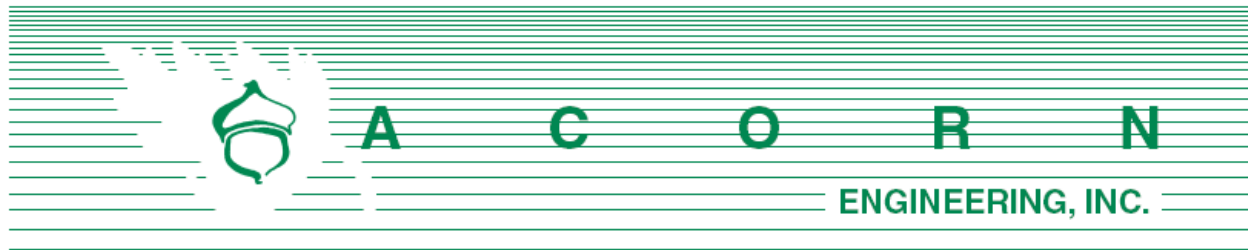
Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

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,

A handwritten signature in black ink, appearing to read "John MacLaine". The signature is fluid and cursive, with a large initial "J" and "M".

John MacLaine
Biologist



Dr. Mark McCollough, Ph.D.
Species Recovery & Project Review, Eagle Act
U.S. Fish and Wildlife Service
306 Hatchery Way
East Orland, ME 04431

November 10th, 2016

Subject: Camelot Farms Subdivision
1700 Westbrook Street, Portland, Maine

Dear Dr. McCollough:

Acorn Engineering, Inc. has been retained by Camelot Holdings, LLC to provide civil engineering services for the proposed subdivision project at 1700 Westbrook Street in Portland, Maine. The project proposes to redevelop the existing, small farm with a single-story home and accessory shed and barn structures into a traditional single-family development within the Stroudwater neighborhood; house lots will range in size between 6,500 sf to 20,000 sf. The property directly abuts the Stroudwater River and consists mostly of farming pastures. The portion of the site adjacent to Westbrook Street is proposed to be regraded to support a road network, subdivided lots, and ancillary infrastructure. Thus, there will be limited tree removal, stumping, and grubbing on-site due to the existing use. The proposed roads are to be paved and built to City standard. The project will require a Zoning Map/Text Amendment and Level III – Site Plan Application.

Per City Ordinance, a portion of the property resides within the Shoreland Overlay Zone in which construction and redevelopment activities are limited within 250 feet of the high-water line; it is proposed that all development associated with subdivision will remain greater than 250 feet from the river. The space is to be used recreationally with a passive, neighborhood trail system and other shared amenities; there is no significant earthwork to occur within this zone.

The project area is comprised of five separate parcels (Chart, Book, Lot 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3) with two existing utility easements for the Portland Water District and Portland Pipeline Company that bisect the property. The parcels have been previously subdivided so that there are four single-family sublots facing Westbrook Street.

Acorn Engineering appreciates your assistance with determining if there are any possible special or significant wildlife or fisheries habitats which might be impacted at the site. Please refer to the attached documents to facilitate your review.

Any response and supporting documents may be mailed to the address below or as a PDF file to odawson@acorn-engineering.com.

Sincerely,



Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.
158 Danforth Street
Portland, Maine 04102

Attached:

EX-1 Vicinity Map
EX-2 Concept Site Plan



Olivia Dawson

From: Mahaney, Wende <wende_mahaney@fws.gov>
Sent: Monday, November 21, 2016 11:35 AM
To: Olivia Dawson
Cc: McCollough, Mark; William Savage
Subject: Re: Camelot Farms - FWS Preliminary Site Review

Follow Up Flag: Follow up
Flag Status: Completed

Hi Olivia: If this project will involve a Corps permit (or any other Federal agency action), please forward the IPaC species list and species summary table to those Federal agencies rather than our office, as outlined on our office's Web site. It is the Federal agency's responsibility to coordinate with our office when necessary regarding federally listed species. It works better and causes less confusion if the Federal agency gets the information from the consultant and then is in charge of consulting with the Service.

One note I did want to make regarding northern long-eared bats. The species summary table says there will not be "major" tree clearing. Not sure what you mean by that, but any cutting down of even one tree > 3 inches DBH could trigger the need for a Federal agency to consult with the Service under the Endangered Species Act. The Corps of Engineers and other Federal agencies in Maine are pretty well-versed in what triggers consultation for the bat. Just didn't want you to assume that because the project site is mostly fields and the project might only result in a few trees being cut down that there are no concerns regarding bats.

Thank you. Wende

Wende S. Mahaney, C.W.B.
U.S. Fish and Wildlife Service
Maine Fish and Wildlife Complex
P.O. Box A (mailing address)
306 Hatchery Road (physical address)
East Orland, Maine 04431
Telephone: (207) 902-1569 (direct line)
Fax: (207) 902-1588
Cellular Phone: 207-944-2991

On Thu, Nov 17, 2016 at 9:13 AM, Olivia Dawson <odawson@acorn-engineering.com> wrote:

Morning Mark,

Thanks for your feedback. I have completed the steps as outlined in Maine Field Office website and have generated the attached Species Summary Table. Based on the provided examples and the report generated by the IPaC system, I do not believe this project will require additional federal review but I wanted to touch base with you just to make sure.

The only federally listed species identified by the IPaC was the Northern Long-eared Bat but we are proposing to not disturb the existing mature wooded areas within the site and thus not impact potential roosting areas for the bats. The site is also not near any documented Bald Eagle nesting sites per the Bald Eagle Map Tool.

I have contacted John Perry at the Maine Dept. of Inland Fisheries & Wildlife for state input on this project and have already received feedback from Lisa St. Hilaire with the Maine Natural Areas Program. I will also reach out to the Army Corps as well considering the scale and proximity to the shoreline of the project.

Thanks again for your help and I hope to hear from you soon,

- Olivia

C: (585) 797-8780

From: McCollough, Mark [mailto:mark_mccollough@fws.gov]
Sent: Tuesday, November 15, 2016 6:00 PM
To: Olivia Dawson <odawson@acorn-engineering.com>; Wende Mahaney <wende_mahaney@fws.gov>
Subject: Re: Camelot Farms - FWS Preliminary Site Review

Dear Ms. Dawson:

Thank you for sharing your proposed development plans with the U. S. Fish and Wildlife Service. If your project requires Federal permits or uses Federal funds, our office may consult with Federal agencies such as the Army Corps of Engineers to ensure your project does not jeopardize the continued existence of Federally-listed species or critical habitat. You can determine what Federally-listed species may occur in your project area by going to the Species List and Project Reviews tab on our Maine Field Office website: <https://www.fws.gov/mainefieldoffice/>. Going through the steps outlined on our website, you can develop an official species list. It also may be possible that there are no Federally-listed species on the property.

You should also contact the Maine Department of Inland Fisheries and Wildlife. The old farm fields that you describe could be habitat for the New England cottontail rabbit, a state-listed species. MDIFW will provide further information on surveys that may be needed. New England cottontails have been documented in the vicinity of the Portland jetport.

Please let us know if you have further questions.

Sincerely, Mark McCollough

On Thu, Nov 10, 2016 at 12:33 PM, Olivia Dawson <odawson@acorn-engineering.com> wrote:

Good Afternoon Dr. McCollough,

On behalf of Camelot Farms, LLC, I am reaching out to you with a preliminary project plan and location to be reviewed for special or significant wildlife or fisheries habitats that could be impacted by the proposed development. Attached is a cover letter outlining the project as well as a vicinity map and preliminary site plan to aid in your review.

Please feel free to contact me or the office with any questions or clarifications on the proposed project and/or attached materials.

Thanks in advance for your help,

Olivia Dawson
Engineer

Licensed E.I. in Maine

Licensed E.I.T in New York

Acorn Engineering, Inc

PO Box 3372

Portland, Maine 04104

www.acorn-engineering.com

C: 585.797.8780

B. 207.775.2655

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--

PLEASE NOTE THAT OUR OFFICE ADDRESS AND PHONE HAVE CHANGED

Mark McCollough, Ph.D.

Endangered Species Specialist

US Fish and Wildlife Service

Maine Fish and Wildlife Service Complex

Ecological Services

Maine Field Office

P.O. Box A (mailing address)

306 Hatchery Road (physical address)

East Orland, Maine 04431

Telephone: (207) 902-1570

Fax: (207) 902-1588

Cell Phone: 207 944-5709

mark_mccollough@fws.gov



Ecological Habitat Assessment Report

1700 Westbrook Street, Portland Maine

Camelot Holdings, LLC

**5 Stone Pony Circle
Saco, ME 04072**

Prepared by:

Verdanterra, LLC
47 Richards Lane
Freeport, Maine 04032
www.verdanterra.com

March 15, 2017

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Figures

Figure 1. Camelot Farms - Project Location Map

Figure 2. Project Limits of Disturbance – Aerial Background

Figure 3. Project Limits of Disturbance – Topographic Background

Appendices

Appendix A. Verdanterra Resume

Appendix B. Site Visit Photodocumentation

Appendix C. Agency Correspondence

1. Introduction

On March 13, 2017, Verdanterra, LLC (Verdanterra) conducted an ecological assessment for the proposed Camelot Holdings, LLC (Camelot) residential development project at 1700 Westbrook Street, Portland, Maine (Project). On November 10, 2016, Maine Natural Areas Program (MNAP) provided a list of rare plants and natural communities that occur within the vicinity of the project area. MNAP has not documented rare plants or natural communities on the Project parcel. Wetland delineations were completed by Mark Hampton Associates, Inc. on November 21, 2016. Maine Department of Inland Fisheries and Wildlife (MDIFW) indicated that there are no Endangered, Threatened, or Special Concern species that occur on the property on December 2, 2016. This ecological assessment was prepared to evaluate Rare and Exemplary Botanical Features habitat and potential New England cottontail (*Sylvilagus transitionalis*) habitat in the Project Area.

This report describes the objectives, methodology, and results of the ecological assessment. The survey and subsequent report were completed by Gino Giumarro, a Wildlife Biologist Certified by the Wildlife Society. Gino has a Bachelor of Science degree in Wildlife Biology from the University of Massachusetts at Amherst and a Master of Science degree in Natural Resources Planning from the University of Vermont. Mr. Giumarro has been conducting wildlife habitat assessments professionally since 1996. A resume is included in Appendix A.

1.1. Regulatory Context

Endangered and threatened inland fish and wildlife species in Maine are listed either under Maine's Endangered Species Act (MESA; Title 12 M.R.S.A. Sections 7751 to 7759), the U.S. Endangered Species Act (ESA; Title 16 U.S. Code Sections 1531 to 1544), or both. Species listed under MESA receive state protection; species listed under ESA receive federal protection; and species listed under both receive state and federal protection. The presence of endangered or threatened species can have implications on defining other resources status protected under different legislation (e.g. Significant Wildlife Habitat or Wetlands of Special Significance).

The MDIFW holds management responsibility for inland fish and wildlife listed under MESA, and shares responsibility with the U.S. Fish and Wildlife Service (USFWS) for inland fish and wildlife listed under ESA. MDIFW indicated in their December 2, 2016 correspondence (Appendix C) that there are no known locations of Endangered, Threatened, or Special Concern species within the Project area that would be directly affected by your project. Additionally, MDIFW has not mapped any Essential or Significant Wildlife Habitats that would be affected directly by the Project. MDIFW further suggested maintaining buffers along sensitive fisheries. As planned (shown on the Site Plan Drawing Number C-10 – Acorn Engineering – 2/14/2017; Attachment C), the project maintains more than the suggested 100-foot vegetative buffer along the Stoudwater River.

On March 20, 2017, Verdanterra conducted an unofficial Information for Planning and Conservation (IPaC; part of the Environmental Conservation Online System¹) analysis for the Project to obtain a draft list of potentially occurring federally protected threatened or endangered species and critical habitats managed by the USFWS. The USFWS also implements the regulations of the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. A formal request can be made to the USFWS should further endangered species coordination be required. For instance, Section 7 of the ESA requires Federal agencies (such as the U.S. Army Corps of Engineers for wetland permitting) request from the USFWS information on whether any species which is listed or proposed to be listed may be present

¹ The Environmental Conservation Online System (ECOS) is a gateway web site that provides access to data systems in the U.S. Fish and Wildlife Service (Service) and other government data sources. This central point of access assists Service personnel in managing data and information, and it provides public access to information from numerous Service databases. Available <https://ecos.fws.gov/ipac/>. Accessed March 20, 2017.

in the area of such proposed action (e.g. filing an application for a Section 404 of the Clean Water Act wetland fill permit).

The report indicated that northern long-eared bat (*Myotis septentrionalis*; threatened) has the potential to occur in the Project Area. There are no critical habitats for protected species in the Project Area, however there are a number of migratory birds of conservation concern protected under the Migratory Bird Treaty Act with the potential to occur in the Project Area. USFWS stresses the importance to avoid and minimize impacts to birds of conservation concern.

A wetland or waterbody permit is considered a federal action by the U.S. Army Corps of Engineers. As a threatened species, impacts to the northern long-eared bat would require a Section 7 Consultation between the U.S. Army Corps of Engineers and the USFWS. Under the Section 4(d) of the Endangered Species Act, the USFWS can issue regulations deemed “necessary and advisable to provide for the conservation of threatened species.” It allows the USFWS to promulgate special rules for species listed as threatened (not endangered) that provide flexibility in implementing the Endangered Species Act. Federal actions that cause incidental take that is **not** prohibited under the 4(d) rule may still affect individual northern long-eared bats. Under Section 7 of the Endangered Species Act, a federal agency must consult with the Service if their action may affect a listed species, which includes effects to individuals. However, for the northern long-eared bat 4(d) rule, the USFWS has provided a framework to streamline Section 7 consultations when federal actions may affect the northern long-eared bat, but not cause prohibited take. The incidental take prohibition for known occupied maternity roost trees applies only during the during the pup season (June 1 through July 31). Including the streamlined 4(d) rule compliance form with any necessary federal permitting is helpful to the permitting agency. This compliance includes the following determinations (among others).

- Does the Project occur within the White-Nosed Syndrome (WNS) zone?
- Is the USFWS aware of hibernacula or maternity roost trees within 0.25 miles of the Project?
- Would the Project cut trees within 150 feet of a known maternity roost tree?

Federal agencies may fulfill their project-specific Section 7 responsibilities by using the USFWS’s framework. The notification would include a determination that the action would not cause prohibited incidental take. USFWS concurrence is not required, but the USFWS may advise the agency whether additional information indicates that project-level consultation is required. If the USFWS does not respond within 30 days, the action agency may consider its Section 7 responsibilities fulfilled with respect to the northern long-eared bat.

MNAP searched the Biological and Conservation Data System files and provided a response on November 10, 2016 for information on the presence of rare or unique botanical features documented from the vicinity of the Project. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. According to the information currently in MNAP’s Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. There are, however, several of species of plants that are known to occur within 4 miles of the Project. Many of the plant species on this list are known to occur in very particular ecological communities.

1.2. New England Cottontail Habitat Requirements

The New England cottontail was listed as state endangered species in Maine in 2007. In 2010, Maine's New England cottontail population was estimated to be less than 200 rabbits. MDIFW determined the number of New England cottontail in Maine by conducting intensive winter surveys to locate occupied patches of habitat and estimating the number of rabbits per acre based on the size of the habitat patch.

The region-wide decline of New England cottontail has been attributed to habitat loss, and in particular, the loss of old field and shrubby habitat. New England cottontails need dense shrubby habitat to protect them from avian and terrestrial predators. Ideally, this dense cover should be interspersed with some grassy areas when the rabbits can find adequate food. Habitat blocks of at least 25 acres in size (ideally much larger) and close to additional patches of habitat are necessary for the species to survive².

New England cottontail depend more upon the structure of the vegetation (its form, height, and density) rather than specific species. In old fields, New England cottontail are commonly associated with juniper (*Juniperus spp.*), blackberry (*Rubus spp.*), spirea (*Spiraea spp.*), dogwoods (*Cornus spp.*), and a variety of young deciduous tree species (red maple [*Acer rubraum*], birch [*Betula spp.*], and aspen [*Populus spp.*])². Old fields are also where New England cottontail are sometimes associated with exotics such as honeysuckle (*Lonicera spp.*), autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), and Japanese barberry (*Berberis thunbergii*)². On wetter sites, alder (*Alnus spp.*), and willow (*Salix spp.*) are frequent dominants. Barbour and Litvaitis (1993) investigated selection of microhabitats in winter among New England cottontail preferred to use sites with >50,000 stem-cover units/ha (20,234 stem-cover units/acre)³.

2. Methods

A Certified Wildlife Biologist⁴ conducted a flora and fauna ecological assessment at the Project site. Prior to conducting the field survey, Verdanterra ecologists conducted a remote landscape analysis to better understand the ecological and regional context of the Project area. This landscape analysis approach to habitat evaluation considered a wide range of published literature, multi-year aerial photography, and wildlife biologist experience. Ecologists remotely characterized the ecological communities present on and adjacent to the Project area to guide a determination of landscape connectivity, with particular focus on identifying large habitat blocks or connecting corridors of habitat suitable for New England cottontail. The ecological community characterization was conducted in a GIS and considered landforms and land use as determined from aerial photographs, topography, wetlands and waterbodies, soil types, rare natural communities, and proximity of other habitats.

Verdanterra developed a list of habitats required for the rare and unique botanical features reported by MNAP to occur within 4 miles of the Project as well as for the New England cottontail. Remote sensing was used to preliminarily characterize the ecological habitat present in the Project Area. A field survey was conducted to verify these communities and to determine if the microhabitat requirements for individual plants occurs. This information was used to determine the likelihood of occurrence for these species at the Project. While many of the species could not be identified at this time of the year, it was feasible to identify potential habitat for these species. Should suitable habitat be identified for any of the species that were provided by MNAP, targeted species surveys would be recommended for the appropriate growing season phase (flowering or fruiting). Growing season surveys were not conducted. If identified in the field, the location of groups of rare plants identified will be recorded using a GPS (i.e. a GPS location of each individual plant will not be collected) with sub-meter accuracy and a MNAP rare species form will be completed.

Verdanterra ecologists conducted a field survey to support the remote landscape analysis. The on-site habitat assessment was based on a pre-determined list of habitat features developed for the site that are required for the

² Litvaitis, J.A., and W.J. Jakubas. 2004. New England Cottontail (*Sylvilagus transitionalis*) Assessment 2004. Unpublished report. 59pp.

³ Barbour, M.S., and J.A. Litvaitis. 1993. Niche dimensions of New England cottontails in relation to habitat patch size. *Oecologia* 95:321-327.

⁴ As certified by the Wildlife Society, Bethesda Maryland

species to occur. Ecologists also searched the area for signs of cottontail tracks, browse, or pellets. This list of habitat requirements is based on biologist knowledge, published papers and reports, and comparisons to reference habitats familiar to the ecologist. The quality of habitats was evaluated based on strength of species associations with particular natural communities, landscape position and connectivity, and other ecological metrics (e.g. canopy cover, ground cover, water depth, soils, plant species composition, distance from potential feeding and/or breeding locations, etc.). Natural community delineation and habitat assessment is not intended to determine presence/absence, but rather allow informed decisions to be made during the permitting process.

The wildlife biologist evaluated the overall habitat quality and position in the landscape to develop suggested conservation management strategies that could be implemented to avoid or minimize impacts to listed species. Photographs were taken to aid in the discussion of various habitat attributes or conditions that illustrate the findings of this assessment (Appendix B).

3. Results

A landscape analysis finds that the parcel is predominantly an active cattle pasture bordered to the west by Interstate 95, the south by the Stroudwater River, and mixed residential / forested land use to the north and east. The limits of disturbance of the Project are predominantly active cattle pasture with a south facing aspect that slopes down to the Stroudwater River. An east-west running electric transmission corridor occurs north of the site and an oil pipeline bisects the parcel north to south. Neither of these transmission corridors are significant wildlife pathways considering the barriers provided by Interstate 95, Stroudwater River, and the dense mixed residential / commercial development of Deering, Deer Hill, and Nasons Corners neighborhoods.

The field survey was conducted on March 13, 2017 and confirmed that land use was consistent with current aerial photography. The weather during the survey was sunny, 15° F and a light dusting of snow covered the ground early in the morning. There are several small groves of white pine (*Pinus strobus*) and various maple and oak trees that are part of the landscaping of the existing residential structure, however the majority of the area within the limits of disturbance is herbaceous in nature. There is a forested fence line on the western part of the parcel and several palustrine emergent wetland drainages. The wooded fence line is composed of several white pine, northern red oak (*Quercus rubra*), and black cherry (*Prunus serotina*). The pasture has been maintained through cattle grazing and occasional mowing. Cropped grasses observed include Kentucky bluegrass (*Poa pratensis*), timothy (*Phleum pratense*), and smooth brome grass (*Bromus inermis*); intermixed with hawksweed (*Hieracium* spp.), Queen Anne's lace (*Daucus carota*), milkweed (*Asclepias syriaca*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and goldendrod (*Solidago* spp.). Shrub sprouts in the meadow include raspberry, quaking aspen, and multiflora rose (*Rosa multiflora*). Wetland areas are comprised of cattail (*Typha* spp.), rushes, sedges, common reed (*Phragmites australis*), steeplebush (*Spirea tomentosa*), speckled alder (*Alnus incana*), and American pussy willow (*Salix discolor*). There was evidence of past earth disturbance on site including the pipeline right of way, access roads, and old structure foundations throughout much of the site.

A steep slope occurs at the southern limit of disturbance that has several white pine and black cherry interspersed with shrubs such as multiflora rose, red maple, and hawthorn (*Crataegus* spp.). The shrubs remain in small clusters with little to no vegetation underneath due to cattle grazing. Much of this sideslope will not be within the limits of disturbance.

3.1. Rare or Unique Botanical Features Evaluation

MNAP indicated that there are 22 rare or unique botanical features that occur within 4 miles of the Project. Most of the species on this list (Table 1) are only found in ecological communities not present in the Project Area (e.g. rocky summits, tidal wetlands, dry barrens, forested wetlands, etc.). Habitat requirements for two of these species generally includes open wetland communities. Creeping spike-moss (*Selaginella apoda*, state endangered) and hollow Joe-pye weed (*Eutrochium fistulosum*, state special concern) generally occur in open herbaceous wetlands, roadside ditches, and old fields.

State endangered species creeping spike-moss is at the northern extent of its range and has been historically identified (1924) within 4 miles of the Project and in 10 other southern Maine towns. This plant is unlikely to occur in the Project Area due to the disturbances associated with cattle grazing and occasional vegetation management. State special concern species hollow Joe-pye weed can tolerate occasional disturbances caused by mowing, but generally is not found in highly grazed pastures. The vegetative cover was thin throughout the site and plants from the last growing season can often be found standing or laying over during the winter. No dead stalks were identified that resembled hollow Joe-pye weed.

Areas within the Project Area that are unmaintained (e.g. steep slopes, around trees, fence lines) are dominated by small dense patches of invasive shrubs. While this assessment was conducted outside of the growing season, it is unlikely that rare or unique botanical features occur within the Project Area.

Table 1. Rare and Exemplary Botanical Features within 4 Miles of 1700 Westbrook Street

Common Name	State Status	State Rank	Global Rank	Last Observed	Occurrence Number	Habitat Requirement	Habitat in Project Area?
Allegheny vine	E	S1	G4	10/1860	9	Rocky summits and outcrops (non-forested, upland), Dry barrens (partly forested, upland)	No
American sea-blite	T	S2	G5	9/12/1932	5	Tidal wetland (non-forested, wetland)	No
	T	S2	G5	8/15/2011	17		
beach plum	E	S1	G4	5/19/1933	10	Rocky coastal (non-forested, upland)	No
broad beech fern	SC	S2	G5	8/1872	15	Hardwood to mixed forest (forest, upland)	No
creeping spike-moss	E	S2	G5	8/20/1924	3	Open wetland, not coastal nor rivershore (non-forested, wetland), Old field/roadside (non-forested, wetland or upland)	Potential
	E	S2	G5	8/21/1924	8		
dioecious sedge	SC	S3	G4	7/14/1936	7	Non-tidal rivershore (non-forested, seasonally wet), open wetland, not coastal nor rivershore (non-forested, wetland)	No
ebony spleenwort	SC	S2	G5	6/6/1910	10	Rocky summits and outcrops (non-forested, upland), Hardwood to mixed forest (forest, upland)	No
Engelmann's spikerush	PE	SH	G4G5 Q	8/31/1916	2	Open wetland, not coastal nor rivershore (non-forested, wetland); wet sand, peat, mud	No
fern-leaved false foxglove	SC	S3	G5	9/2/1902	13	Dry barrens (partly forested, upland), Hardwood to mixed forest (forest, upland)	No
great blue lobelia	PE	SX	G5	9/1/1905	3	Forested wetland, Non-tidal rivershore (non-forested, seasonally wet)	No
hollow joe-pye weed	SC	S2	G5?	6/18/2014	24	Open wetland, not coastal nor rivershore (non-forested, wetland), old field/roadside (non-forested, wetland or upland)	Potential
	SC	S2	G5?	10/22/2007	18		
horned pondweed	SC	S2	G5	9/13/1913	9	Tidal wetland (non-forested, wetland)	No
	SC	S2	G5	6/13/1972	3		
marsh milkwort	PE	SH	G5T4	8/18/1903	1	Dry barrens (partly forested, upland), Open wetland, not coastal nor rivershore (non-forested, wetland)	No
Missouri rockcress	T	S1	G5?Q	6/11/1905	5	Rocky summits and outcrops (non-forested, upland), Hardwood to mixed forest (forest, upland)	No
mountain honeysuckle	E	S2	G5	7/16/2015	16	Dry barrens (partly forested, upland), Hardwood to mixed forest (forest, upland)	No
	E	S2	G5	7/7/2015	17		
Parker's pipewort	SC	S3	G3	8/20/1924	8	Tidal wetland (non-forested, wetland)	No
pitch pine bog	<null>	S2	G3G5	7/31/2012	16	Forested wetland, coastal non-tidal wetland (non-forested, wetland)	No
tidal marsh estuary ecosystem	<null>	S3	GNR	8/25/2011	8	Tidal wetland (non-forested, wetland)	No
variable sedge	E	S1	G3	3/25/1905	8	Dry barrens (partly forested, upland), Hardwood to mixed forest (forest, upland)	No
	E	S1	G3	6/29/1911	9		
Vasey's pondweed	SC	S2	G4	8/4/1901	7	Open water (non-forested, wetland)	No
water-plantain spearwort	PE	SH	G4	8/1862	3	Open water (non-forested, wetland)	No
wild leek	SC	S3	G5	5/10/2006	19	Hardwood to mixed forest (forest, upland), Forested wetland	No

Table 1 Notes

STATE RARITY RANKS	
S1	Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
S2	Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
S3	Rare in Maine (20-100 occurrences).
S4	Apparently secure in Maine.
S5	Demonstrably secure in Maine.
SU	Under consideration for assigning rarity status; more information needed on threats or distribution.
SNR	Not yet ranked.
SNA	Rank not applicable.
S#?	Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).
NOTE:	State Rarity Ranks are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.
GLOBAL RARITY RANKS	
G1	Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
G2	Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
G3	Globally rare (20-100 occurrences).
G4	Apparently secure globally.
G5	Demonstrably secure globally.
GNR	Not yet ranked.
NOTE:	Global Ranks are determined by NatureServe.
STATE LEGAL STATUS	
NOTE:	State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's Endangered and Threatened plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.
E	ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
T	THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.
NON-LEGAL STATUS	
SC	SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
PE	Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

3.2. Wildlife Habitat Evaluation

A number of wildlife were observed during the field visit (Table 2) typical for the season in this habitat. The light snow provided some opportunity to track on the otherwise frozen ground, but it was not so deep that scat, burrows, trails, or other wildlife signs were not visible. Several regular paths used by coyote (*Canis latrans*), red fox (*Vulpes vulpes*), and striped skunk (*Mephitis mephitis*) were observed. Scat, tracks, and venting frost from a red fox den were observed on the site. A variety of winter resident and early spring migrant birds were observed in the Project Area.

Table 2. Wildlife Observed at 1700 Westbrook Street (3/13/2017)

Common Name	Scientific name
Birds	
downy woodpecker	<i>Picoides pubescens</i>
northern cardinal	<i>Cardinalis cardinalis</i>
pileated woodpecker	<i>Dryocopus pileatus</i>
black-capped chickadee	<i>Poecile atricapillus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>
American crow	<i>Corvus brachyrhynchos</i>
blue jay	<i>Cyanocitta cristata</i>
herring gull	<i>Larus argentatus</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
American crow	<i>Corvus brachyrhynchos</i>
Mammals	
red fox	<i>Vulpes vulpes</i>
Eastern coyote	<i>Canis latrans</i>
striped skunk	<i>Mephitis mephitis</i>

A thorough evaluation of the sideslope dominated by invasive shrubs did not show signs of cottontail use such as scat, tracks, or sign of browse. The multiflora rose, hawthorn, and other shrubs are separated by cattle paths, thereby separating most of the shrubs from each other. The areas under shrubs were free of vegetation due to heavy browse and foot traffic by cattle. The cattle use the area as shelter from the sun, making this area unsuitable for New England cottontail. The patch of shrubby habitat is too small, lacks the proper vegetative structure, lacks the preferred stem density, and is largely unconnected to other areas of suitable New England cottontail habitat.

It is unlikely that the USFWS has hibernacula or maternity roost records for northern long-eared bat (*Myotis septentrionalis*) in the vicinity of the Project based on other work conducted by Verdanterra in the area. There was nothing observed in the field visit to suggest otherwise. Therefore, we believe the 4(d) rule for the northern long-eared bat could be applied.

If there is a federal nexus for the project (e.g., federal permits required to construct), no tree clearing should occur on any portion of the Project Area until consultation under Section 7 of the Endangered Species Act, between the USFWS and the federal action agency, is completed. The applicant can prepare the 4(d) notification form and submit it with their wetland permit for use by the U.S. Army Corps during the Section 7 consultation.

4. Conclusions and Recommendations

The results of the landscape analysis and subsequent field assessment found that rare or unique botanical features previously documented in the area by MNAP are unlikely to occur within the limits of disturbance of the Project. Many of the habitats required do not occur on the Project site. The herbaceous wetlands present on site are impacted by decades (at least since 1984) of cattle grazing and occasional vegetation management, making them unsuitable for any of these rare or unique botanical features. No further evaluation of plant or protected natural communities are recommended at the Project.

Several species of wildlife or their signs were observed within the Project area. While several areas of dense shrubs exist on the edges of the limits of disturbance, none of these areas are suitable to support populations of New England cottontail. The islands of invasive shrubs lack the density, aerial coverage, or connectivity to support a population of New England cottontail.

There are trees of size and quality to act as potential northern long-eared bat at the Project, however, any tree cutting required would qualify under the 4(d) rules as incidental take. While there are no specific cutting restrictions for northern long-eared bats, providing this information along with any required federal permits will hopefully speed up the consultation between the U.S. Army Corps of Engineers and the USFWS. Additionally, there are not likely to be significant adverse impacts to birds of conservation concern listed as occurring within Cumberland County, Maine.

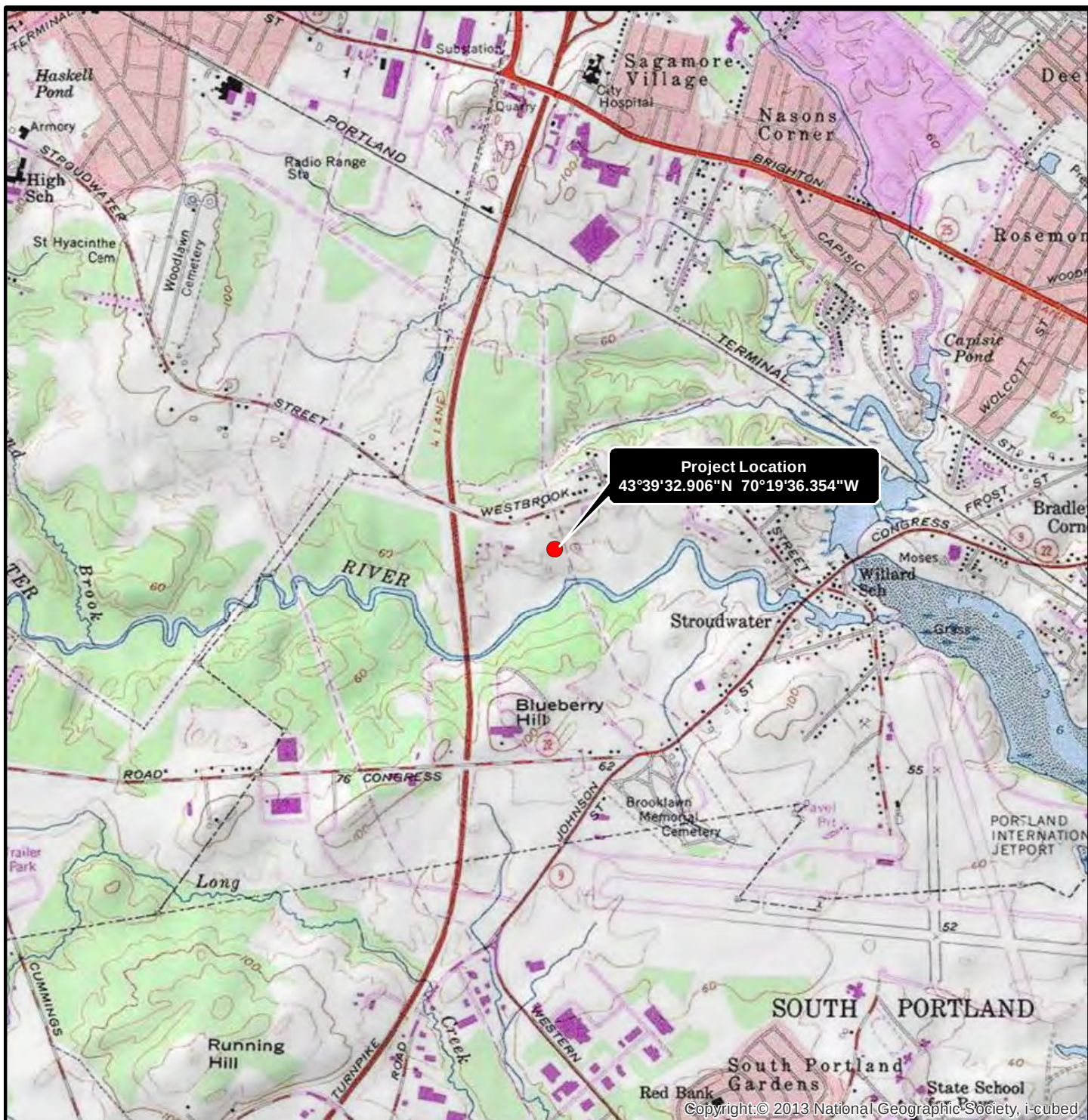


Figures

Figure 1. Camelot Farms - Project Location Map

Figure 2. Project Limits of Disturbance – Aerial Background

Figure 3. Project Limits of Disturbance – Topographic Background



VERDANTERRA

Map Details

Location
Cumberland County,
Maine

Last Modified: March 17, 2017

REVISION	00
CREATOR	AS 03/16/2017
REVIEWED	GG 03/16/2017

Page 01 of 01

Legend

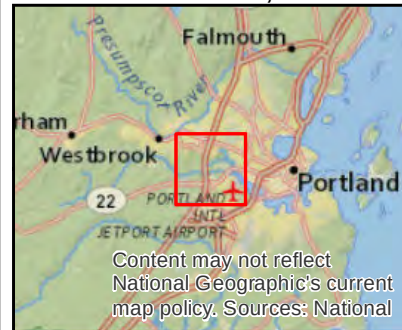
- Project Location

Data Sources include: USGS, VT
Orthophotography: USGS Topographic Quad



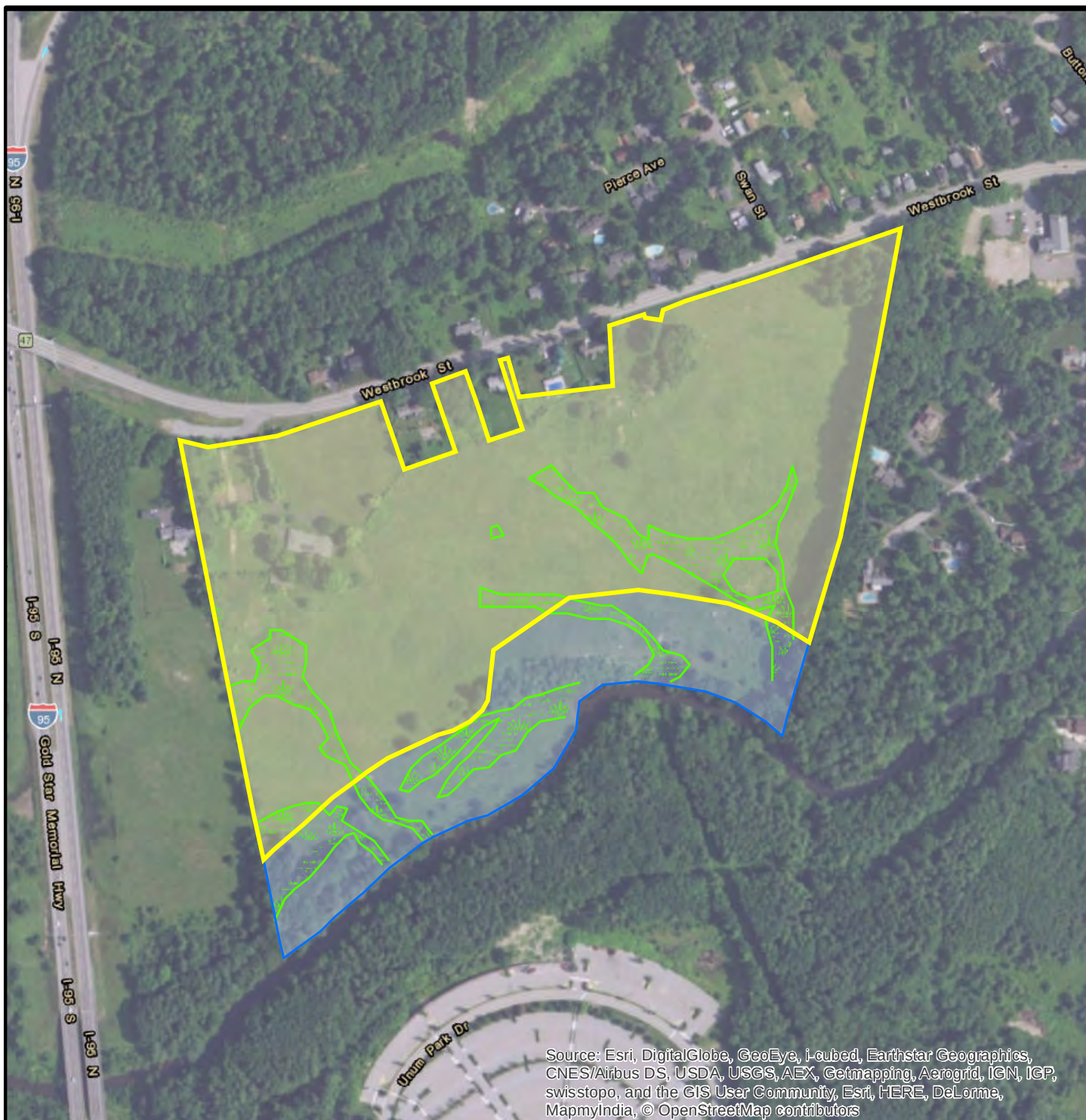
Figure 1.

Project Location
Camelot Farms
1700 Westbrook Street, Portland ME



Content may not reflect
National Geographic's current
map policy. Sources: National

Map Location in Red



Map Details

Location

Cumberland County,
Maine

Last Modified: March 17, 2017

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CREATOR

AS 03/17/2017

REVIEWED

GG 03/17/2017

Page 01 of 01

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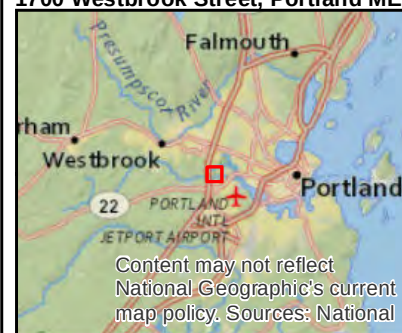
- Limit of Disturbance
- Shoreland Protection Zone
- Wetland Areas

Data Sources include: USGS, VT
Orthophotography: USGS Topographic Quad

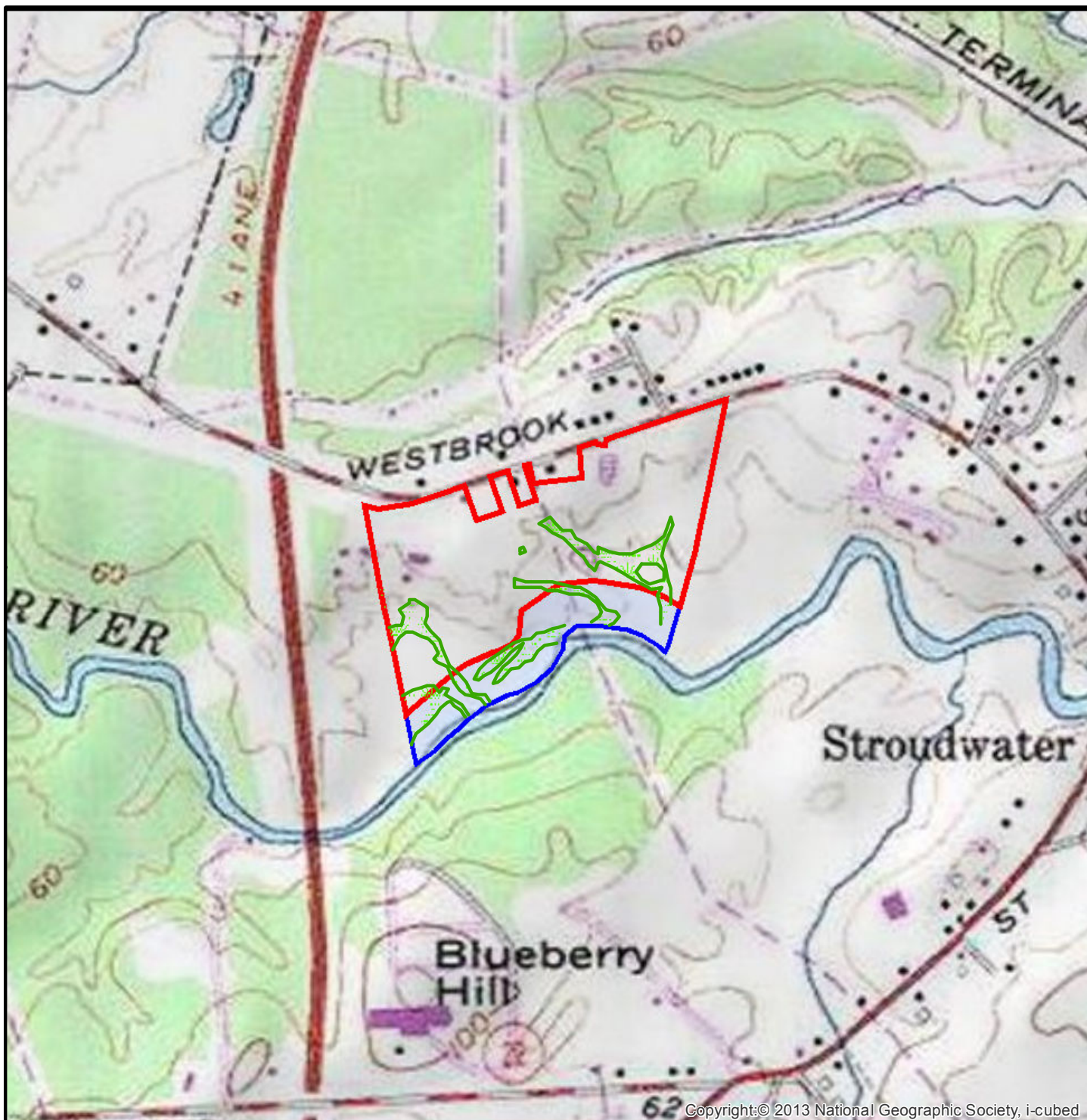


Figure 2.

**Project Limits of Disturbance (Aerial)
Camelot Farms
1700 Westbrook Street, Portland ME**



Map Location in Red



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Map Details

Location

Cumberland County,
Maine

Last Modified: March 27, 2017

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GG 03/17/2017

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Legend



Limit of Disturbance



Shoreland Protection Zone



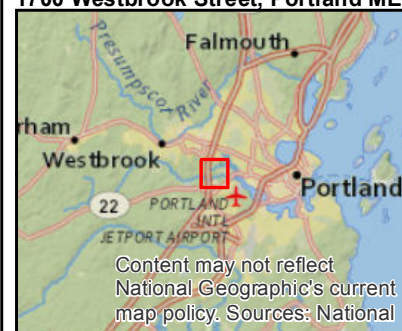
Wetland Areas

Data Sources include: USGS, VT
Orthophotography: USGS Topographic Quad



Figure 3.

Project Limits of Disturbance (Topo)
Camelot Farms
1700 Westbrook Street, Portland ME



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National Geographic's current
map policy. Sources: National

Map Location in Red



Appendix A. Verdanterra Resume

Gino is a Certified Wildlife Biologist and Director of Ecological Services that leads our team of biologists who complete natural resources assessment and permitting, pipeline/transmission line assessment and permitting, wind power assessments, regional natural resources planning, wildlife management planning, and permitting. He has specialty expertise with bird and bat surveys, with a focus on rare species surveys and consultations under the Endangered Species Act.

Gino oversees FERC license applications, RTE surveys, ecological community characterizations, biological assessments, Section 7 consultations, Clean Water Act permitting, and document preparation in accordance with the NEPA.

Gino's client experience includes a wide array of federal, state, local, and private clients. He is certified by the US Army Center for Health Promotion and Preventative Medicine in the Evaluation of Environmental Noise and is a Qualified Airport Biologist as recognized by the FAA.

REPRESENTATIVE PROJECT EXPERIENCE

RANGER SOLAR INDUSTRIAL SCALE SOLAR FACILITIES Project Manager and Lead Ecologist

Gino is the Project Manager and Lead Ecologist for Ranger Solar's development of five utility scale solar facilities throughout New England. Each of the sites were surveyed for vernal pools, wetlands and waterbodies, and rare vernal pool dependent species. Resources were characterized according to applicable state and federal standards and definitions.

NORWOTTUCK RAILTRAIL REHABILITATION PROJECT, MA Senior Ecologist

Provided oversight natural community, general wildlife, and rare species habitat assessments within the 11- mile rail trail corridor. Evaluated habitat conditions for 19 state-listed rare wildlife and plant species documented by the NHESP and provided impact minimization recommendations to the engineer to comply with MESA. Evaluated current beaver damage to the rail trail corridor and reviewed beaver management planning in accordance with MWPA and MESA performance standards.

EDUCATION

MS, Natural Resources Planning,
University of Vermont,
Burlington, Vermont

BS, Wildlife Biology, University of
Massachusetts, Amherst,
Massachusetts

TRAINING

Airport Wildlife Hazard
Management Workshop (meets
requirements of 14 CFR 139 and
FAA Circ 150/5200-36), Embry-
Riddle Aeronautical University,
Daytona Beach, Florida, 2010

Qualified Airport Wildlife
Biologist, Federal Aviation
Administration

Certified Wildlife Biologist,
The Wildlife Society

SPOTTED TURTLE HABITAT ASSESSMENT AND SURVEYS, MA

Senior Ecologist

Conducted an assessment of suitable habitat conditions and visual surveys for spotted turtles at the site of a proposed major commercial and residential development. Assisted with the development of wildlife crossing structure and exclusion barrier design and placement. Coordinated project planning and mitigation design with local and state agencies in compliance with MESA.

REGIONAL BLANDING'S TURTLE RAPID HABITAT ASSESSMENT, NH

Senior Ecologist

Conducted and managed landscape analysis, habitat assessment, and field survey of Blanding's turtle habitat modeling results in southern and central New Hampshire. Developed regional study plan in coordination with the New Hampshire Fish and Game Department to assess modeling results of 15 sites (> 1500 acres). Results evaluated suitable habitat conditions, new observations of Blanding's turtles, and conservation planning and management recommendations.

KINDER MORGAN PARKWAY PIPELINE PROJECT

Principal Scientist

The Parkway Pipeline Project (PWP) proposes to construct a new 136-mile, 16-inch diameter liquid products pipeline originating at Valero Energy Corporation's St. Charles Refinery in Norco, Louisiana and terminating at Kinder Morgan's pipeline terminal in Collins, Mississippi. The purpose of the project is to transport refined petroleum products from Norco to Collins, where these products can be further distributed to the southeastern United States. Mr. Giumarro assisted with permitting and routing studies for this project.

NEXUS GAS TRANSMISSION PROJECT

Project Manager

Gino managed wetland and waterbody surveys and delineations on an approximate 250 mile proposed pipeline corridor crossing portions of Ohio and Michigan. Daily data collection and reporting included USACE wetland data forms, Ohio Rapid Assessment Method (ORAM), stream assessments (HHEI/QHEI), and GPS survey within the proposed pipeline right-of-way.

NATURAL RESOURCE SERVICES

Senior Ecologist and Project Manager

Conducted assessment and surveys of numerous project sites throughout New England to identify suitable habitat conditions for a variety of rare, threatened, and endangered species; or rare communities; wetlands; and vernal pools. Determinations were provided to assist with project planning and permit applications in compliance with applicable local, state, and federal natural resource regulations.

OTHER REPRESENTATIVE PROJECTS

Sandpiper Pipeline Project
(Minnesota)

Downeast LNG Export Terminal
(Maine)

TransCanada Pipeline
Groundbed Anode Replacement
(Michigan)

Blue Racer Midstream Natrium
Residue Pipeline (Ohio/West
Virginia)

Blue Racer Midstream Carlisle
Dos Looping Project (Ohio)

Access Midstream Rare Bat
Surveys (Ohio)

National Park Service Cape Cod
NS Hunting EIS (Massachusetts)

Wind Farm Development Surveys
and Risk Assessments (New York,
New Hampshire, Vermont,
Maine, Virginia, West Virginia,
and Pennsylvania)

Mount Rushmore National
Memorial Air Tour Management
Plan Environmental Assessment
(South Dakota)

NASA Wallops Island Flight
Facility Bat Evaluation, Wallops
Island (Virginia)



Appendix B. Site Visit Photodocumentation



Photo 1 – Property access off 1700 Westbrook Street, Portland, Maine



Photo 2 – Wet ditch paralleling Westbrook Street



Photo 3 – Shrub and treeline at the western edge of the limits of disturbance; north to south



Photo 4 – Narrow treeline surrounded by pasture does not connect other dense shrub habitat



Photo 5 – Narrow treeline on the western edge of the limits of disturbance



Photo 6 – The meadow has thin grass, herb, and raspberry cover; many signs of grazing



Photo 7 – Forested edge near Stroudwater River is free of dense shrub cover



Photo 8 – Open floodplain forest adjacent to Stroudwater River



Photo 9 – Numerous fox tracks were observed



Photo 10 – Small patches of multiflora rose occur in areas that cannot be mowed



Photo 11 – Black cherry, multiflora rose and speckled alder occur along wetland / toe of slope



Photo 12 – Shrubby areas are kept open by cattle grazing



Photo 13 – Cattle paths occur under the canopy and within shrub areas



Photo 14 – Cattle path on sideslope south of Stroudwater River



Photo 15 – Numerous signs of past land uses such as this access road and an oil pipeline



Photo 16 – Fox den



Photo 17 – Thin cover of goldenrod, grasses, thistle, hawksweed; raspberry



Photo 18 – No understory in the small grove of white pine adjacent to Westbrook Street



Photo 19 – Vegetative cover is typical of cattle pastures in southern Maine



Photo 20 – Emergent wetland seep adjacent to a slope has allowed multiflora rose to grow in isolated places in the pasture

Appendix C. Agency Correspondence

1. Site Plan Drawing Number C-10 – Acorn Engineering – 2/14/2017
2. Maine Natural Areas Program Letter – 11/10/2016
3. Maine Division of Inland Fisheries and Wildlife Letter – 12/2/2016
4. United States Fish and Wildlife Service IPaC Analysis – 3/20/2017
5. Maine Historic Preservation Commission Letter – 12/9/2016

GENERAL NOTES:

1. PLAN REFERENCES:

1.1. MAINE OFFICE OF GIS FOR AERIAL AND CONTOUR DATA

1.2. CITY OF PORTLAND GIS FOR PARCEL AND ZONING DATA

1.3. PRELIMINARY BOUNDARY SURVEY DATED 11/16/2016 COMPLETED BY TITCOMB ASSOCIATES.

1.4. WETLAND DELINEATION BY MARK HAMPTON ASSOCIATES DATED 11/18/2016

2. AREA DEPICTED FOR THE SHORELAND OVERLAY ZONE IS APPROXIMATE BASED ON PORTLAND GIS DATA.

3. IN ANTICIPATION OF BEING BUILT INTO PHASES, TURNAROUND CAPABILITIES WILL BE MAINTAINED IN THE CENTER OF THE DEVELOPMENT. THE TURNAROUND WILL BE A MINIMUM 30' LONG AS MEASURED FROM THE PROPOSED ROW PER TECHNICAL STANDARD AND WILL BE REMOVED AT PROJECT COMPLETION.

SPACE AND BULK STANDARDS		
ZONE:	R-1 (EX.)	R-3 (PROP.)
MINIMUM LOT SIZE	15,000 SF	6,500 SF
MINIMUM STREET FRONTAGE	75'	50'
FRONT YARD	25'	25'
REAR YARD - PRINCIPAL	25'	25'
REAR YARD - ACCESSORY	5'	5'
SIDE YARD	16'	16'
STRUCTURE STEPBACKS (REAR YARD ABOVE 35')	-	15'
MAXIMUM LOT COVERAGE	20%	35%
MINIMUM LOT WIDTH*	100'	65'
MAXIMUM BUILDING HEIGHT	35'	35'
MAXIMUM ACCESSORY HEIGHT	18'	18'

*DISTANCE PARALLEL TO THE FRONT OF THE BUILDING MEASURED BETWEEN SIDE LOT LINES THROUGH THAT PART OF THE PRINCIPAL BUILDING WHERE THE LOT IS NARROWEST.

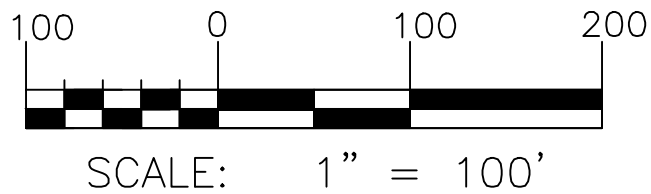
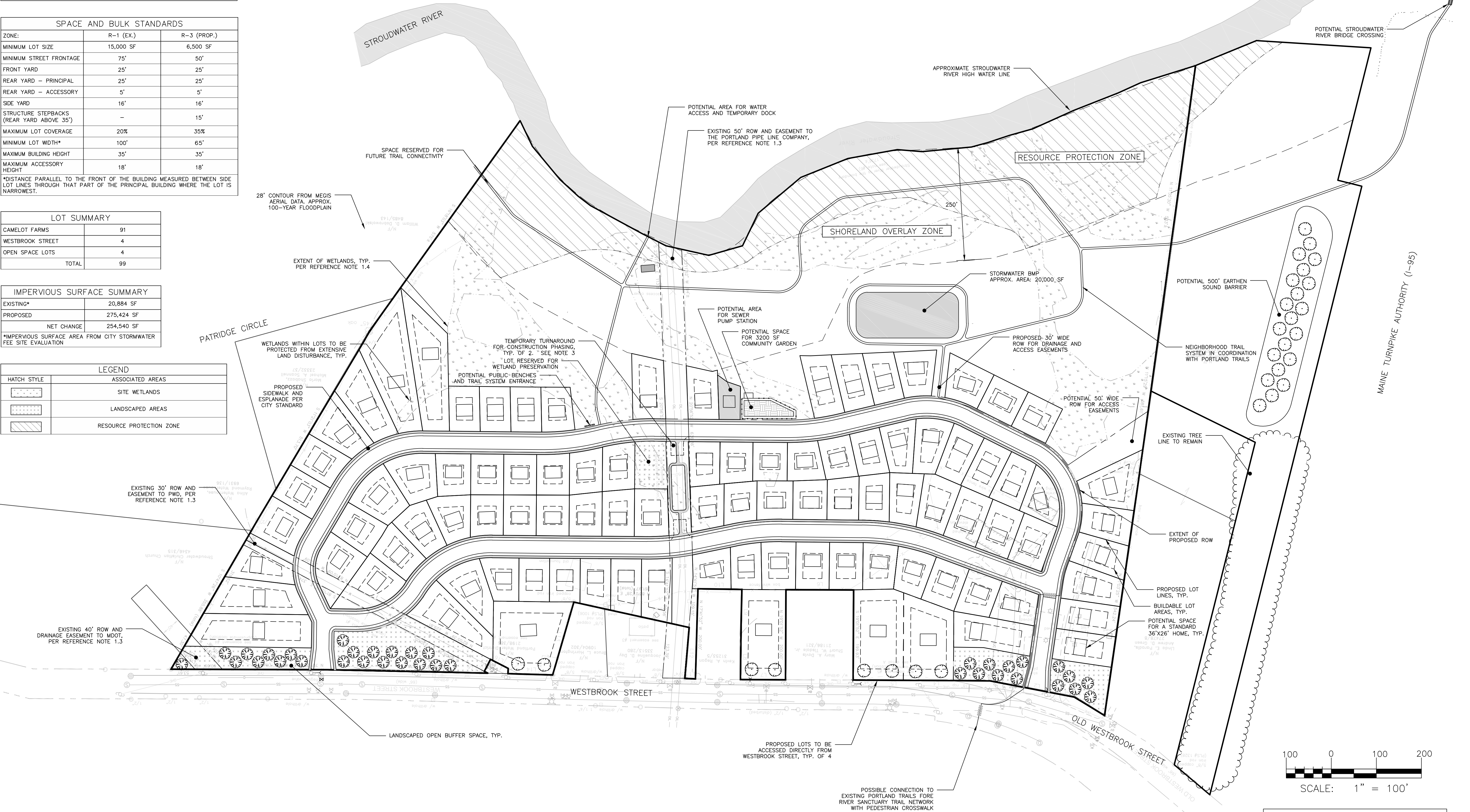
LOT SUMMARY	
CAMELOT FARMS	91
WESTBROOK STREET	4
OPEN SPACE LOTS	4
TOTAL	99

IMPERVIOUS SURFACE SUMMARY	
EXISTING*	20,884 SF
PROPOSED	275,424 SF
NET CHANGE	254,540 SF

*IMPERVIOUS SURFACE AREA FROM CITY STORMWATER FEE SITE EVALUATION

LEGEND	
HATCH STYLE	ASSOCIATED AREAS
	SITE WETLANDS
	LANDSCAPED AREAS
	RESOURCE PROTECTION ZONE

R-3 ZONE CHANGE CONCEPT PLAN



FINAL APPLICATION
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY
PRE-APP	WHS
PRELIM APP	WHS
FINAL APP	WHS
DATE	
10/27/16	
12/2/16	
2/14/17	

SITE PLAN - R-3 CONCEPT	
CAMELOT VILLAGE	
CAMELOT HOLDINGS, LLC	
KENNEBUNK, MAINE 04043	

DRAWING NAME:	PROJECT NAME:	CLIENT:
ACORN ENGINEERING, INC.		

FILE:	1079_CIVIL
JN:	1079
SCALE:	1"=100'
DESIGNED BY:	OJD
DRAWN BY:	OJD
CHECKED BY:	WHS

STATE OF MAINE	WILLIAM SAVAGE
2-14-17	11416

DRAWING NO.
C-11



PAUL R. LePAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

WALTER E. WHITCOMB
COMMISSIONER

November 10, 2016

Olivia Dawson
Acorn Engineering
PO Box 3372
Portland, ME 04104

Via email: odawson@acorn-engineering.com

Re: Rare and exemplary botanical features in proximity to: Camelot Farms Subdivision, Portland, Maine

Dear Ms. Dawson:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received November 10, 2016 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. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

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.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM



PHONE: (207) 287-8044
FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

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.

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

Rare and Exemplary Botanical Features within 4 miles of Project: Camelot Farms Subdivision, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Allegheny Vine						
	E	S1	G4	1860-10	9	Rocky summits and outcrops (non-forested, upland),Dry barrens (partly forested, upland)
American Sea-blite						
	T	S2	G5	1932-09-12	5	Tidal wetland (non-forested, wetland)
	T	S2	G5	2011-08-15	17	Tidal wetland (non-forested, wetland)
Beach Plum						
	E	S1	G4	1933-05-19	10	Rocky coastal (non-forested, upland)
Broad Beech Fern						
	SC	S2	G5	1872-08	15	Hardwood to mixed forest (forest, upland)
Creeping Spike-moss						
	E	S2	G5	1924-08-20	3	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	E	S2	G5	1924-08-21	8	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
Dioecious Sedge						
	SC	S3	G4	1936-07-14	7	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
Ebony Spleenwort						
	SC	S2	G5	1910-06-06	10	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Engelmann's Spikerush						
	PE	SH	G4G5Q	1916-08-31	2	Open wetland, not coastal nor rivershore (non-forested, wetland)
Fern-leaved False Foxglove						
	SC	S3	G5	1902-09-02	13	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Great Blue Lobelia						

Rare and Exemplary Botanical Features within 4 miles of Project: Camelot Farms Subdivision, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	PE	SX	G5	1905-09	3	Forested wetland,Non-tidal rivershore (non-forested, seasonally wet)
Hollow Joe-pye Weed						
	SC	S2	G5?	2014-06-18	24	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	SC	S2	G5?	2007-10-22	18	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
Horned Pondweed						
	SC	S2	G5	1913-09-13	9	Tidal wetland (non-forested, wetland)
	SC	S2	G5	1972-06-13	3	Tidal wetland (non-forested, wetland)
Marsh Milkwort						
	PE	SH	G5T4	1903-08-18	1	Dry barrens (partly forested, upland),Open wetland, not coastal nor rivershore (non-forested, wetland)
Missouri Rockcress						
	T	S1	G5?Q	1905-06-11	5	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Mountain Honeysuckle						
	E	S2	G5	2015-07-16	16	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S2	G5	2015-07-07	17	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Parker's Pipewort						
	SC	S3	G3	1924-08-20	8	Tidal wetland (non-forested, wetland)
Pitch Pine Bog						
	<null>	S2	G3G5	2012-07-31	16	Forested wetland,Coastal non-tidal wetland (non-forested, wetland)
Tidal Marsh Estuary Ecosystem						
	<null>	S3	GNR	2011-08-25	8	Tidal wetland (non-forested, wetland)
Variable Sedge						

Rare and Exemplary Botanical Features within 4 miles of Project: Camelot Farms Subdivision, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	E	S1	G3	1911	8	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	1911-06-29	9	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Vasey's Pondweed						
	SC	S2	G4	1901-08-04	7	Open water (non-forested, wetland)
Water-plantain Spearwort						
	PE	SH	G4	1862-08	3	Open water (non-forested, wetland)
Wild Leek						
	SC	S3	G5	2006-05-10	19	Hardwood to mixed forest (forest, upland),Forested wetland

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>



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

December 2, 2016

Olivia Dawson
Acorn Engineering, Inc.
158 Danforth Street
Portland, ME 04102

RE: Information Request - Camelot Farms subdivision, Portland

Dear Olivia:

Per your request received November 10, 2016, 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 *Camelot Farms subdivision project* in Portland. For purposes of this review, we are assuming that the development will occur primarily within maintained fields and tree clearing will not be necessary. If tree clearing is ultimately proposed, please contact our Department for further guidance

Our information indicates no locations of Endangered, Threatened, or Special Concern species within the project area that would be directly affected by your project. Additionally, our Department has not mapped any Essential or Significant Wildlife Habitats that would be directly affected by your project.

Fisheries Habitat

Without details, it is difficult to know what impacts your project may have on the Stroudwater River. That being said, MDIFW makes the following general recommendations as they pertain to work around rivers and streams.

Maintaining buffers along coldwater fisheries is critical to the protection of water temperatures, water quality, and inputs of coarse woody debris necessary to support conditions required by brook trout. We generally recommend that a 100-foot undisturbed vegetated buffer be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work or work within 100 feet of streams occur between July 15 and October 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

Letter to Olivia Dawson
Comments RE: Camelot Farms subdivision, Portland
December 2, 2016

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,

A handwritten signature in black ink, appearing to read "John MacLaine". The signature is fluid and cursive, with a large initial "J" and "M".

John MacLaine
Biologist

IPaC resource list

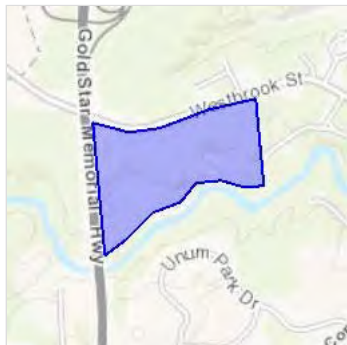
Project information

NAME

Camelot Farms

LOCATION

Cumberland County, Maine



DESCRIPTION

Residential development

Local office

Maine Ecological Services Field Office

☎ (207) 469-7300

📠 (207) 902-1588

MAILING ADDRESS

P. O. Box A
East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road
East Orland, ME 04431

<http://www.fws.gov/mainefieldoffice/index.html>

Endangered species

This resource list is for informational purposes only and should not be used for planning or analyzing project level impacts.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to “request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action” for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Review section in IPaC or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by creating a project and making a request from the Regulatory Review section.

Listed species¹ are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. http://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location, not a list of every bird species you may find in this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#).

NAME	SEASON(S)
American Bittern <i>Botaurus lentiginosus</i> http://ecos.fws.gov/ecp/species/6582	On Land: Breeding
American Oystercatcher <i>Haematopus palliatus</i> http://ecos.fws.gov/ecp/species/8935	On Land: Breeding
Bald Eagle <i>Haliaeetus leucocephalus</i> http://ecos.fws.gov/ecp/species/1626	On Land: Year-round
Bay-breasted Warbler <i>Dendroica castanea</i>	On Land: Breeding
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> http://ecos.fws.gov/ecp/species/9399	On Land: Breeding

Blue-winged Warbler	<i>Vermivora pinus</i>	On Land: Breeding
Canada Warbler	<i>Wilsonia canadensis</i>	On Land: Breeding
Great Cormorant	<i>Phalacrocorax carbo</i>	On Land: Wintering
Hudsonian Godwit	<i>Limosa haemastica</i>	At Sea: Migrating
Least Bittern	<i>Ixobrychus exilis</i> http://ecos.fws.gov/ecp/species/6175	On Land: Breeding
Nelson's Sparrow	<i>Ammodramus nelsoni</i>	On Land: Breeding
Olive-sided Flycatcher	<i>Contopus cooperi</i> http://ecos.fws.gov/ecp/species/3914	On Land: Breeding
Peregrine Falcon	<i>Falco peregrinus</i> http://ecos.fws.gov/ecp/species/8831	On Land: Breeding
Pied-billed Grebe	<i>Podilymbus podiceps</i>	On Land: Breeding
Prairie Warbler	<i>Dendroica discolor</i>	On Land: Breeding
Purple Sandpiper	<i>Calidris maritima</i>	On Land: Wintering
Saltmarsh Sparrow	<i>Ammodramus caudacutus</i>	On Land: Breeding
Short-eared Owl	<i>Asio flammeus</i> http://ecos.fws.gov/ecp/species/9295	On Land: Wintering
Snowy Egret	<i>Egretta thula</i>	On Land: Breeding
Upland Sandpiper	<i>Bartramia longicauda</i> http://ecos.fws.gov/ecp/species/9294	On Land: Breeding
Willow Flycatcher	<i>Empidonax traillii</i> http://ecos.fws.gov/ecp/species/3482	On Land: Breeding
Wood Thrush	<i>Hylocichla mustelina</i>	On Land: Breeding

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details

about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAANCCOS models: the models were developed as part of the NOAANCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAANCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

December 9, 2016

Olivia Dawson, E.I.
Acorn Engineering, Inc.
P.O. Box 3372
Portland, ME 04104

Project: MHPC# 1678-16 - Camelot Holdings, Inc., 1700 Westbrook Street; redevelop
existing farm with single family homes
Town: Portland, ME

Dear Ms. Dawson:

In response to your recent request, I have reviewed the information received November 16, 2016 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

In order to complete our review, we are requesting the following information:

1. Submit photos (keyed to a topographic map) of any buildings that are fifty years or older that are on or adjacent to the project site. If no such buildings exist, please indicate this in writing.
2. An archeological Phase I survey for prehistoric archaeological sites is necessary for all land on this project area below the 40 foot contour or within 100 yards of the Stroudwater River. A list of approved archaeologists is enclosed. Please note that we must review the proposal/scope of work for this survey that you choose. Please contact Dr. Arthur Spiess, Senior Archaeologist arthur.spiess@maine.gov with any questions.

Once this information is received, we will forward a response regarding the results of our evaluation.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer

Enc.

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		Robert N. Bartone Northeast Archaeology Research Center 382 Fairbanks Road Farmington, ME 04938 Phone: 207-860-4032 Fax: 207-860-4031 Email: bartone@nearchaology.com																									
		Dr. William R. Belcher U.S. Army CILHI 310 Worcester Avenue, Bldg 45 Hickam AFB, HI 96853-5530 Email: wbelcher@msn.com																									
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		Jacob Freedman SEARCH, Inc. 55 Melville Avenue Boston, MA 02124 Phone: 207-266-7709 Email: jacob@searchinc.com																									

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Section 8

Historic Sites



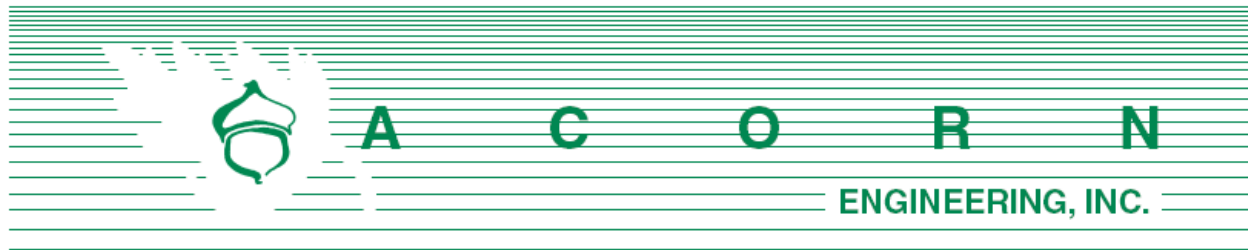
8. Historic Sites

Acorn Engineering, Inc. sent a project description and copy of the development plans to Maine Historic Preservation Commission (MHPC) on November 10, 2016. A response letter was received from Kirk F. Mohny (MHPC) on December 9, 2016 and is included as part of this Section.

A Phase I Prehistoric Archaeological Survey Report, by Sarah Haugh – Tetra Tech dated, August 2017 was completed for the project area. The results of the Phase I Prehistoric Archaeological Investigation, determined there are no prehistoric archeological sites recorded within the project area. Please refer to the attached report for additional information.

A Historic Structures photographic record was also completed by Sarah Haugh – Tetra Tech, dated August 31st, 2017 for buildings fifty years or older located on or adjacent to the project site.

The Phase I Prehistoric Archaeological Survey and Historic Structures Photographs will be forwarded along to Kirk F. Mohny along with a topographic photo map per his attached response. Future correspondence with Mr. Mohny will be submitted once received.



Mr. Kirk F. Mohnney
Director - Maine Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, Maine 04333

November 10th, 2016

Subject: Camelot Farms Subdivision
1700 Westbrook Street, Portland, Maine

Dear Mr. Mohnney:

Acorn Engineering, Inc. has been retained by Camelot Holdings, LLC to provide civil engineering services for the proposed subdivision project at 1700 Westbrook Street in Portland, Maine. The project proposes to redevelop the existing, small farm with a single-story home and accessory shed and barn structures into a traditional single-family development within the Stroudwater neighborhood; house lots will range in size between 6,500 sf to 20,000 sf. The property directly abuts the Stroudwater River and consists mostly of farming pastures. The portion of the site adjacent to Westbrook Street is proposed to be regraded to support a road network, subdivided lots, and ancillary infrastructure. Thus, there will be limited tree removal, stumping, and grubbing on-site due to the existing use. The proposed roads are to be paved and built to City standard. The project will require a Zoning Map/Text Amendment and Level III – Site Plan Application.

Per City Ordinance, a portion of the property resides within the Shoreland Overlay Zone in which construction and redevelopment activities are limited within 250 feet of the high-water line; it is proposed that all development associated with subdivision will remain greater than 250 feet from the river. The space is to be used recreationally with a passive, neighborhood trail system and other shared amenities; there is no significant earthwork to occur within this zone.

The project area is comprised of five separate parcels (Chart, Book, Lot 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3) with two existing utility easements for the Portland Water District and Portland Pipeline Company that bisect the property. The parcels have been previously subdivided so that there are four single-family sublots facing Westbrook Street. The site is approximately 1,200 feet the Stroudwater Historic District, but, based on preliminary research, is not included in the district or the National Register of Historic Places.

Acorn Engineering appreciates your assistance with determining if there are any areas within the site of historical, architectural, or archeological significance. Please refer to the attached documents to facilitate your review.

Any response and supporting documents may be mailed to the address below or as a PDF file to odawson@acorn-engineering.com.

Sincerely,



Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.
*158 Danforth Street
Portland, Maine 04102*

Attached:

EX-1 Vicinity Map
EX-2 Concept Site Plan





MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

December 9, 2016

Olivia Dawson, E.I.
Acorn Engineering, Inc.
P.O. Box 3372
Portland, ME 04104

Project: MHPC# 1678-16 - Camelot Holdings, Inc., 1700 Westbrook Street; redevelop
existing farm with single family homes
Town: Portland, ME

Dear Ms. Dawson:

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Once this information is received, we will forward a response regarding the results of our evaluation.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer

Enc.

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**PHASE I PREHISTORIC ARCHAEOLOGICAL
INVESTIGATION REPORT**

**CAMELOT FARMS SUBDIVISION PROJECT
CITY OF PORTLAND,
CUMBERLAND COUNTY, MAINE**

MHPC# 1678-16

Prepared for:

**Camelot Holdings, L.L.C.
78 Lincoln St
Portland, ME 04103**

Prepared by:

**Sarah M. Haugh
Tetra Tech, Inc.
451 Presumpscot Street
Portland, Maine 04103**

August 2017



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<u>APPENDIX</u>	<u>DESCRIPTION</u>
Appendix A	Camelot Farms Site Plan
Appendix B	Photographic Record
Appendix C	Excavation Characteristics and Artifact Inventory

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) conducted a Phase I prehistoric archaeological investigation of the proposed Camelot Farms Subdivision Project (Project), located in the City of Portland, Cumberland County, Maine. Field work was performed in July on behalf of Camelot Holdings L.L.C. (Camelot). The cultural resource investigation was conducted in accordance with the National Historic Preservation Act of 1966, as amended, and the Maine State Historic Preservation Officer's Standards and Guidelines (27 MRSA §509).

As requested by the Maine Historic Preservation Commission (MHPC), the Phase I prehistoric archaeological investigation involved field survey of portions of the Project below the 40 foot contour. The purpose of the survey was to characterize the cultural resource sensitivity and identify potentially significant prehistoric archaeological sites within the survey area. A Phase IB subsurface testing regimen was established and conducted in areas of potential archaeological sensitivity. A total of 28 shovel tests (STs) and four test units (TUs) were excavated within the Project area. No prehistoric cultural materials or features were identified in the STs or TUs; historic period artifacts were recovered from both STs, TUs and through surface collection. None of the historic materials present particular significance either individually or collectively, and are likely the result of continued use of the Project area as a farm pasture.

This report summarizes the background research, describes the environment and cultural history of the Project area, presents the field methods employed in the survey, and describes the results of the Phase I archaeological field investigation for the Project. Ms. Sarah M. Haugh, B.A., Certified Level I Prehistoric Archaeologist in Maine, served as the Principal Investigator for the archaeological investigation.

1.1 Project Description

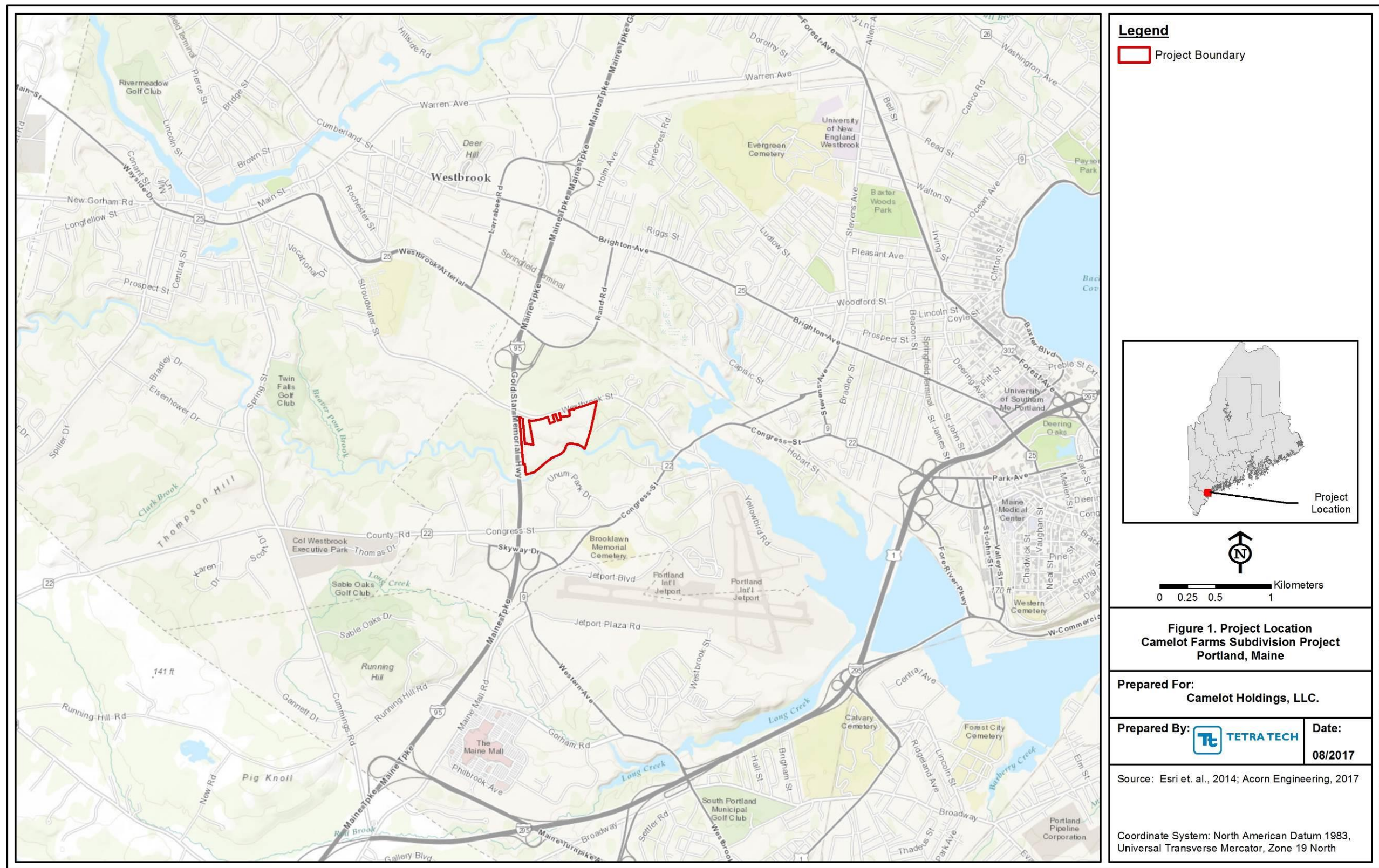
The Project area is situated on the Camelot Farm property, south of Westbrook Street between the Maine Turnpike and Route 9 in the City of Portland, Maine (Figure 1). The proposed Project consists of the construction of an approximately 50 acre residential subdivision (Appendix A).

Camelot initiated consultation with the MHPC to determine if significant cultural resources may exist within and/or adjacent to the Project area. The MHPC response indicated that the Project is sensitive for the presence of prehistoric archaeological sites, and a Phase I prehistoric archaeological survey for areas below the 40 foot contour and within 100 yards of the Stroudwater River is necessary to determine whether there are any significant archaeological sites present. Additionally, the MHPC requested a historic structures survey to identify any buildings on or adjacent to the Project area that are 50 years of age or older.

1.2 Environmental Setting

The Project area is located between 0 to 60 feet above mean sea level and contains upland terrain, interspersed by large wetland drainages, which descends to the south towards the Stroudwater River. The area was previously used as a farm pasture, former livestock trails and compressed soils are visible in areas.

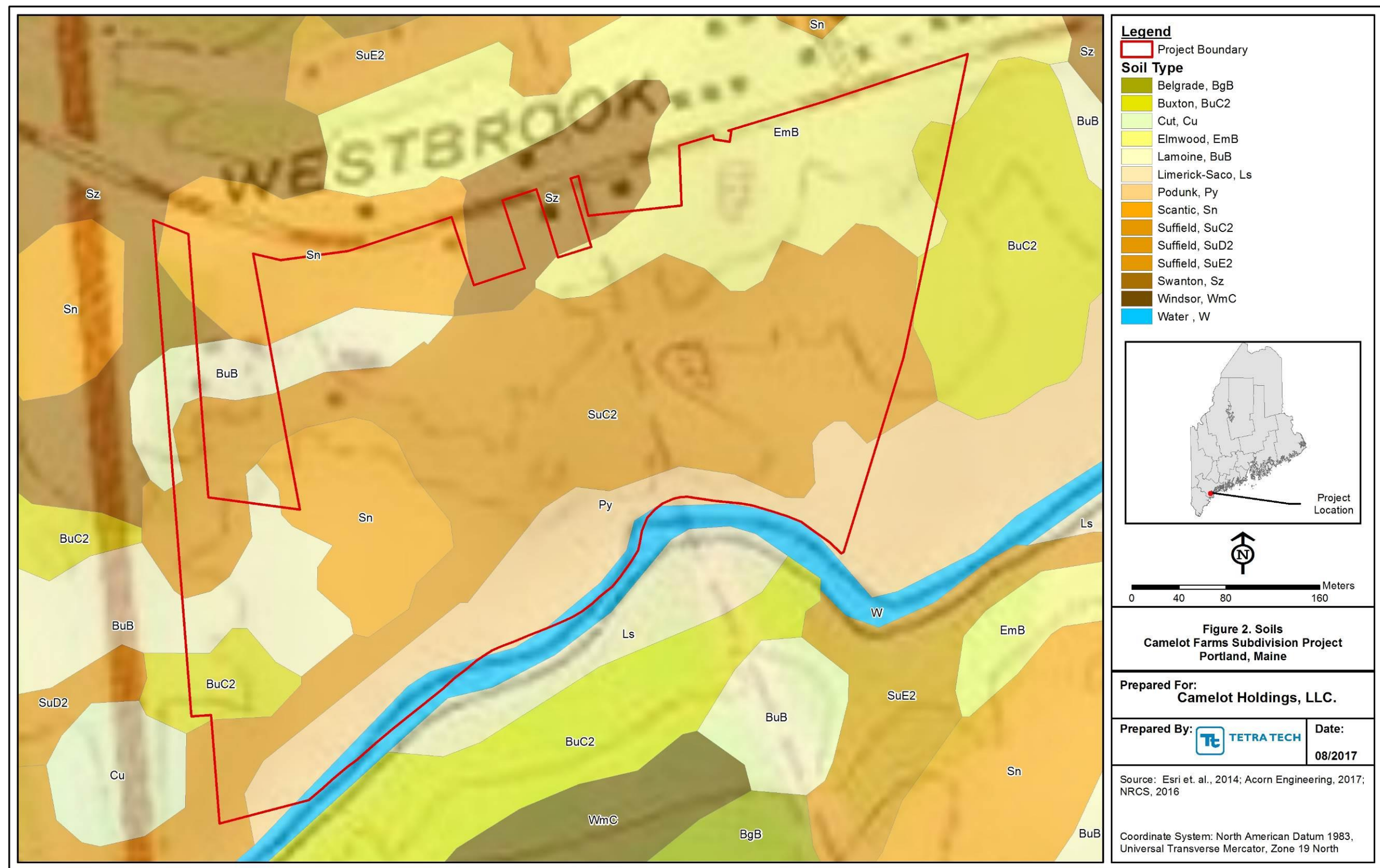
The surficial geology of the Project area is composed of fine grained glaciomarine deposits formed at the end of the Pleistocene epoch during the late-glacial marine submergence of lowland areas in southern Maine (Maine Geological Survey 2017, Bourque 2001, Hildreth et al. 2002). The marine submergence occurred between 13,000 and 12,800 years ago as glacial ice



melted and retreated inland, causing lowland areas to become inundated with sea water, and glacial melt water sediments to accumulate on the ocean floor (Spiess and Wilson 1987). As glacial ice continued to melt lowland areas experienced isostatic rebound as the weight of the glacial ice reduced allowing lowland areas to rise above sea level. The rising of lowland areas resulted in the further deposition of glaciomarine deposits by both fluvial and nearshore processes. The glaciomarine deposit present within the Project area (classification m) consists of silt, clay, sand, and minor amounts of gravel often overlying marine mud of the Presumpscot Formation. Deposited during the late-glacial period, the marine regressive surficial deposits consist of reworked marine delta and outwash materials graded by streams to the falling sea level.

The majority of the Project area is dominated by Suffield Series soil (ScC2) consisting of moderately well drained silt loam, associated with coastal plains and located on 8 to 15 percent slopes (California Soil Resource Lab 2017) (Figure 2). Additional Series present within the Project area also consist of silt loam or sandy loams. Within the southern portion of the Project area, where the majority of subsurface testing took place, soils consist of the Podunk Series (Py) sandy loams associated with flood plains and situated on 0 to 3 percent slopes. Floodplains environments can cause archaeological sites to become deeply buried over time as multiple flooding and sedimentation events occur, as such subsurface testing in floodplain areas often require deep testing.

Forested portions of the Project area are presently undergoing various stages of woodland succession. The forested areas consist primarily of pine (*Pinus* spp.), spruce (*Picea* spp.), maple (*Acer* spp.), and oak (*Fagus* spp.). This type of forest cover falls within the Transition Hardwoods category vegetation zone (Zone 3) for southern Maine, featuring oaks, white pine, birch, poplar, and red pine on sandy terraces (Westveld et al. 1956). This locality falls within the Central and Southwestern Interior Climatic area of Maine, a zone marked by warmer temperatures and less snowfall than other regions of the state (NOAA ESRL 2017).



1.3 Prehistoric Context

Maine's record of human land use dates back more than 10,000 years. Archaeological evidence from Maine suggests that populations moved into the area soon after the retreat of the glacier and the reversal of the marine transgression, a period of dramatic environmental change. The pollen record shows a progression of dominant species that began to replace the glacial environment between ca. 12,000 Before Present (BP) to ca. 10,000 BP. In the broadest terms, changes in biotic communities occurred as herb pollen, representing open tundra-like conditions, gave way to spruce (*Picea* spp.) (parkland), then to pine (coniferous forest), and recently to a combination of hemlock, birch, and beech in northwestern Maine and pine and oak in southwestern Maine (deciduous forest) (Eldridge et al. 1997). The environment had undergone a transformation from the initial mixed tundra/woodland to predominantly deciduous forest in the late Holocene.

Archaeologists have divided the prehistoric cultural history of the state into three major periods that are further divided into cultural units that share similarities in artifact form and cultural adaptations across large portions of the region (Table 1). The cultural units also are defined as "study units" in the *State Plan for Prehistoric Archaeology* (Spiess 1989, 1991a, 1991b, 1991c, 1992a, 1992b). The following sections briefly present a broad summary of each of the major prehistoric cultural periods: Paleoindian, Archaic, Ceramic, and Contact.

Table 1. Maine Cultural Chronology Study Units¹.

Cultural Periods	Time Period (Years Before Present)	Study Unit
Paleoindian	11,500 to 10,200	Fluted Point Paleoindian Tradition
	10,200 to 9500	Late Paleoindian Tradition
Archaic	9500 to 6000	Early and Middle Archaic Traditions
	6000 to 2000	Late Archaic: Small-Stemmed Point
	4500 to 3700	Late Archaic: Moorehead Phase
	3900 to 2800	Late Archaic: Susquehanna Tradition
Ceramic (Woodland)	2800 to 500	Ceramic Period
Historic	less than 500	Contact Period and Modern History

1 – Table adapted from MacPherson et al. 1997

Paleoindian Period. Maine's earliest inhabitants are archaeologically referred to as Paleoindians. The Fluted Point and Late Paleoindian phases have been identified based on the presence of diagnostic projectile points in assemblages recovered from significant sites in the region. Paleoindian tool kits are characteristically manufactured from high-quality lithic materials often derived from quarry sources located great distances from habitation sites. Researchers suggest long-distance movement of Paleoindian groups and extensive trade networks as mechanisms that account for the presence of tools made from distant raw materials (Eldridge et al. 1997). Classic stone tool forms include the bifacially flaked projectile points with fluted bases and steep-edged endscrapers.

There is little direct evidence for subsistence practices in Maine during this period, but a model of broad exploitation of a variety of animal and plant remains has replaced the customary view of Paleoindian as specialized big-game hunters (Wilson et al. 1995). Researchers in Maine have refined perceptions of early, middle, and late Holocene paleoenvironments, suggesting diverse regional settings that would have provided a wide range of resources to Native American populations during any period (Petersen and Putman 1992).

Generally speaking when compared to Archaic and Woodland Period sites, Paleoindian sites tend to be smaller in area and fewer known sites have been identified to date. Although research of the Paleoindian culture is limited due to the small number of known sites, a suite of environmental attributes that is unique to these sites can be used to help identify potential Paleoindian site locations. The primary indicator of Paleoindian site location is sandy, well-drained soil deposits, often formed during the final period of deglaciation in Maine that occurred at the end of the Pleistocene epoch, approximately 15,000 years ago (Bourque 2001). During the period of deglaciation eolian movement of sand often created dune formations as the glacier melted, retreating inland. Secondary indicators of potential Paleoindian sensitivity are the presence of promontories often paired with a nearby water resource such as wetland or bog complexes (Spiess and Wilson 1987). These type of vantage points paired with proximity to fresh water resources provided ideal locations for Paleoindian habitation and resource procurement. Although Paleoindian culture adapted to the changing environment through time, these three attributes are known to indicate environments in which Paleoindian habitation is likely to occur in the Northeast.

Archaic Periods. Recent research has demonstrated that Early and Middle Archaic Period components do exist in regions of the Northeast and that they exhibit distinctive lithic technologies (MacPherson et al. 1997). The inferred settlement and subsistence pattern for the Early Archaic suggests that small groups of hunter-gatherers continued to live in Maine and possessed a much more diversified economy than their predecessors. Tool assemblages consisting of groundstone tools are fairly diagnostic and particular to Maine. Middle Archaic Period sites have been identified on the coast as well as in the interior of Maine. The first cemetery sites identified in Maine are dated to this time period.

The Late Archaic Period is divided into several traditions and phases and is well documented in Maine. It is during this period, from 6,000 years ago to 2,800 years ago, that the environment experienced many changes in forest composition that affected the types of plant and animal resources available for subsistence practices. Habitation sites are recorded from a variety of locations, including coastal shell middens, lake margins, and large and small waterways. Numerous cemetery sites are known from this period and there is considerable evidence for marine resource exploitation.

At the close of the Late Archaic Period the archaeological assemblage suggests a different lifestyle than that practiced during earlier traditions. The deceased were cremated rather than interred; diagnostic tool forms include large, broad spearpoints rather than groundstone tools; and subsistence appears to have been more focused on inland or terrestrial resources rather than marine resources.

Ceramic Period. The introduction of pottery making into Maine's Native American culture signifies the beginning of the Ceramic Period. Ceramics first appear in the archaeological record of Maine about 2,800 years ago and persist until after contact with the Europeans. Ceramic Period sites depict cultural adaptations to the diversified use of local resources. While ceramics were adopted and there is archaeological evidence for limited corn-bean-squash horticulture in extreme southwestern Maine, a hunter-gatherer lifestyle persisted. Ceramic Period sites are abundant, with the highest frequency identified in shell middens found along the coast in estuary and island environments; however sites also are common in interior sections along waterways, ponds, and lakes (MacPherson et al. 1997).

Contact Period. The Contact Period was a period of tremendous and rapid change for Maine's Native Americans. Subsequent additions of European materials to Native material culture were followed by expansions and strains in pre-existing intertribal trade networks, warfare, and social structure. One of the most profound and lasting results of early visits by Europeans to the coast was European-introduced disease.

The Early Contact Period has been considered to start arbitrarily at 1500 Anno Domini (A.D.), with European voyages to Newfoundland and the Gulf of St. Lawrence. The period arbitrarily ends at 1676, corresponding with the outbreak of King Phillip's War, the abandonment of trading posts and towns, and intensified movement by Native American refugee groups and other drastic changes in Native American ethnic groupings and lifestyles. The long prehistoric occupation of Maine had come to an end with the arrival of the European traders, fishermen, and settlers.

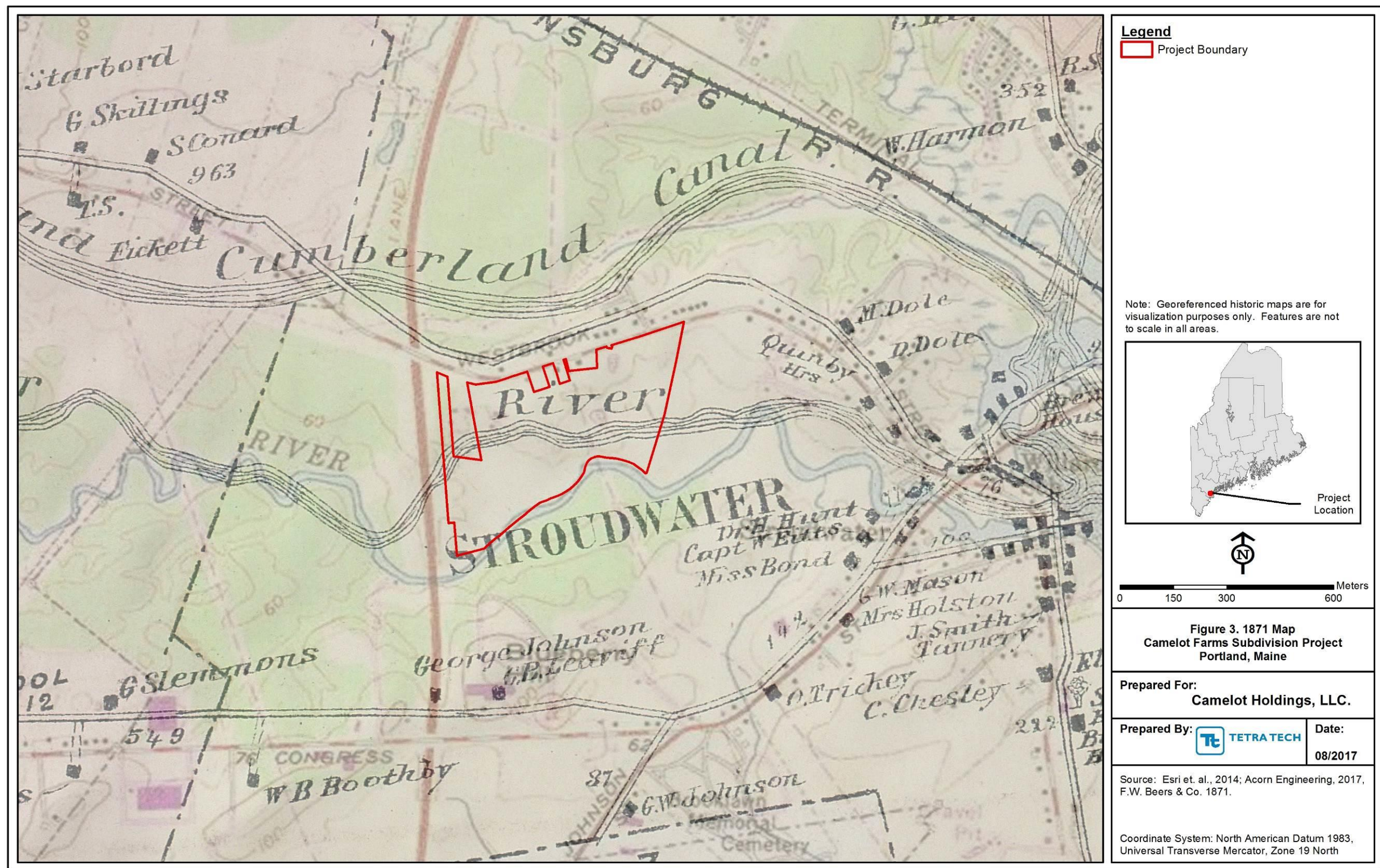
1.4 Previous Archaeological Research

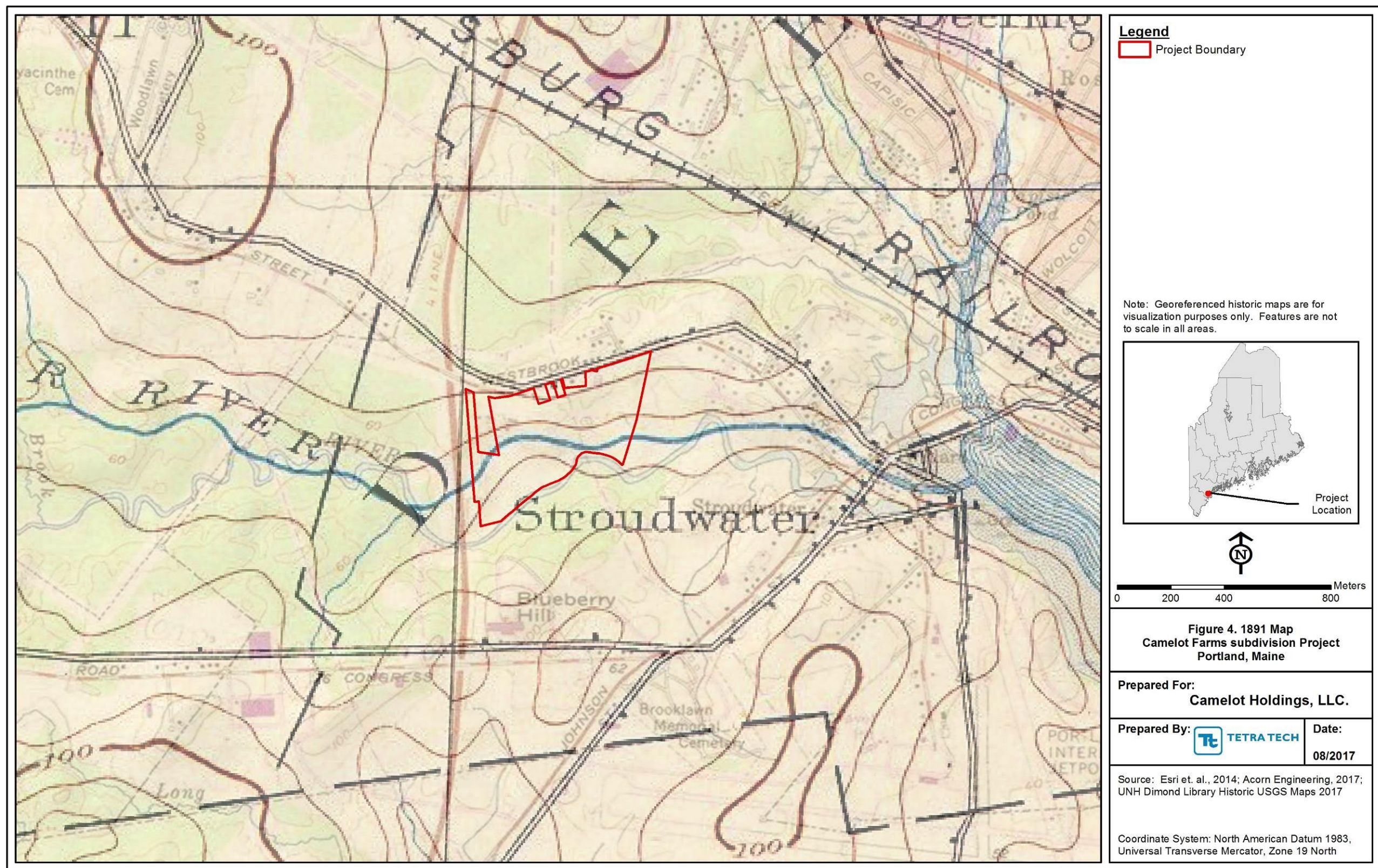
A site file search at the MHPC determined no previously recorded prehistoric sites are located within the Project area. The closest documented site, ME 8.16, is situated approximately a quarter mile northeast of the Project within the Fore River Sanctuary (MHPC 1993). The site was identified in 1992 by Richard Doyle and consisted of prehistoric lithic materials identified on a tributary bank.

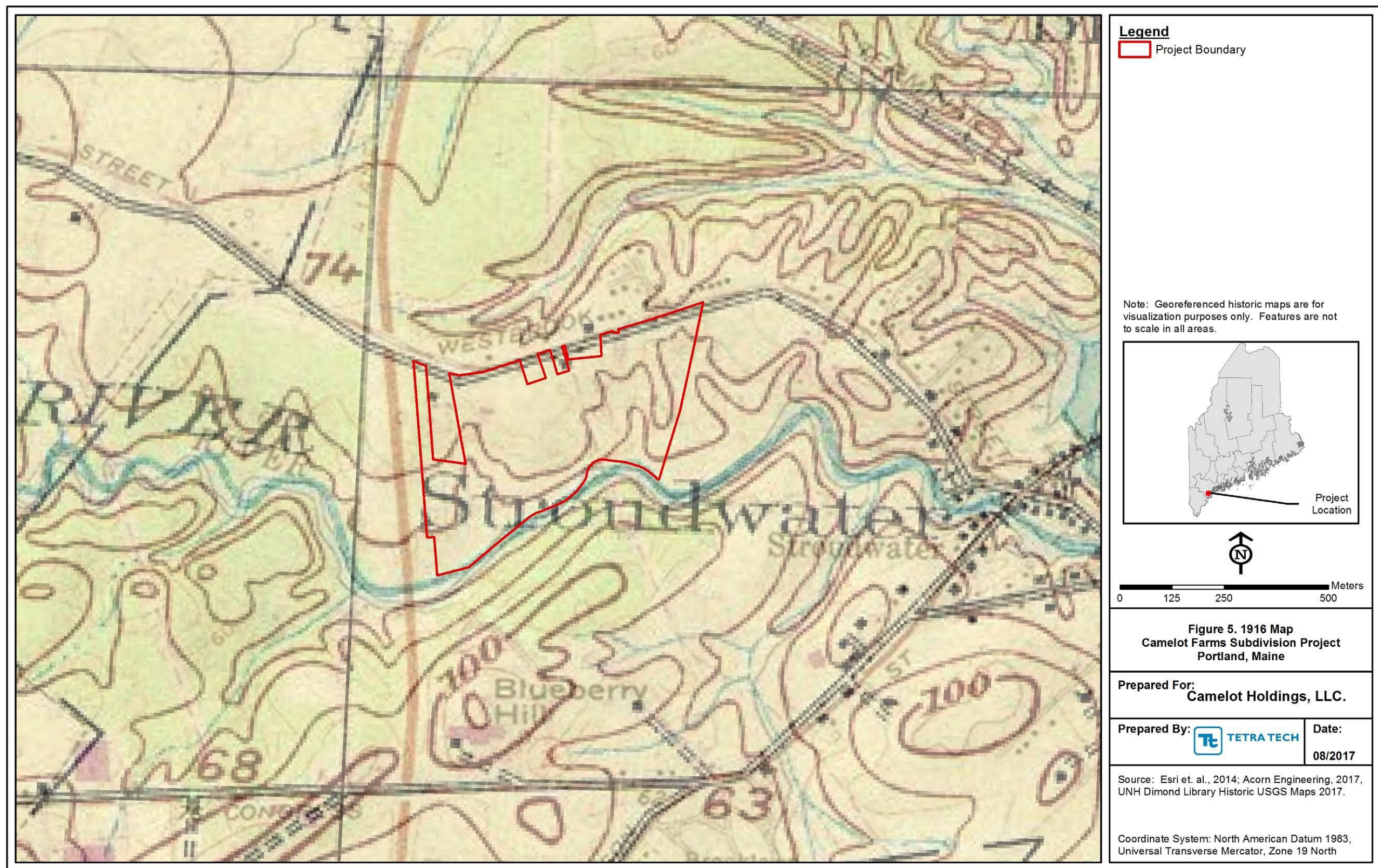
Follow up to the original finding of ME 8.16 was conducted by the MHPC in 1992 as part of the Phase I Archaeological Survey for the Proposed Westbrook Interchange. The survey determined the site did not meet minimum eligibility requirements for listing in the National Register of Historic Places (NRHP). Additionally, the Westbrook Interchange survey did not identify any other prehistoric materials or sites. Recovered historic materials were determined likely the result of 19th and early 20th century composting of household garbage and not significant. The historic Cumberland and Oxford Canal intersects a portion of the Westbrook Interchange Project area, the Canal was determined as eligible for listing on the NRHP (Cranmer and Burgess 1999).

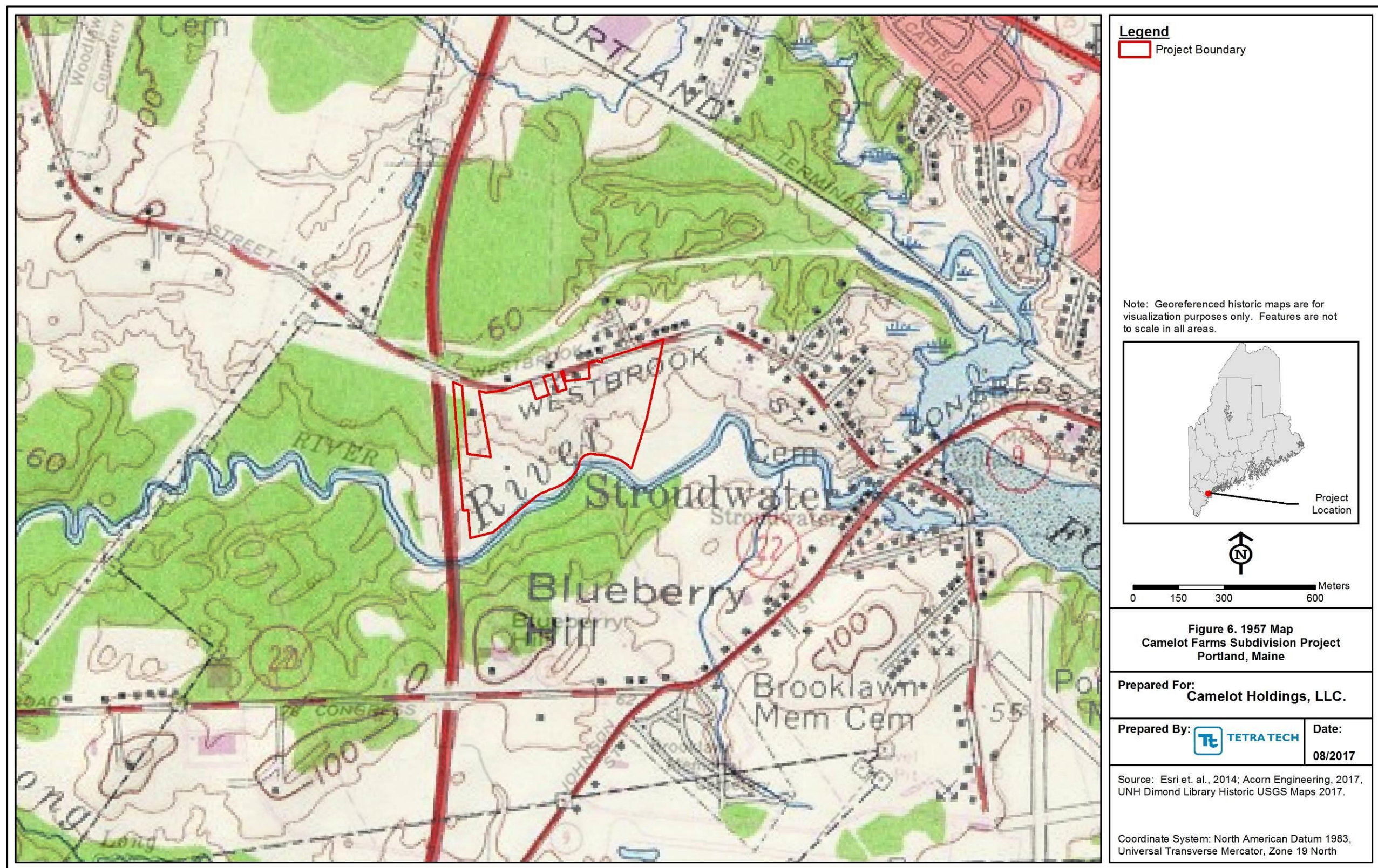
A survey of the UNUM property to south of the Project area across the Stroudwater River was undertaken in 1992. No prehistoric artifacts or features were recovered. Several historic period artifacts dating to the 20th century were recovered and determined insignificant (Wilson 1992).

Lastly, a comparison of historic maps of the area was undertaken as part of the background research. The review of historic maps determined little change to the Project area in terms of recorded structures and outbuildings. A series of georeferenced maps were created to aid in the comparison (Figures 3 – 6).









2.0 METHODS AND RESULTS

2.1 Archaeological Sensitivity and Methodology

Researchers suggest three environmental factors, which are key to the development of a prehistoric archaeological sensitivity model and testing strategy: the presence of level terrain, presence of well-drained soils, and relative proximity to a potable fresh water source. The importance of these factors varied over time, resulting in differing settlement patterns as human populations adapted to the changing environment. The assessment for prehistoric archaeological sensitivity of the Project was based on site characteristics (landform, soil characteristics, and proximity to water), and on recommendations from the MHPC.

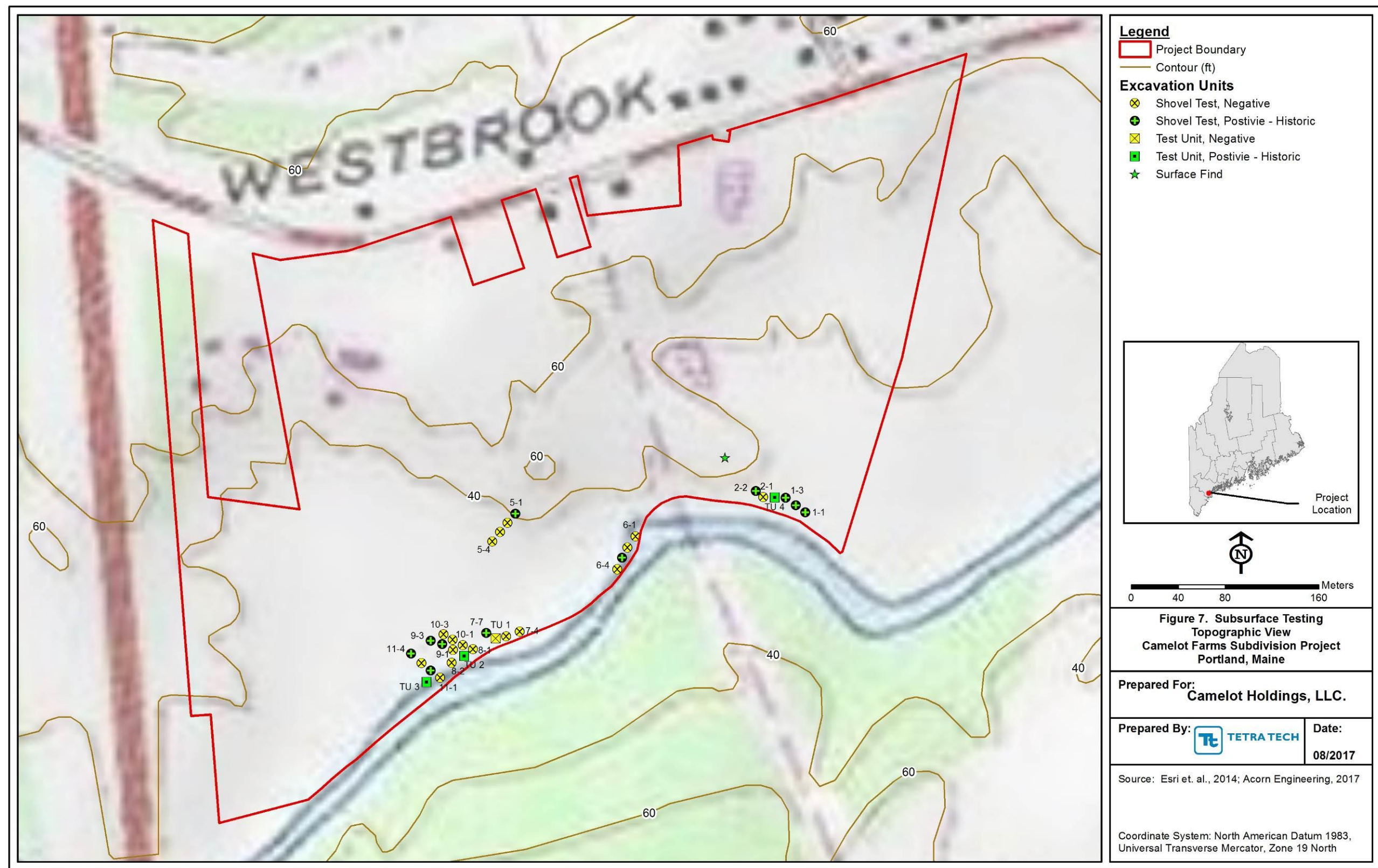
2.2 Field Investigations and Results

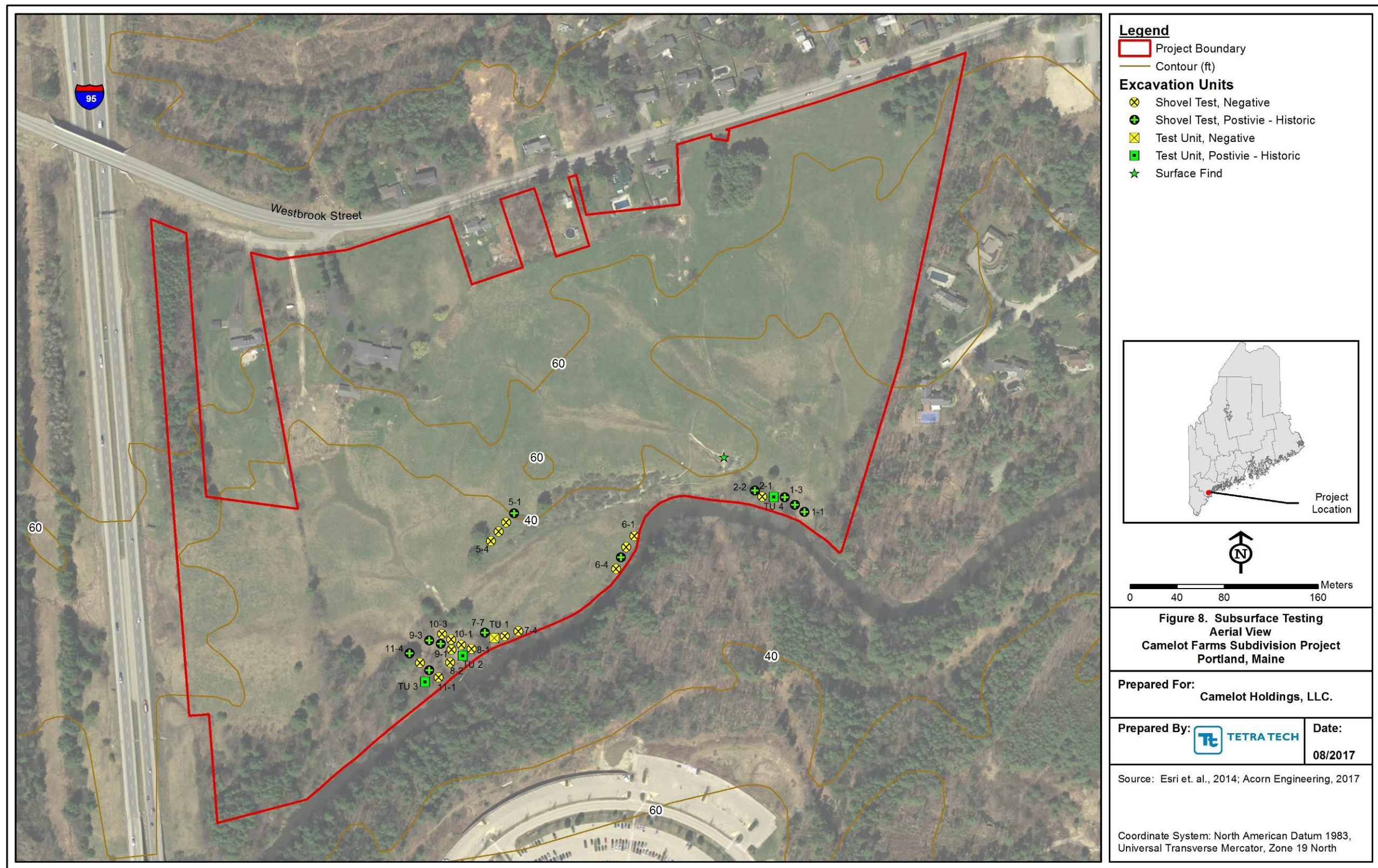
Phase IA prehistoric archaeological investigations, which typically include visual assessments, site walk-over, and hand auguring to verify soil integrity, are performed to establish the current physical conditions and status of a project site and to assess the possibility that intact prehistoric or historic cultural features or deposits are recoverable.

On July 11, 2017, S. Haugh conducted a pedestrian survey of the Project. This survey revealed that the Project exhibits surficial modification due to past agricultural activities (i.e. historic clearing, livestock grazing). However, a history of agricultural pursuits does not preclude the possibility or potential for locating prehistoric cultural resources, given a positive combination of the environmental variables commonly associated with the presence of prehistoric archaeological sites and a tendency for prehistoric cultural remnants to often lie in deeper strata or buried former surfaces below the plow zone. The pedestrian survey determined testing of sensitive areas below the 40 foot contour would be divided between 12 transects with a total of 45 STs. However, upon excavation adjacent to the Stroudwater River and further consultation with Art Spiess of the MHPC it was determined deep testing in the form of one meter by one meter test units (TUs) would be appropriate for the floodplain area adjacent to the Stroudwater. The original set up was modified to include 9 transects with a total of 28 STs, and 4 TUs within sensitive portions of the Project area (Figures 7 and 8, Appendix B). Much of the original layout was maintained, and the original ST numbering was utilized with certain Transects and STs removed.

Phase IB Archaeological Investigation (systematic subsurface testing) is used to locate and identify buried deposits of cultural materials (historic or prehistoric) and to initially assess the potential significance of a site location. On July 13 – 15 and 18 - 21, 2017 S. Haugh and N. Johnson proceeded to excavate the 28 STs and 4 TUs plotted within the Project. Soils were generally characteristic of forested conditions and appeared relatively undisturbed. The root mat from each shovel test was removed in squares and set aside for replacement when the shovel test was completed and backfilled. The soil was removed and screened through ¼-inch wirecloth mesh by natural soil levels, where such levels were visible, and by 10-centimeter increments where visible stratigraphy could not be visually discerned.

The excavator was alert to the possible presence of features, such as hearths, postholes, or foundations. The excavations continued in depth until a sterile stratum was reached (for example, Presumpscot Formation clays or glacial till) or a natural obstacle presented itself. A data log of soil stratigraphy for each ST and TU excavated was recorded prior to backfilling and re-sodding (Appendix C).





Transects 1 and 2, Test Unit 4

Transects 1 and 2, and Test Unit 4 were plotted within the south east corner of the Project area adjacent to the Stroudwater River. All units, with the exception of ST 2-1 were positive for historic materials. Many of the recovered artifacts were burned, and ST 1-2 contained a burn layer in the upper profile with an abundance of slag. This portion of the Project area produced the most historic artifacts, and within the area TU 4 was most productive excavation unit. The artifacts recovered were dominated by eroded nails and minor amounts of glass, indicative of a former outbuilding structure. Many of the nails could not be identified due to corrosion, however the majority of identifiable nails were round head wire cut. Recovered ceramics included whiteware and terracotta. Additionally a molded brick fragment and a fragment of a rough form of concrete were recovered. The majority of materials date to the 20th century and collectively and individually do not represent particular significance. For a full inventory of the artifacts refer to Appendix C.

The five STs achieved an average depth of 63 centimeters below ground surface, and the TU was excavated to 100 centimeters. Soil profiles were fairly consistent with a root mat overlying a stratum containing brown sandy loam in the uppermost profile, followed by a stratum of light olive brown fine sandy loam, followed at the base by a sterile substratum of light olive brown fine silty sand. The STs contained moderate amounts of subangular pebbles and gravel.

Transect 5

Transect 5 was plotted just below the 40 foot contour in the south-central portion of the Project area. The transect is situated on a small knoll overlooking the floodplain adjacent to the Stroudwater River. ST 5-1 produced two clear glass bottle fragments, no other artifacts were recovered from the remaining STs (Appendix C).

The four STs achieved an average depth of 44 centimeters below ground surface and consisted of a root mat overlying a stratum containing olive brown to light olive brown silty loam in the uppermost profile, followed by a stratum of light olive brown silty loam with subangular gravel, followed at the base of each ST by a sterile substratum of light yellowish brown silty loam.

Transect 6

Transect 6 was plotted on the bank of the Stroudwater River adjacent to a small inlet area. ST 6-3 produced one corroded unidentifiable nail fragment, no other artifacts were recovered from the remaining STs (Appendix C).

The four STs achieved an average depth of 66 centimeters below ground surface and consisted of a root mat overlying a stratum containing olive brown to dark olive brown silty loam in the uppermost profile, followed by a stratum of light olive brown silty sand, followed at the base of each ST by a sterile substratum of light olive brown silty sand.

Transect 7 and Test Unit 1

Transect 7 and Test Unit 1 were plotted along to the Stroudwater River and the eastern bank of a wetland drainage that outlets in the River. ST 7-7 produced one corroded unidentifiable nail fragment, the remaining two STs and TU 1 did not produce any cultural materials (Appendix C).

The three STs achieved an average depth of 73 centimeters below ground surface, and the TU was excavated to 100 centimeters. Soil profiles were fairly consistent with a root mat overlying a stratum containing brown sandy silt in the uppermost profile, followed by a stratum of light olive brown sandy silt, followed at the base by a sterile substratum of light olive brown silty sand.

Transects 8 – 10 and Test Unit 2

Transects 8, 9, 10 and Test Unit 2 were plotted along to the Stroudwater River on a small landform bounded on the east and west by wetland drainages that outlet into the River. STs 9-2, 9-3, and TU-2 produced historic artifacts: three window glass fragments, one corroded unidentifiable nail fragment, and one piece of slag (Appendix C).

The eight STs plotted on the landform achieved an average depth of 64 centimeters below ground surface, and the TU was excavated to 105 centimeters. Soil profiles consisted of a root mat overlying a stratum containing brown silty loam in the uppermost profile, followed by a stratum of light olive brown sandy silt, followed at the base by a sterile substratum of light olive brown fine silty sand.

Transect 11 and Test Unit 3

Transect 11 and Test Unit 3 were plotted along to the Stroudwater River and the eastern bank of a wetland drainage that outlets in the River. STs 11-2, 11-4 and TU 3 produced 18 historic period artifacts; the recovered materials were dominated by slag and glass fragments with the majority being produced by TU 3 (Appendix C).

The four STs achieved an average depth of 63 centimeters below ground surface, and the TU was excavated to 100 centimeters. Soil profiles were fairly consistent with a root mat overlying a stratum containing brown silty loam in the uppermost profile, followed by a stratum of light olive brown sandy silt, followed at the base by a sterile substratum of light olive brown fine silty sand.

Surface Find

Two whiteware fragments were located on the ground surface of an eroding former livestock trail northwest of ST 2-2. The find location was situated just east of a large drainage running north-south to the Stroudwater River and adjacent to three large apple trees on the west. The area, including the southern portion of the drainage was subject to intensive pedestrian survey, no additional cultural materials were identified.

3.0 SUMMARY AND RECOMMENDATIONS

A Phase I prehistoric archaeological survey of the proposed Project, was performed in July 2017. Background research and an archaeological site file search were conducted with the MHPC in Augusta, Maine. This research determined there are no prehistoric archaeological sites recorded within the Project area; however both a prehistoric site and a historic site are located nearby and associated with the Stroudwater River are located within a half mile of the Project area.

A subsurface testing regimen was established and conducted in areas of potential archaeological sensitivity. A total of 28 STs and 4 TUs were excavated within the Project area. No prehistoric cultural materials or features were identified. Numerous historic artifacts dating to the 20th century were identified throughout the Project area, with a particularly dense deposit located in TU 4. The materials recovered from TU 4 likely represent the remnants of a dilapidated historic outbuilding. The other historic artifacts recovered throughout the Project area were minor in quantity and likely represent typical historic farm scatter. The recovered historic artifacts collectively and individually do not represent particular significance.

Based on the results of this Phase I prehistoric archaeological investigation, no further archaeological investigations are recommended in conjunction with the proposed Project.

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APPENDIX A

Camelot Farms Subdivision Project, City of Portland, Cumberland County, Maine

Camelot Farms Site Plan

APPENDIX B

Camelot Farms Subdivision Project, City of Portland, Cumberland County, Maine

Photographic Record



Photo No. 1. Southeast view of the Transect 1 – 2 and TU 4 test area. The Stroudwater River is located in the center distance of the photo. (Haugh, 7/11/2017)



Photo No. 2. West/southwest view from Transect 5 towards a low-lying wetland area. The existing house located on the property is visible in the distance of the photo. (Haugh, 7/11/2017)



Photo 3. Northeast view of Transect 6 from ST 6-4. The Stroudwater River is visible in the right of the photo. (Haugh, 7/12/2017)



Photo 4. Northeast view of the inlet adjacent to Transect. (Haugh, 7/12/2017)



Photo 5. West view of the majority of the Project area located below the 40 foot contour. The photographer is positioned adjacent to Transect 6, looking towards I-95. (Haugh, 7/12/2017)



Photo 6. South view of the wetland drainage outlet to the Stroudwater River, located between Transects 7 and Transects 8 - 10. (Haugh, 7/12/2017)



Photo 7. South view of TU 1, the Stroudwater River is visible in the background. (Haugh, 7/14/2017)



Photo 8. North view of the landform containing Transects 8 – 10 and TU 2. The landform is

bounded on the east and west by wetland drainages that outlet in to the Stroudwater River. (Haugh, 7/12/2017).



Photo 9. South view of TU 3. (Haugh, 7/20/2017)



Photo 10. West view of TU 4. (Haugh, 7/22/2017)

APPENDIX C

Camelot Farms Subdivision Project, City of Portland, Cumberland County, Maine

Excavation Characteristics and Artifact Inventory

ST/TU	Start Depth (cm)	End Depth (cm)	Munsell	Soil Composition	Inclusions	Soil Compaction	Artifacts	Period and Description	Date
<i>* Munsell colors are from sheet 10YR unless noted.</i>									
1-1	0	39	4/3	fine sandy loam	subangular gravel	moderate	positive	Historic: slag, burned rock (not saved)	7/20/2017
	39	48	5/8	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
	48	71	2.5Y 5/4	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
1-2	0	32	4/3	fine sandy loam	subangular gravel	high	positive	Historic: dense slag, corroded unidentifiable nails, burned whiteware. Burn area/pile. Saved representative sample.	7/20/2017
	32	46	2.5Y 5/6	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
	46	65	2.5Y 5/4	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
1-3	0	27	4/3	fine sandy loam	subangular gravel	moderate	positive	Historic: 2 slag, 3 brick fragments, 2 clear window glass fragments, 1 whiteware fragment, 2 corroded unidentifiable nails.	7/20/2017
	27	40	2.5Y 5/6	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
	40	68	2.5Y 5/4	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
TU-4	0	40	3/3	fine sandy loam	subangular gravel	moderate	positive	Historic: 0-10 cm: 3 slag, 9 clear window glass fragments, 3 clear bottle glass fragments, 1 round head spike, 2 unidentifiable spikes, 1 unidentifiable screw, 8 round head wire nails, 17 unidentifiable nails. 10-20 cm: 1 molded brick fragment, 1 rough concrete fragment, 2 slag, 3 unidentifiable ferrous objects (possible latch, buckle, and button fragments), 10 unidentifiable ferrous objects (likely highly eroded nail fragments), 4 square head-body spikes, 3 round head-body spikes, 2 unidentifiable head-square body spikes, 1 square head-unidentifiable body nail fragment, 9 round head-body nail fragments, 4 terracotta fragments, 4 whiteware fragments, 34 clear window glass fragments, 7 clear bottle glass fragments. 20-30 cm: 1 slag, 1 flat unidentifiable metal object, 2 unidentifiable head-square body spikes, 19 unidentifiable ferrous objects (likely highly eroded nail fragments), 7 round head-body nails, 20 unidentifiable nails, 10 clear window glass fragments, 10 clear bottle glass fragments, 1 burned glass fragment, 6 whiteware fragments (1 burned),	7/21/2017
	40	52	3/3 mottled w/ 5/6	fine silty sand	minor subangular gravel	moderate	positive		7/21/2017
	52	79	2.5Y 5/3	fine silty sand	-	moderate	negative	-	7/21/2017

ST/TU	Start Depth (cm)	End Depth (cm)	Munsell	Soil Composition	Inclusions	Soil Compaction	Artifacts	Period and Description	Date
	79	100	2.5Y 4/4	fine sandy silt	-	moderate/high	negative	-	7/21/2017
2-1	0	35	4/3	fine sandy loam	subangular gravel	moderate	negative	-	7/20/2017
	35	47	2.5Y 5/6	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
	47	72	2.5Y 5/4	fine silty sand	subangular gravel	moderate	negative	-	7/20/2017
2-2	0	40	4/3	fine sandy loam	roots, subangular gravel	moderate	positive	Historic: 15 brick fragments (1 burned)	7/20/2017
	Partial excavation, densely root bound.					moderate	negative	-	7/20/2017
Transect Nos. 3 and 4 removed from revised set up.									
5-1	0	34	2.5Y 4/4	silty loam	-	high	positive	Historic: 2 clear glass bottle fragments (not saved)	7/13/2017
	34	42	2.5Y 5/6	silty loam	minor subangular gravel	high	negative	-	7/13/2017
	42	53	5/6	silty loam	minor subangular gravel	high	negative	-	7/13/2017
5-2	0	24	4/4	silty loam	-	high	negative	-	7/13/2017
	24	48	2.5Y 6/4	silty loam	minor subangular gravel	very high	negative	-	7/13/2017
5-3	0	18	3/4	silty loam	-	high	negative	-	7/13/2017
	18	26	2.5Y5/4	silty loam	-	high	negative	-	7/13/2017
	26	43	2.5Y 6/3	silty loam	minor subangular gravel	very high	negative	-	7/13/2017
5-4	0	14	2.5Y 4/4	silty loam	-	high	negative	-	7/13/2017
	14	30	2.5Y 6/3	silty loam	dense subangular gravel	very high	negative	-	7/13/2017
6-1	0	34	2.5Y 4/3	silty loam	-	moderate	negative	-	7/13/2017
	34	43	2.5Y 4/2	clayey silt	-	moderate	negative	-	7/13/2017
	43	58	2.5Y 5/3	clayey silt	-	moderate	negative	-	7/13/2017
6-2	0	32	2.5Y 3/3	silty loam	-	moderate	negative	-	7/13/2017
	32	38	2.5Y 5/4	silty sand	-	moderate	negative	-	7/13/2017
	38	45	2.5Y 3/3 mottled w/ 7.5YR 4/6	silty clay	-	moderate	negative	-	7/13/2017
	45	58	2.5Y 5/3	clayey silt	-	moderate	negative	-	7/13/2017
6-3	0	28	4/3	sandy silt	-	moderate	positive	Historic: 1 nail fragment	7/14/2017
	28	34	2.5Y 5/3	silty sand	-	moderate	negative	-	7/14/2017
	34	73	2.5Y 5/4	silty sand	-	moderate	negative	-	7/14/2017
6-4	0	30	4/3	sandy silt	-	moderate	negative	-	7/14/2017
	30	36	2.5Y 5/3	silty sand	-	moderate	negative	-	7/14/2017
	36	75	2.5Y 5/4	silty sand	-	moderate	negative	-	7/14/2017
TU-1	0	17	4/4	fine sandy loam	-	moderate	negative	-	7/14/2017

ST/TU	Start Depth (cm)	End Depth (cm)	Munsell	Soil Composition	Inclusions	Soil Compaction	Artifacts	Period and Description	Date
	17	23	6/6	fine sandy loam	-	moderate	negative	-	7/14/2017
	23	45	3/6	fine sandy loam	-	moderate	negative	-	7/14/2017
	45	77	2.5Y 5/4	sandy silt	-	moderate	negative	-	7/14/2017
	77	100	2.5Y 5/3	sandy silt	-	moderate	negative	-	7/14/2017
7-4	0	54	4/3	sandy silt	-	moderate	negative	-	7/15/2017
	54	62	2.5Y 4/3	sandy silt	-	moderate	negative	-	7/15/2017
	62	75	2.5Y 5/4	silty sand	-	moderate	negative	-	7/15/2017
7-5	0	50	4/3	sandy silt	-	moderate	negative	-	7/15/2017
	50	57	2.5Y 4/3	sandy silt	-	moderate	negative	-	7/15/2017
	57	70	2.5Y 5/4	silty sand	-	moderate	negative	-	7/15/2017
7-7	0	45	4/3	sandy silt	-	moderate	positive	Historic: 1 nail fragment (40cm)	7/15/2017
	45	73	2.5Y 5/4	silty sand	-	moderate	negative	-	7/15/2017
8-1	0	30	4/3	sandy silt	-	moderate	negative	-	7/15/2017
	Partial excavation, densely root bound.							-	7/15/2017
TU-2	0	33	4/3	silty loam	roots	moderate	positive	Historic: slag (15 cm, not saved), 1 nail fragment (26 cm)	7/19/2017
	33	83	2.5Y 5/6 mottled w/ 2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
	83	86	3/2	silty loam	-	moderate	negative	-	7/19/2017
	86	105	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
8-3	0	32	4/3	silty loam	roots, minor subangular gravel	moderate	negative	-	7/15/2017
	32	50	2.5Y 4/4	sandy silt	roots, minor subangular gravel	moderate	negative	-	7/15/2017
	50	70	2.5Y 5/4	sandy silt	-	moderate	negative	-	7/15/2017
9-1	0	19	3/2	sandy silt	roots	moderate	negative	-	7/15/2017
	19	23	2/1	sandy silt	-	moderate	negative	-	7/15/2017
	23	37	2.5 Y 4/4 mottled w/ 2.5Y 5/4	fine silty sand	-	moderate	negative	-	7/15/2017
	37	50	2.5Y 5/4	fine silty sand	-	moderate	negative	-	7/15/2017
9-2	0	28	4/3	silty loam	-	moderate	positive	Historic: 1 window glass fragment	7/18/2017
	28	64	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/18/2017
	64	80	2.5Y 5/4	fine silty sand	-	moderate	negative	-	7/18/2017
9-3	0	30	4/3	silty loam	-	moderate	positive	Historic: 1 window glass fragment	7/18/2017
	30	57	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/18/2017
	57	78	2.5Y 5/4	fine silty sand	-	moderate	negative	-	7/18/2017
10-1	0	26	4/3	silty loam	-	moderate	negative	-	7/19/2017
	26	45	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/19/2017

ST/TU	Start Depth (cm)	End Depth (cm)	Munsell	Soil Composition	Inclusions	Soil Compaction	Artifacts	Period and Description	Date
	45	70	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
10-2	0	23	4/3	silty loam	-	moderate	negative	-	7/19/2017
	23	30	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/19/2017
	30	64	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
10-3	0	20	4/3	silty loam	-	moderate	negative	-	7/19/2017
	20	67	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
11-1	0	24	4/3	silty loam	roots	moderate	negative	-	7/19/2017
	24	67	2.5Y 5/6	silty sand	-	moderate	negative	-	7/19/2017
11-2	0	27	4/3	silty loam	roots	moderate	positive	Historic: 1 slag, 1 unidentifiable nail fragment, 1 clear window glass fragment	7/19/2017
	27	36	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/19/2017
	36	72	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
11-3	0	30	4/3	silty loam	-	moderate	negative	-	7/19/2017
	30	38	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/19/2017
	38	69	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
11-4	0	26	4/3	silty loam	roots	moderate	positive	Historic: 1 slag	7/19/2017
	26	44	2.5Y 5/4	silty sand	-	moderate	negative	-	7/19/2017
	Partial excavation, densely root bound.					moderate	negative	-	7/19/2017
TU-3	0	33	4/3	silty loam	-	moderate	positive	Historic: 0-10cm: 4 slag, 2 clear bottle glass fragments. 10-20cm: 4 slag, 1 clear window glass fragments, 1 unidentifiable glass fragment, 1 burned whiteware fragment, 1 unidentifiable nail.	7/20/2017
	33	40	2.5Y 5/6	sandy silt	-	moderate	negative	-	7/20/2017
	40	60	2.5Y 5/4 mottled with 2.5Y 5/3	fine silty sand	-	moderate	negative	-	7/20/2017
	60	84	2.5Y 5/6 mottled with 2.5Y 6/2	fine silty sand	-	moderate	negative	-	7/20/2017
	84	100	2.5Y 6/2	fine silty sand	-	moderate	negative	-	7/20/2017
					Total Artifact Count (less ST 1-2 representative sample):			257	



August 31, 2017

Michael Barton
Camelot Holdings, L.L.C.
78 Lincoln St
Portland, ME 04103

Re: Historic Structures Photographs, Camelot Farms Subdivision Project, Portland, Maine; MHPC# 1678-16

Dear Mike,

As requested by the Maine Historic Preservation Commission, Tetra Tech, Inc. (Tetra Tech) is pleased to provide you with photographs keyed to a topographic map of buildings that are fifty years or older located on or adjacent to the Project site.

If you have any questions regarding this submittal, please do not hesitate to contact me via email at sarah.haugh@tetrattech.com or phone at (207) 358-2395.

Sincerely,
Tetra Tech, Inc.

Sarah M. Haugh
Archaeologist
451 Presumpscot Street
Portland, ME 04103

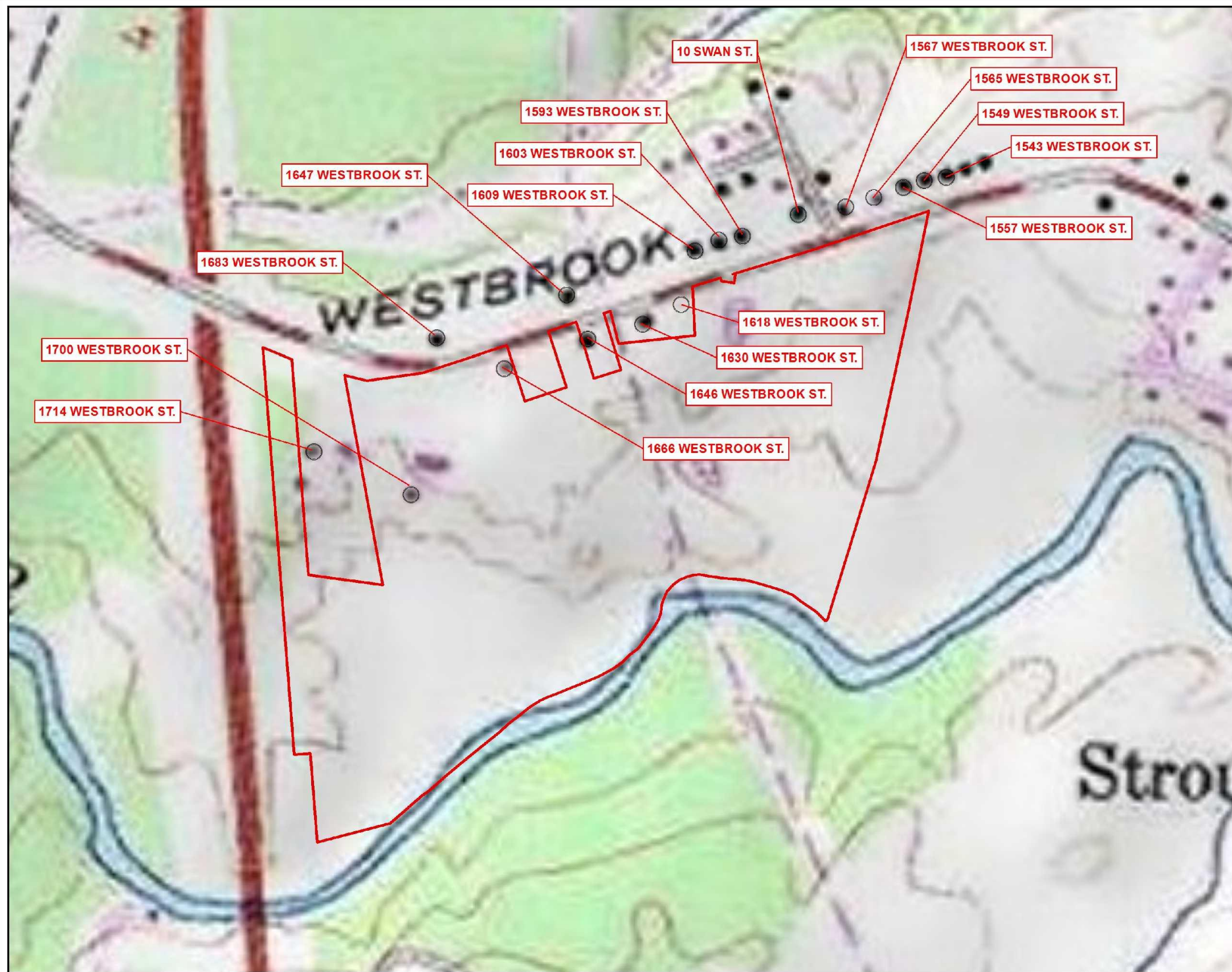
Att. Topographic Map
Photographs

cc: TT file: I:\Projects\Camelot Holdings\04 Tasks

Tetra Tech, Inc.

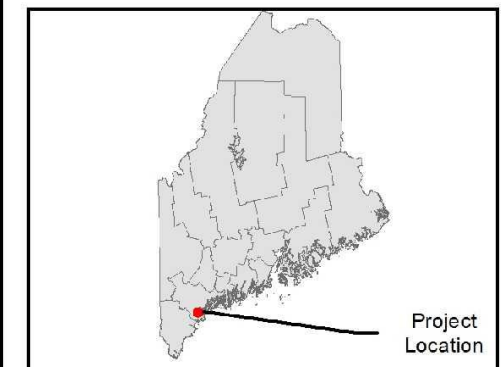
451 Presumpscot Street, Portland, Maine 04103

Tel 207.358.2400 Fax 207.879.9481 www.tetrattech.com



Legend

- Project Boundary
- Historic Structure



0 50 100 200 Meters

Historic Structures
Camelot Farms Subdivision Project
Portland, Maine

Prepared For:
Camelot Holdings, LLC.

Prepared By:  **TETRA TECH**

Date:
08/2017

Source: Esri et. al., 2014; Acorn Engineering, 2017;
City of Portland, 2017

Coordinate System: North American Datum 1983,
Universal Transverse Mercator, Zone 19 North

1700 Westbrook Street



1714 Westbrook Street



1666 Westbrook Street



1683 Westbrook Street



1647 Westbrook Street



1646 Westbrook Street



1630 Westbrook Street



1618 Westbrook Street



1609 Westbrook Street



1603 Westbrook Street



1596 Westbrook Street



10 Swan Street



1567 Westbrook Street



1563/1565 Westbrook Street



1557 Westbrook Street



1549 Westbrook Street (1)



1549 Westbrook Street (2)



1543 Westbrook Street



Section 9

Unusual Natural Areas



9. Unusual Natural Areas

The site was surveyed independently by Gino Giumarro (Verdanterra, LLC), on March 13, 2017, and by Mark Hampton (Mark Hampton Associates, Inc.), on multiple days. Gino Giumarro's findings can be found in Section 7. Mark Hampton provided Acorn Engineering with response letters regarding wetlands on November 21, 2016 and May 20, 2017. Additionally, he provided a response letter regarding vernal pools on June 12, 2017.

As part of the due diligence, several agencies were contacted including the Maine Natural Areas Program. No unusual natural areas were discovered on the site.

Please refer to section 7 and section 11 for more information regarding the surveys.

Section 10

Buffers



10. Buffers

Per the survey received from Titcomb Associates, the project parcel has the following existing easements:

1. Subject to a 30' – wide utility easement for a 42" concrete water pipe granted to Portland Water District further described in Book 1382, Page 144 and Book 1399, Page 462.
2. Subject to a 50' – wide utility easement for three pipelines further described in instruments recorded in Book 1655, Page 294 and Book 2954, Page 772.
3. Subject to an easement for a sewer pipe granted by Ruby H. Young to Frederick A. Butts and Marie Butts in a deed recorded in Book 2236, Page 405. (Location unknown)
4. Subject to an easement for drainage granted to Maine Department of Transportation and further described in an instrument recorded in Book 4146, Page 333. Location is approximate.
5. Subject to a slope easement granted to Maine Department of Transportation and further described in an instrument recorded in Book 4146, Page 333. Location is approximate.
6. Benefiting from an easement for access reserved in a deed recorded in Book 2198, Page 386.

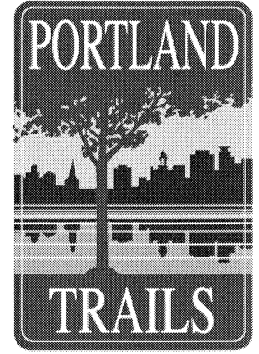
The proposed project will be subject to stormwater and utility easements. The locations of these easements are forthcoming. A 30' wide pedestrian (Stroudwater Trail) easements was recently granted to Portland Trails and is depicted on the Site Plan.

The site will feature existing and proposed vegetated buffers between the development and the abutting properties. Existing trees and shrubs will be maintained where feasible. Landscaping and visual buffering throughout the site is provided in general conformance with the City of Portland Ordinance requirements. Sound buffering will be provided through the creation of a sound berm with landscaping adjacent to the Maine Turnpike. The residential development will incorporate an approximate 300-foot average buffer from the Stroudwater River.

See plans for stormwater buffer locations (Sheet C-10)

Furthermore, all of the required setbacks required by the City have been met or exceeded.

August 17, 2017



To Camelot Holdings, LLC:

Portland Trails agrees to hold the Recreation Trail Easement between Camelot Holdings, LLC and Portland Trails in escrow until after deed for the property at 1700 Westbrook Street is held by Camelot Holdings, LLC. At that time, we will take the easement to the Cumberland County Registry of Deeds to be recorded. If the sale of the property does not take place, the Recreation Trail Easement document will be destroyed.

Sincerely yours,

Kara Wooldrik
Kara Wooldrik
Executive Director

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Kate O'Brien, Vice President
Matt Bahl, Treasurer
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Kara Wooldrik

Section 11

Soils



11. Soils

A. Soil Survey Map and Report

The soil survey is from a Class B-High Intensity Soil Survey published by Mark Hampton Associates, Inc.

The site is comprised of primarily Lamoine and Buxton soils which are classified as types C and D hydrologic soils, respectively. The areas where Lamoine has been identified, have been classified as somewhat poorly drained. The areas where Buxton has been identified, have been classified as moderately well drained.

Small parts of the site are comprised of Podunk soils which is characterized by moderately well drained soils. Permeability is moderately rapid to rapid.

Lastly, eight wetlands with Scantic soils exist on site which are poorly drained.

A copy of the Soil Narrative Report, provided by Mark Hampton Associates, Inc, on May 20, 2017, is included as part of this section. Test pit locations are depicted on the Predevelopment Watershed Map attached to the Stormwater Report.

B. Soil Survey Intensity Level by Development Type

The project consists of redeveloping a 55.3-acre lot into a traditional single-family housing neighborhood and townhouse development. The subject site is mostly meadowland. Runoff from the proposed surfaces will be treated using tree filters and retention ponds. Mark Hampton, a certified soil scientist and licensed sit evaluator, performed test pit evaluations at locations specified by a registered land surveyor.

C. Geotechnical Investigation

A geotechnical investigation will be completed if deemed necessary for the detention basin construction.

D. Hydric Soils Mapping

Mark Hampton Associates, Inc. identified all wetland areas within the subject parcel area. The wetland delineation is incorporated in the plans. Mark Hampton also confirmed that there are no vernal pools located within the property.

The existing wetlands are shown on the Existing Conditions Plan and the Civil Plan set.

A copy of the Wetland Report and Vernal Pool Assessment, provided by Mark Hampton Associates, Inc. dated November 21, 2016, May 20, 2017, and June 21, 2017 respectively, are as attached.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

November 21, 2016

Mr. Mike Barton
Diversified LLC
5 Stone Pony Circle
Saco, ME 04072

Re: Wetland Delineation, 45+ acre parcel Westbrook Street Portland, ME

Dear Mike,

Today, I completed a wetland delineation on an 45+ acre parcel located on Westbrook Street Portland, ME. The wetland delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands I found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by gps equipment capable of locating a point to within three feet. The wetland data has been forwarded to Acorn Engineering. The wetlands found onsite are wet meadow wetlands. The wetlands on the parcel are related to drainage moving across the site from north to south. The wetlands on the parcel located adjacent to the Stroudwater River will meet the definition of wetlands of special significance as defined by Maine Department of Environmental Protection.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Camelot Village City/County: Portland Cumberland Sampling Date: 5/10/17
 Applicant/Owner: Camelot Holdings LLC State: ME Sampling Point: A-1
 Investigator(s): M. Hampton Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex
 Slope (%): 6 Lat: 43-39-23.6 N Long: 70-19-46 W Datum: NAD 83
 Soil Map Unit Name: Buxton Silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☐ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☐ Saturation (A3) | ☐ Marl Deposits (B15) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Sparsely Vegetated Concave Surface (B8) | |

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) |
| ☐ Microtopographic Relief (D4) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): _____
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): _____
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches): _____

(includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Wetland Hydrology Present? Yes _____ No X

Remarks:

VEGETATION - Use scientific names of plants.

4722

Sampling Point: A1

Tree Stratum (Plot size: <u>30</u>)			
1.	Absolute % Cover	Dominant Species?	Indicator Status
<u>Quercus rubra</u>	<u>20</u>		<u>FACU</u>
<u>Pinus strobus</u>	<u>30</u>	<u>X</u>	<u>FACU</u>
<u>Malus domestica</u>	<u>20</u>		<u>FACU</u>
<u>Betula papyrifera</u>	<u>10</u>		<u>FACU</u>
5.			
6.			
7.			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>2</u>	x 3 = <u>6</u>
FACU species <u>4</u>	x 4 = <u>16</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>6</u> (A)	<u>22</u> (B)

Prevalence Index = B/A = 3.7

Sapling/Shrub Stratum (Plot size: 15) 70 = Total Cover

1. <u>N/A</u>			
2.			
3.			
4.			
5.			
6.			
7.			

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0¹
- ☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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.

Herb Stratum (Plot size: <u>5</u>) <u>100</u> = Total Cover			
1. <u>Pteridium aquilinum</u>	<u>20</u>		<u>FACU</u>
2. <u>Trientalis borealis</u>	<u>20</u>		<u>FAC</u>
3. <u>Maianthemum canadensis</u>	<u>20</u>		<u>FAC</u>
4. <u>Various grasses</u>	<u>40</u>		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Woody Vine Stratum (Plot size: 30) 100 = Total Cover

1. <u>N/A</u>			
2.			
3.			
4.			

Hydrophytic Vegetation Present?

Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

4702

AI

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)					Sample
Depth (inches)	Matrix		Redox Features		
	Color (moist)	%	Color (moist)	%	
0-4	11 x 2 3/2				

[illegible]

Hydric Soil Indicators:

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (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 Soils³.

- 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 (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: hard pan

Depth: 10 cm

Restrictive Layer (if observed):
Type: None

Type: Hard pan

Depth (Inches): 16 inches

Remarks:

Hydric Soil Present? Yes _____ No ☒

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

4702

Project/Site: Camelot Village City/County: Tarrant and Garland State: NE Sampling Date: 5/16/17
 Applicant/Owner: Camelot Holdings LLC Section, Township, Range: _____ Sampling Point: A-2
 Investigator(s): M. Hampton Landform (hill/slope, terrace, etc.): Flood plain Local relief (concave, convex, none): none
 Slope (%): 2 Lat: 43-39-24.7N Long: 70-19-44W Datum: NAD27
 Soil Map Unit Name: Scandic NWI classification: P meadow

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

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 Aquifers (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): _____
Water Table Present?	Yes <u>X</u> No _____	Depth (inches): <u>6 inches</u>
Saturation Present?	Yes <u>X</u> No _____	Depth (inches): <u>8 inches</u>

Includes capillary fringe

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

4702

Sampling Point: A-2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species <u>3</u>	x 2 = <u>6</u>
FAC species <u>2</u>	x 3 = <u>6</u>
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: <u>5</u>	(A) <u>12</u> (B)

Prevalence Index = B/A = 2.4

- Hydrophytic Vegetation Indicators:
 - Rapid Test for Hydrophytic Vegetation
 - ☒ Dominance Test is $>50\%$
 - ☒ Prevalence Index is $\leq 3.0^1$
 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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? Yes X No

Sampling Point: A-2

Northcentral and Northeast Region – Interim Version

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Camelot Village City/County: Portland Cumberland Sampling Date: 5/10/17
 Applicant/Owner: Camelot Holdings LLC State: ME Sampling Point: 81
 Investigator(s): M. Houghton Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): convex
 Slope (%): 4 Lat: 43-39-31.4N Long: 70-19-38.8W Datum: NAD83
 Soil Map Unit Name: Lanshire NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No ☒	
Wetland Hydrology Present? Yes _____ No ☒	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) ___ Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> ___ 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) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: B1

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			_____ = Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			_____ = Total Cover	
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Taraxacum</u>			<u>FACU</u>	
2. <u>Trifolium rep</u>			<u>NIR</u>	
3. <u>Phleum pratense</u>		<u>X</u>	<u>FACU</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			_____ = Total Cover	
Woody Vine Stratum (Plot size: <u>30</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
			_____ = Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species <u>2</u>	x 4 = <u>8</u>
UPL species _____	x 5 = _____
Column Totals: <u>2</u> (A)	<u>8</u> (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0¹

☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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? Yes _____ No X

SOIL

Sampling Point: B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---|--|
| ___ Histosol (A1) | ___ Polyvalue Below Surface (S8) (LRR R, |
| ___ Histic Epipedon (A2) | MLRA 149B) |
| ___ Black Histic (A3) | ___ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ___ Hydrogen Sulfide (A4) | ___ Loamy Mucky Mineral (F1) (LRR K, L) |
| ___ Stratified Layers (A5) | ___ Loamy Gleyed Matrix (F2) |
| ___ Depleted Below Dark Surface (A11) | ___ Depleted Matrix (F3) |
| ___ Thick Dark Surface (A12) | ___ Redox Dark Surface (F6) |
| ___ Sandy Mucky Mineral (S1) | ___ Depleted Dark Surface (F7) |
| ___ Sandy Gleyed Matrix (S4) | ___ Redox Depressions (F8) |
| ___ Sandy Redox (S5) | |
| ___ Stripped Matrix (S6) | |
| ___ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 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 (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: hand pen

Depth (inches): 14 inches

Hydric Soil Present? Yes _____ No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Camelot Village City/County: Portland Cumberland Sampling Date: 5/6/17
 Applicant/Owner: Camelot Holdings LLC State: ME Sampling Point: B72
 Investigator(s): M. Hays Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): concave
 Slope (%): 2 Lat: 43-39-31.4 N Long: 70-19-36.4 W Datum: NAD83
 Soil Map Unit Name: Scoutic NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☒ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☒ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes ☒ No _____ Depth (inches): <u>2 inches</u>	Wetland Hydrology Present? Yes ☒ No _____	
Water Table Present? Yes ☒ No _____ Depth (inches): <u>surface</u>		
Saturation Present? Yes ☒ No _____ Depth (inches): <u>surface</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: B-2

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			_____ = Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1. <u>N/A</u>				
2. _____				
3. <u>-</u>				
4. _____				
5. _____				
6. _____				
7. _____				
			_____ = Total Cover	
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Iris versicolor</u>			<u>OBL</u>	
2. <u>onoclea sensibilis</u>			<u>FACW</u>	
3. <u>OSMunda Cinnamomea</u>			<u>FACW</u>	
4. <u>various rushes/sedges</u>			<u>FACW</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			_____ = Total Cover	
Woody Vine Stratum (Plot size: <u>30</u>)				
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
			_____ = Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>1</u>	x 1 = <u>1</u>
FACW species <u>3</u>	x 2 = <u>6</u>
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: <u>4</u> (A)	<u>7</u> (B)

Prevalence Index = B/A = 1.7

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☒ Prevalence Index is ≤3.0¹

☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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? Yes ☒ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B-2

[illegible]



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

May 20, 2017

Mr. Mike Barton
Diversified LLC
5 Stone Pony Circle
Saco, ME 04072

Re: Wetland Delineation, 6+ acre parcel Westbrook Street Portland, ME

Dear Mike,

Today, I completed a wetland delineation on an 6+ acre parcel located on Westbrook Street Portland, ME. The wetland delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands I found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by gps equipment capable of locating a point to within three feet. The wetland data has been forwarded to Acorn Engineering. The wetlands found onsite are wet meadow wetlands and forested wetlands. The wetlands on the parcel are related to drainage moving across the site from north to south. The wetlands on the parcel located adjacent to the Stroudwater River will meet the definition of wetlands of special significance as defined by Maine Department of Environmental Protection.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

4762

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Camelot Village City/County: Portland Cumberland Sampling Date: 5/10/17
 Applicant/Owner: Camelot Holdings LLC State: ME Sampling Point: 51
 Investigator(s): M. Hampton Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex
 Slope (%): 4 Lat: 43-39-31.4N Long: 70-19-38W Datum: NAD83
 Soil Map Unit Name: Lansing NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes _____ No ☒	
Wetland Hydrology Present?	Yes _____ No ☒	
Remarks: (Explain alternative procedures here or in a separate report.)		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No _____	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No ☒
Water Table Present? Yes _____ No _____	Depth (inches): _____	
Saturation Present? Yes _____ No _____ (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: B1

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>N/A</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

_____ = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>N/A</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

_____ = Total Cover

Herb Stratum (Plot size: <u>5</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Taraxacum</u>			<u>FACU</u>
2. <u>Trifolium repens</u>			<u>NR</u>
3. <u>Phleum pratense</u>		<u>X</u>	<u>FACU</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			

_____ = Total Cover

Woody Vine Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			

_____ = Total Cover

Dominance Test worksheet:Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)Total Number of Dominant Species Across All Strata: 1 (B)Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)**Prevalence Index worksheet:**

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species 2 x 4 = 8

UPL species _____ x 5 = _____

Column Totals: 2 (A) 8 (B)Prevalence Index = B/A = 4**Hydrophytic Vegetation Indicators:**☐ Rapid Test for Hydrophytic Vegetation☐ Dominance Test is >50%☐ Prevalence Index is ≤3.0¹☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)☐ Problematic Hydrophytic Vegetation¹ (Explain)¹Indicators 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?**Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ Sandy Gleyed Matrix (S4) | |
| ☐ Sandy Redox (S5) | |
| ☐ Stripped Matrix (S6) | |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 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 (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: hand pan

Depth (inches): 14 inches

Hydric Soil Present? Yes No ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Comelot Village City/County: Portland Cumberland Sampling Date: 5/12/17
 Applicant/Owner: Comelot Holdings LLC State: ME Sampling Point: B72
 Investigator(s): m. taylor Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): concave
 Slope (%): 2 Lat: 43-39-31.4 N Long: 70-19-36.4 W Datum: NAD83
 Soil Map Unit Name: Scamtic NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed?

Are "Normal Circumstances" present? Yes ☒ No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic?

(If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☒ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☒ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes ☒ No _____ Depth (inches): <u>2 inches</u>	Wetland Hydrology Present? Yes ☒ No _____	
Water Table Present? Yes ☒ No _____ Depth (inches): <u>surface</u>		
Saturation Present? Yes ☒ No _____ Depth (inches): <u>surface</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: B-2

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>N/A</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
				Dominance Test worksheet:
				Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
				Total Number of Dominant Species Across All Strata: _____ (B)
				Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
				Prevalence Index worksheet:
				Total % Cover of: Multiply by:
				OBL species <u>1</u> x 1 = <u>1</u>
				FACW species <u>3</u> x 2 = <u>6</u>
				FAC species _____ x 3 = _____
				FACU species _____ x 4 = _____
				UPL species _____ x 5 = _____
				Column Totals: <u>4</u> (A) <u>7</u> (B)
				Prevalence Index = B/A = <u>1.7</u>
				Hydrophytic Vegetation Indicators:
				☐ Rapid Test for Hydrophytic Vegetation
				☐ Dominance Test is >50%
				☒ Prevalence Index is ≤3.0 ¹
				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
				☐ Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ 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? Yes ☒ No _____
Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>N/A</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>5</u>) 1. <u>Iris versicolor</u> 2. <u>Onoclea sensibilis</u> 3. <u>Osmunda cinnamomea</u> 4. <u>Various rushes/sedges</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30</u>) 1. <u>N/A</u> 2. _____ 3. _____ 4. _____ _____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) 				

SOIL

Sampling Point: B-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ Sandy Gleyed Matrix (S4) | |
| ☐ Sandy Redox (S5) | |
| ☐ Stripped Matrix (S6) | |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 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 (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: band plan
Depth (inches): 4 inches

Hydric Soil Present? Yes X No

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Camelot Village City/County: Portland Cumberland Sampling Date: 5/10/17
 Applicant/Owner: Camelot Holdings LLC State: ME Sampling Point: A-1
 Investigator(s): M. Hampton Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex
 Slope (%): 6 Lat: 43-39-23.6 N Long: 70-19-46 W Datum: NAD 27
 Soil Map Unit Name: Buxton silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes _____ No ☒ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes _____ No ☒	
Wetland Hydrology Present?	Yes _____ No ☒	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☐ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☐ Saturation (A3) | ☐ Marl Deposits (B15) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Sparsely Vegetated Concave Surface (B8) | |

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 Aquifers (D3) |
| ☐ Microtopographic Relief (D4) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes _____ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No ☒
Water Table Present?	Yes _____ No ☒	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____ No ☒	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: A1

Tree Stratum (Plot size: <u>30</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus rubra</u>	<u>20</u>		<u>FACU</u>
2. <u>Pinus strobus</u>	<u>30</u>	<u>X</u>	<u>FACU</u>
3. <u>Malus domestica</u>	<u>20</u>		<u>FACU</u>
4. <u>Betula papyrifera</u>	<u>10</u>		<u>FACU</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Dominance Test worksheet:

 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

 Total Number of Dominant Species Across All Strata: 1 (B)

 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = _____
FACW species <u>0</u>	x 2 = _____
FAC species <u>2</u>	x 3 = <u>6</u>
FACU species <u>4</u>	x 4 = <u>16</u>
UPL species _____	x 5 = _____
Column Totals: <u>6</u> (A)	<u>22</u> (B)

 Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
☐ Dominance Test is >50%
☐ Prevalence Index is ≤3.0¹
☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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?

 Yes _____ No X

Sapling/Shrub Stratum (Plot size: 15)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>N/A</u>	<u>70</u>		
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: 5)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pteridium aquilinum</u>	<u>20</u>		<u>FACU</u>
2. <u>Trientalis borealis</u>	<u>20</u>		<u>FAC</u>
3. <u>Maianthemum canadensis</u>	<u>20</u>		<u>FAC</u>
4. <u>Various grasses</u>	<u>40</u>		
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: 30)

	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>N/A</u>	<u>100</u>		
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Remarks: (Include photo numbers here or on a separate sheet.)

4702

Al

Northcentral and Northeast Region – Interim Version

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

0702

Project/Site: Camelot Village City/County: Tarrant and Tarrant Sampling Date: 5/10/17
 Applicant/Owner: Camelot Holdings LLC State: NE Sampling Point: A-2
 Investigator(s): M. Hampton Section, Township, Range: _____
 Landform (hill slope, terrace, etc.): Flood plain Local relief (concave, convex, none): none
 Slope (%): 2 Lat: 43-39-24.7N Long: 70-19-44W Datum: NAD 27
 Soil Map Unit Name: Scandic NWI classification: P meadow

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Yes _____ No _____
 Are Vegetation no, Soil no, or Hydrology no naturally problematic? Yes _____ No _____
 Are "Normal Circumstances" present? Yes X No _____
 (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- | | |
|--|--|
| ☒ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☒ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☒ Saturation (A3) | ☐ Marl Deposits (B15) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☒ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☒ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Sparsely Vegetated Concave Surface (B8) | |

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) |
| ☐ Microtopographic Relief (D4) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): _____
Water Table Present?	Yes <u>X</u> No _____	Depth (inches): <u>6 inches</u>
Saturation Present?	Yes <u>X</u> No _____	Depth (inches): <u>0 inches</u>

includes capillary fringe

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Wetland Hydrology Present? Yes X No _____

Remarks:

VEGETATION - Use scientific names of plants.

4702

Sampling Point: A-2

Tree Stratum (Plot size: <u>30</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Petula populifolia</u>			<u>FAC</u>
2. <u>Acer rubrum</u>			<u>FAC</u>
3.			
4.			
5.			
6.			
7.			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species <u>3</u>	x 2 = <u>6</u>
FAC species <u>2</u>	x 3 = <u>6</u>
FACU species	x 4 =
UPL species	x 5 =
Column Totals: <u>5</u> (A)	<u>12</u> (B)

Prevalence Index = B/A = 2.4

Sapling/Shrub Stratum (Plot size: <u>15</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Alnus rugosa</u>			<u>FACW</u>
2.			
3.			
4.			
5.			
6.			
7.			

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
 - ☒ Dominance Test is >50%
 - ☒ Prevalence Index is ≤ 3.0
 - ☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - ☐ Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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.

Herb Stratum (Plot size: <u>5</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Oenothera sensibilis</u>			
2. <u>various sedges / rushes</u>			<u>FACW</u>
3.			<u>FACW</u>
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Woody Vine Stratum (Plot size: <u>30</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status

Hydrophytic Vegetation Present?

Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: A-2

[illegible]

Hydric Soil Indicators:

— Histosol (A1)

— Histic Epipedon (A2)

— Black Histic (A3)

— Hydrogen Sulfide (A4)

— Stratified Layers (A5)

— Depleted Below Dark Surface (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 Soils²:

— 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 (TF2)

— Very Shallow Dark Surface (TF12)

— Other (Explain in Remarks)

²Location: PL=Pore Lining, M=Matrix.

Restrictive Layer (if observed):
Type: hard pan
Depth (inches): 4 inches
Remarks:
Hydric Soil Present? Yes X No



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

Camelot Village
Camelot Holdings LLC
Portland, ME

Soil Narrative Report

DATE: Soil Profiles observed on May 10, 2017

BASE MAP: Base plan provided by Acorn Engineering, Inc.
scale 1 inch equals 100 feet and two foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates,
Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

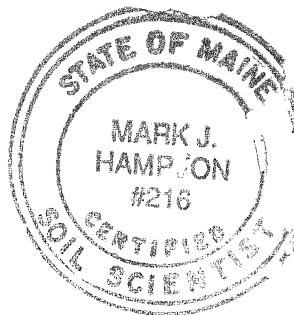
Mapping units of 1 acre or larger.
Scale of 1"= 100 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located accurately under direction of registered land surveyor
Base Map –2 foot contour intervals

Provided:

Mapping units of 1/2 acre or larger
Base map scale of 1"= 100 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by Mark Hampton Associates, Inc.
Ground topographic survey with one foot contours and ground control provided.

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

Mark J. Hampton C.S.S. #216, L.S.E. #263 May 20, 2017
Mark J. Hampton Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

Camelot Village
Camelot Holdings, LLC
Portland, ME

Buxton
(Aquic Dystric Eutrochrepts)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Intermediate positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Moderately well drained with a perched watertable from 1.5 to 3.0 feet below the surface at some time from November to May or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark Brown, fine sandy loam 0-7"
<u>Subsurface Layer:</u>	Olive brown, silt loam, 8-15"
<u>Subsoil Layer:</u>	Olive gray silty clay loam, 15-32"
<u>Substratum:</u>	Gray silty clay loam +32"

HYDROLOGIC GROUP: Group C
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 60 inches
HAZARD TO FLOODING: None

INCLUSIONS (Within Mapping Unit)

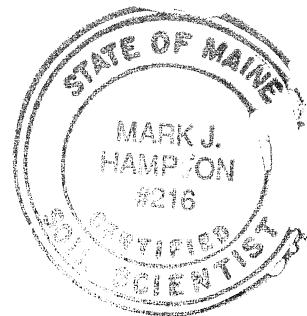
CONTRASTING: Scantic, Lamoine, Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline





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SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

Camelot Village
Camelot Holdings, LLC
Portland, ME

Lamoine
(Aeric Haplaquepts)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Intermediate positions on landform
SLOPE GRADIENT RANGES: (B) 3-8%, (C) 8-15%, (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 0.5 to 2.0 feet below the surface at some time from November to June or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark Brown, fine sandy loam 0-7"
<u>Subsurface Layer:</u>	Lt. Olive brown silt loam, 7-14"
<u>Subsoil Layer:</u>	Olive silty clay loam, 14-21"
<u>Substratum:</u>	Olive, silty clay loam, 21-65"

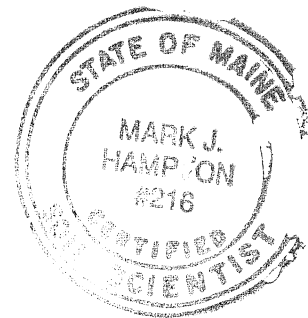
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS (Within Mapping Unit)

CONTRASTING: Buxton, Scantic, Podunk

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





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SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

Camelot Village
Camelot Holdings LLC
Portland, ME

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolauustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Lower positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
<u>Subsoil Layer:</u>	Olive silty clay loam, 16-29"
<u>Substratum:</u>	Olive gray clay loam, 29-65"

HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

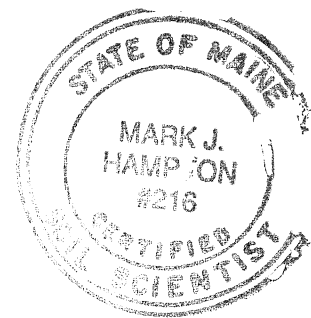
INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Buxton, Lamoine, Podunk

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





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SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

Camelot Village
Camelot Holdings, LLC
Portland, ME

Podunk
(Fluvaquentic Dystrudepts)

SETTING

PARENT MATERIAL: Derived from recent alluvium on floodplain
LANDFORM: Floodplain
POSITION IN LANDSCAPE: Low depressions and plains
SLOPE GRADIENT RANGES: (A) 0-3%,

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Moderately well drained

TYPICAL PROFILE:

Surface Layer:	Dark brown fine sandy loam, 0-12"
Subsurface Layer:	Light olive brown 12-30"
Substratum:	Olive gray, loamy fine sand, 30-65"

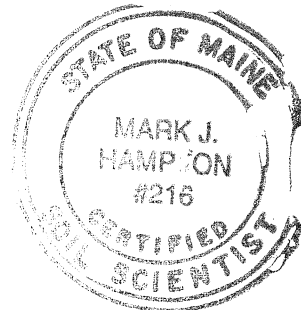
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Slow to very slow
PERMEABILITY: Moderately Rapid to Rapid
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: Frequent

INCLUSIONS (Within Mapping Unit)

CONTRASTING: Lamoine, Buxton, Scantic

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name:

Camelot Village

Applicant Name:

Camelot Holdings LLC

Project Location (municipality):

Pittsford

Exploration Symbol # SS1☒ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Dark Brown	
10	Silt loam	Frable	Brown	
20	Silty Clay loam	Firm	blue gray	Common & Distinct
30				
40				
50				
60				

Soil Details by
S.E.
S.S.

Soil Classification		Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
Soil Series/Phase Name:		☐ Hydric ☐ Bedrock		
Barton MUD		☒ Non-hydric ☐ Hydrologic		
		Soil Group		

Exploration Symbol # SS2☒ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Dark Brown	
10	Silt loam	Frable	Brown	
20	Silty Clay loam	Firm	blue gray	Common & Distinct
30				
40				
50				
60				

Soil Details by
S.E.
S.S.

Soil Classification		Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
Soil Series/Phase Name:		☐ Hydric ☐ Bedrock		
Barton MUD		☒ Non-hydric ☐ Hydrologic		
		Soil Group		

Exploration Symbol # SS3☒ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Dark Brown	
10	Silt loam	Frable	Brown	
20	Silty Clay loam	Firm	gray	Common & Distinct
30				
40				
50				
60				

Soil Details by
S.E.
S.S.

Soil Classification		Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
Soil Series/Phase Name:		☐ Hydric ☐ Bedrock		
Lansing SPD		☒ Non-hydric ☐ Hydrologic		
		Soil Group		

Exploration Symbol # SS4☒ Test Pit ☐ Boring ☐ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Dark Brown	
10	Silt loam	Frable	Brown	
20	Silty Clay loam	Firm	blue gray	Common & Distinct
30				
40				
50				
60				

Soil Details by
S.E.
S.S.

Soil Classification		Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
Soil Series/Phase Name:		☐ Hydric ☐ Bedrock		
Lansing SPD		☒ Non-hydric ☐ Hydrologic		
		Soil Group		

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Date

5/26/17

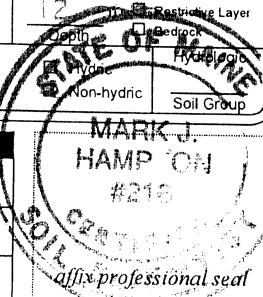
Name Printed

Mark J. Hampton

Cert/Lic/Reg. #

263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional EngineerMARK J.
HAMPTON
#216

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name:

Camelot Village

Applicant Name:

Camelot Holdings LLC

Project Location (municipality):

Portland

Exploration Symbol # SS5☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Friable	Black	
10	Silty clay loam	Firm	Gray	Common
20	loam			Distinct
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
	Profile	Condition	Percent	Depth	
S.S.	Soil Series/Phase Name:				Hydrologic
	Scenic PD				Soil Group
	☐ Hydric ☐ Non-hydric				

Exploration Symbol # SS6☐ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Friable	Dark Brown	
10	Silt loam	Friable	Brown	
20	Silty clay loam	Firm	olive gray	Common
30				Distinct
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
	Profile	Condition	Percent	Depth	
S.S.	Soil Series/Phase Name:				Hydrologic
	Lansing SPD				Soil Group
	☐ Hydric ☒ Non-hydric				

Exploration Symbol # SS7☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Firm	Dark Brown	
10	Silt loam	Friable	Brown	
20	Silty clay loam	Firm	gray	Common
30				Distinct
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
	Profile	Condition	Percent	Depth	
S.S.	Soil Series/Phase Name:				Hydrologic
	Lansing SPD				Soil Group
	☐ Hydric ☒ Non-hydric				

Exploration Symbol # SS8☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Friable	Dark Brown	
10	Silt loam	Friable	Brown	
20	Silty clay loam	Firm	olive gray	Common
30			gray	Distinct
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock
	Profile	Condition	Percent	Depth	
S.S.	Soil Series/Phase Name:				Hydrologic
	Lansing SPD				Soil Group
	☐ Hydric ☒ Non-hydric				

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Date

5/26/17

Name Printed

MARK J. Hampton

Cert/Lic/Reg. #

2631216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

MARK J.
HAMPTON
#216

CERTIFIED
Soil Scientist
affix professional seal

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name:

Camelot Village

Applicant Name:

Camelot Holdings LLC

Project Location (municipality):

Tortland

Exploration Symbol # SS9 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Brown	
10	Silt loam	Frable	Brown	
20	Silty clay	Fine	Gray	Common
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.E.	<u>E</u>	<u>D</u>	<u>12</u>	<u>12</u>	☐ Bedrock
S.S.	Soil Series/Phase Name: <u>Lansing SPD</u>				
			☐ Hydric	Hydrologic	
			☒ Non-hydric	Soil Group	

Exploration Symbol # SS10 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Brown	
10	Silt loam	Frable	Brown	
20	Silty clay	Fine	Gray	Common
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.E.	<u>E</u>	<u>D</u>	<u>10</u>	<u>12</u>	☐ Bedrock
S.S.	Soil Series/Phase Name: <u>Lansing SPD</u>				
			☐ Hydric	Hydrologic	
			☐ Non-hydric	Soil Group	

Exploration Symbol # SS11 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Dark brown	
10	Silt loam	Frable	Brown	
20	Silty clay	Fine	Gray	Common
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.E.	<u>E</u>	<u>D</u>	<u>2</u>	<u>13</u>	☐ Bedrock
S.S.	Soil Series/Phase Name: <u>Lansing SPD</u>				
			☐ Hydric	Hydrologic	
			☒ Non-hydric	Soil Group	

Exploration Symbol # SS12 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt loam	Frable	Blue	
10	Silty clay	Fine	Gray	Common
20	Loam			Discrete
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.E.	<u>E</u>	<u>E</u>	<u>2</u>	<u>13</u>	☐ Bedrock
S.S.	Soil Series/Phase Name: <u>Scenic PD</u>				
			☐ Hydric	Hydrologic	
			☐ Non-hydric	Soil Group	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Date

5/26/17

Name Printed

Mark J. Hampton

Cert/Lic/Reg. #

263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:

Camelot Village

Applicant Name:

Camelot Holdings LLC

Project Location (municipality):

Portland

Exploration Symbol # SS13 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sample Silt Loam	Frail	Dark Brown	
10	Wet Silt Loam	Frail	Brown	
20	Sandy Loam	Fin	Dark Brown	Common Distinct
30				
40				
50				
60				

S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.S.	Soil Series/Phase Name:			☐ Bedrock
	Tedonic mud			☐ Hydric
				☒ Non-hydric
				Soil Group

Exploration Symbol # SS14 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt Loam	Frail	Black	
10	Silty Clay	Fin	Gray	Common
20	Loam			Distinct
30				
40				
50				
60				

S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.S.	Soil Series/Phase Name:			☐ Bedrock
	Scenic PD			☐ Hydric
				☐ Non-hydric
				Soil Group

Exploration Symbol # SS15 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt Loam	Frail	Dark Brown	
10	Silt Loam	Frail	Brown	
20	Silty Clay Loam	Fin	Dark Brown	Common Distinct
30				
40				
50				
60				

S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.S.	Soil Series/Phase Name:			☐ Bedrock
	Lamo-ne SPD			☐ Hydric
				☒ Non-hydric
				Soil Group

Exploration Symbol # SS16 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt Loam	Frail	Black	
10	Silty Clay Loam	Fin	Gray	Common Distinct
20				
30				
40				
50				
60				

S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
Profile	Condition	Percent	Depth	☒ Restrictive Layer
S.S.	Soil Series/Phase Name:			☐ Bedrock
	Scenic PD			☐ Hydric
				☐ Non-hydric
				Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

MARC J. HAMPTON

Date

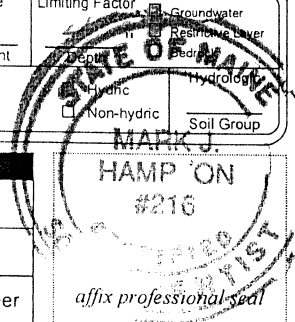
5/20/17

Name Printed

MARC J. HAMPTON

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**

Project Name:

Camelot Village

Applicant Name:

Camelot Holdings LLC

Project Location (municipality):

Portland

Exploration Symbol # SS17 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Silt	Finest	Dark Brown	
10	Silt	Finest	Brown	
20	Silty Clay	Finest	Gray	Common
30	Clay	Finest	Gray	Discrete
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☐ Groundwater
	Profile	Condition	Percent	Depth	☐ Restrictive Layer
S.S.	Soil Series/Phase Name:				☐ Bedrock
	Barter MUD				☐ Hydric
					☒ Non-hydric
					Hydrologic
					Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☐ Groundwater
	Profile	Condition	Percent	Depth	☐ Restrictive Layer
S.S.	Soil Series/Phase Name:				☐ Bedrock
					☐ Hydric
					☐ Non-hydric
					Hydrologic
					Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☐ Groundwater
	Profile	Condition	Percent	Depth	☐ Restrictive Layer
S.S.	Soil Series/Phase Name:				☐ Bedrock
					☐ Hydric
					☐ Non-hydric
					Hydrologic
					Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

Soil Details by	Soil Classification		Slope	Limiting Factor	☐ Groundwater
	Profile	Condition	Percent	Depth	☐ Restrictive Layer
S.S.	Soil Series/Phase Name:				☐ Bedrock
					☐ Hydric
					☐ Non-hydric
					Hydrologic
					Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Date

5/22/17

Name Printed

Mark J. Hampton

Cert/Lic/Reg. #

363/2162

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional EngineerMARK J.
HAMPTON
#216

affix professional seal



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4702

June 12, 2017

Mr. Mike Barton
Camelot Holdings LLC
5 Stone Pony Circle
Saco, ME 04072

Re: Vernal Pool Assessment, 50+ acre parcel Camelot Village Westbrook Street
Portland, ME

Dear Mike,

I have completed a vernal pool assessment during this breeding season, on the 50+- acre parcel of land located off Westbrook Street Portland, ME. The vernal pool assessment was conducted in accordance with Chapter 335 Significant Wildlife Habitat, Section 9 Significant Vernal Pools for the Maine Department of Environmental Protection. This section outlines the definition of a vernal pool as well as the requirements of a vernal pool to meet the definition of significance as related to the number of amphibian egg masses counted during the breeding season.

I made 6 site visits to the property over the course of six weeks beginning the third week in April. During each of these site visits I would evaluate each potential site of a possible vernal pool. I was looking for any amphibian egg masses. I did not find any wood frog or salamander egg masses on the property. As such, based on the observations made this spring, there are no vernal pools on the property. Vernal pools are described as shallow depressions that usually only contain water for part of the year. Vernal pools are also mostly likely to occur in forested or heavily vegetated areas for protection. There was only one area on the property which met this criteria and that is located in the northwest corner of the property up against the turnpike and Westbrook Street. And this pocket did not have any egg masses during the evaluation period.

I have included a completed Maine State Vernal Pool Assessment Form and a copy of a photograph of the assessment site. At your authorization I will submit the form and photograph to Maine Department of Inland Fisheries and Wildlife for processing.

If you have any questions or require additional information, please contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "Mark J. Hampton", with a long, sweeping horizontal stroke extending to the right.

Mark J. Hampton C.S.S., L.S.E.

Certified Soil Scientist #216

Licensed Site Evaluator #263



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: Camelot Holding A1

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Mark Hampton
- b. Contact and credentials previously provided? ☐ No (submit Addendum 1) ☒ Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: ☒ same as observer ☐ other _____
- b. Contact and credentials previously provided? ☐ No (submit Addendum 1) ☒ Yes
- c. Project Name: Camelot Village

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? ☐ Yes ☒ No If no, was landowner permission obtained for survey? ☒ Yes ☐ No
- b. Landowner's contact information (required)
- Name: Camelot Holdings LLC Phone: 286-6210
- Street Address: 5 Stone Pony Circle City: Saco State: ME Zip: 072
- c. ☐ Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

- a. Location Township: Portland

Brief site directions to the pool (using mapped landmarks):

Near the intersection of Westbrook Street and the Maine Turnpike

b. Mapping Requirements

- i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: -70-19-51W Latitude/Northing: 43-39-36N

Coordinate system: NAD27

Check one: ☐ GIS shapefile

- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)
- ☐ The pool perimeter is delineated by multiple GPS points. (Excellent)
 - Include map or spreadsheet with coordinates.
- ☒ The above GPS point is at the center of the pool. (Good)
- ☐ The center of the pool is approximately _____ m ☐ ft ☐ in the compass direction of _____ degrees from the above GPS point. (Acceptable)



Maine State Vernal Pool Assessment Form



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): _____

b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- ☒ Isolated depression ☐ Pool associated with larger wetland complex
☐ Floodplain depression ☐ Other: _____

■ Check all wetland types that best apply to this pool:

- | | | | |
|--|---|---|---|
| ☐ Forested swamp | ☐ Wet meadow | ☐ Slow stream | ☐ Dug pond or borrow pit |
| ☐ Shrub swamp | ☐ Lake or pond cove | ☐ Floodplain | |
| ☐ Peatland (fen or bog) | ☐ Abandoned beaver flowage | ☒ Mostly unvegetated pool | ☐ Roadside ditch |
| ☐ Emergent marsh | ☐ Active beaver flowage | ☐ ATV or skidder rut | ☐ Other: _____ |

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: ☒ Natural ☐ Natural-Modified ☐ Unnatural ☐ Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (**required**):

ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale in box (**required**):

- ☐ Permanent ☐ Semi-permanent (drying partially in all years and completely in drought years) ☒ Ephemeral (drying out completely in most years) ☐ Unknown

Explain:

■ Maximum depth at survey: ☐ 0-12" (0-1 ft.) ☒ 12-36" (1-3 ft.) ☐ 36-60" (3-5 ft.) ☐ >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 30 ☐ m ☒ ft Length: 100 ☐ m ☒ ft

■ Predominate substrate in order of increasing hydroperiod:

- ☐ Mineral soil (bare, leaf-litter bottom, or upland mosses present) ☒ Organic matter (peat/muck) shallow or restricted to deepest portion
☐ Mineral soil (sphagnum moss present) ☐ Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- | | |
|---|---|
| ☐ Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.) | ☐ Wet site ferns (e.g. royal fern, marsh fern) |
| ☐ Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern) | ☐ Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly) |
| ☐ Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern) | ☐ Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes) |
| ☐ Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle) | ☐ Aquatic vascular spp. (e.g. pickerelweed, arrowhead) |
| ☐ Sphagnum moss (anchored or suspended) | ☐ Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort) |
| | ☒ No vegetation in pool |

■ Faunal indicators (check all that apply):

- ☐ Fish ☐ Bullfrog or Green Frog tadpoles ☐ Other: _____

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- ☐ No inlet or outlet ☐ Permanent inlet or outlet (channel with well-defined banks and permanent flow)
☒ Intermittent inlet or outlet ☐ Other or Unknown (explain): _____



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 4/25, 5/3, 5/11, 5/17, 5/25, 6/3

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? ☒ Yes ☐ No
- Was the entire pool surveyed for egg masses? ☒ Yes ☐ No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴					
	Visit #1	Visit #2	Visit #3	Confidence Level ¹			Egg Mass Maturity ²			Observed		Confidence Level ¹
Wood Frog	0	0	0	1	1	1						
Spotted Salamander	0	0	0	1	1	1						
Blue-spotted Salamander	0	0	0	1	1	1						
Fairy Shrimp ³	0	0	0	1	1	1						

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	☐	☐	☐		Wood Turtle	☐	☐	☐	
Spotted Turtle	☐	☐	☐		Ribbon Snake	☐	☐	☐	
Ringed Boghaunter	☐	☐	☐		Other:	☐	☐	☐	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

☐ SVP ☐ Potential SVP ☐ Non Significant VP ☐ Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
Attn: Vernal Pools
650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

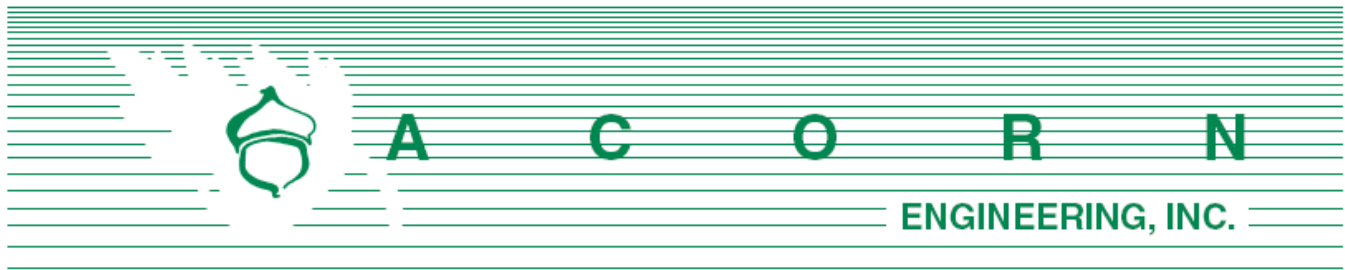
This pool is: ☐ Significant ☐ Potentially Significant but lacking critical data ☐ Not Significant due to: ☐ does not meet biological criteria.
☐ does not meet MDEP vernal pool criteria.

Comments:

Section 12

Stormwater Management Report





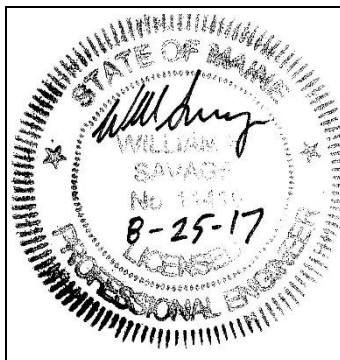
12. STORMWATER MANAGEMENT **REPORT**

Prepared For:

**Stroudwater Development Partners, LLC
Kennebunk, Maine 04043**

Prepared By:

**Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104**



August 2017

INTRODUCTION

Acorn Engineering, Inc. has been retained by Stroudwater Development Partners, LLC to provide civil engineering services for the proposed single-family and townhouse development. The project is at 1700 Westbrook Street.

A stormwater analysis will be prepared to demonstrate that the project will meet the following requirements of the City of Portland (the City):

- City of Portland Land Use Ordinance Chapter 14, Article V. Site Plan Section 14-523. Required Approvals and Applicability (E) Level III Site Plan Review.
- City of Portland City Code Chapter 32 Stormwater
- City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards, Section 12 – Site Location of Development Review, and Maine DEP Chapter 500 Stormwater Management Amended January 11, 2015.

The property consists of approximately 55.3 acres of land in Portland, Maine. A new roadway and sidewalk meeting the City of Portland Technical requirements will be developed to provide frontage for all new lots. Stroudwater Development Partners, LLC will construct the roadway, stormwater best management practices (BMPs) and associated utility infrastructure. Development of the roadway will result in approximately 33.1 acres of developed land, including 4.2 acres of impervious surfaces. Stroudwater Development Partners, LLC will sell lots upon completion of the roadway.

A Maine DEP Site Location of Development (Site Law) permit application is being submitted because the project will involve the creation of 15 or more lots on a parcel of land greater than 30 acres. The proposed development anticipates altering between 15,000 to 20,000 SF of freshwater wetland and therefore qualifies for a Tier 2 Natural Resources Protection Act Permit (NRPA). Additionally, the project qualifies for a Chapter 305 - Permit by Rule application (PBR) for Section 2 - Activities adjacent to protected natural resources and Section 7 - Outfall pipes.

The City of Portland Technical Standards Section 5 Stormwater Standards for new development requires compliance with the Maine DEP Chapter 500 Rules. According to the Maine DEP ground cover changes associated with the development of single family driveways, buildings, and lawns within the proposed lots are considered exempt from water quality treatment according to Title 38, Chapter 3, Section 420-D (Storm water management), Subsection 7E of the Maine Revised Statutes, which reads, "Impervious and disturbed areas associated with construction or expansion of a single-family, detached residence on a parcel do not require review pursuant to this section."

"Parcel" is defined in Chapter 500, Section 3(W) to be the same as "parcel of land" under Site Location of Development rules, which is Chapter 371(1)(L). The stormwater management standard under the Site Law is found at 38 M.R.S. § 484-D(4-A). Lots reviewed under a Site Law permit and in a lake watershed included in the list adopted pursuant to section 420-D would need to meet the quality standards, however the Subdivision is in stream watershed so quality standards do not apply. Lots will be offered for sale to general public. Upon sale of the lots, owners will have their choice of builder. Stroudwater Development Partners, LLC may be the designated as the preferred builder.



The current course of action is to provide primary water quality and quantity control through a Best Management Practice (BMP) approved by the Maine Department of Environmental Protection (MDEP). The majority of the roadway will be directed towards proprietary high-performance filter BMPs before being redirected towards detention basins to provide channel protection and quantity control. The development will provide water quality treatment for no less than 75% of the new roadway impervious area and no less than 50% of the roadway developed area. Although not required the stormwater BMPs within the roadway will be oversized to provide water quality treatment for the upgradient house lots. Channel protection volume is not required or nor will it be provided for the house lots tributary to the detention basin. Water quantity will be provided for the roadways and although not specifically required provided for the single-family house lots.

The planned unit residential (PRUD) development (excluding the access road) will provide water quality treatment for no less than 95% of the new impervious area (parking lot and buildings) and no less than 80% of the developed area. The PRUD will be directed towards a vegetated underdrain soil filter (VUSF) BMP. Channel Protection Volume and water quantity will be provided by the VUSF.

EXISTING CONDITIONS

The proposed redevelopment project is located in between the Maine Turnpike to the West, the Stroudwater River and Unum to the South, a Subdivision and Stroudwater Christian Church to the East, and a Subdivision and Portland Technology Park to the North. A boundary plan has been prepared by Titcomb Associates of Falmouth, Maine dated December 16, 2016.

The property is in the R-3 Residential Zone. Abutting Uses include:

- North R1, OP & ROS Zone – Residential & Office Park
- West R1 & R2 Zone – Single Family Residential & Religious Institution
- South OP Zone – Office Park
- East I-L Zone – Industrial Land & Maine Turnpike

The exiting property is generally flat in areas closer to Westbrook Street. In the north direction, the property gradually transitions into hills. The terrain becomes steeper, closer to the river. A topographic map of the proposed project location can be found in Section 1. The majority of stormwater runoff from the subject site drains to Stroudwater River. The runoff flows south-east down multiple hills towards Stroudwater River. The river continues to flow approximately 1 mile east before it reaches Fore River. The water is later discharged into Casco Bay. The site is not within a watershed classified as an Urban Impaired Stream as defined by the Maine DEP Chapter 502.

PROPOSED DEVELOPMENT

The proposed development includes 100 lots of which 98 are single family house lots, one planned unit residential lot (PRUD) and one open space lot. The PRUD will include 25 units within 5 multi-family buildings. The includes roadways, sidewalks and infrastructure to serve the proposed residential development.

New impervious surfaces comprise of pavement and gravel associated with the proposed roadway, as well as single family homes, multi-families and associated driveways and parking for lot



development. The roadway will be built in accordance with the City of Portland Local Street Standards and will be twenty-eight feet wide to accommodate two-way traffic and parallel parking on wide side of the street. The roadway will be curbed on both sides of the street with a six-foot esplanade and one five foot sidewalk. The project is requesting a waiver to reduce the requirement for two sidewalks on either side of the street to reduce the overall impervious area. The private driveway associated with the Planned Unit Residential Development (PRUD) will be twenty-feet wide with an esplanade at non-wetland crossing areas and a five foot wide sidewalk. The PRUD driveway wetland crossing culvert will be embedded a minimum six inches to support connectivity and minimize impact.

The development will be served by the Portland Water District, Central Maine Power, Communications, Unitil and the municipal sewer and storm systems. Solid waste and recycling will be through the municipal curb pick-up.

The majority of the roadway will be directed towards proprietary high-performance filter BMPs before being redirected towards detention basins to meet the General and Flooding Standards. The stormwater management plan was designed so that existing drainage patterns are not significantly altered.

GENERAL STANDARDS - WATER QUALITY

According to Section 3 (c) of the Chapter 500, General Standard rules, “For a linear portion of a project, runoff volume control may be reduced to no less than 75% of the volume from the impervious area and no less than 50% of the developed area that is impervious or landscaped.” The development will exceed the minimum water quality treatment for no less than 75% of the new roadway impervious area and no less than 50% of the roadway developed area. Although not required, the stormwater BMPs within the roadway will be oversized to provide water quality treatment for the upgradient house lots. Channel protection volume is not required or nor will it be provided for the single-family house lots tributary to the detention basin. Channel protection volume has been provided for the roadway impervious and developed area. The project includes the redevelopment of existing impervious area including rooftops, asphalt and gravel driveways and parking.

The planned unit residential (PRUD) development (excluding the access road) will provide water quality treatment for no less than 95% of the new impervious area (parking lot and buildings) and no less than 80% of the developed area.

Treatment Area

At this time, the roadway associated with the single-family house lots, anticipates treatment through the use of the Filterra, a proprietary high-performance filtration BMP. The Filterra will be designed to be in accordance with the Maine Stormwater Best Management Practice Manual, Appendix B Proprietary System requirements specified within the MaineDEP February 2, 2017 approval letter. Channel Protection Volume will be provided by the down gradient detention basin.

Treatment for the PRUD buildings is anticipated through the use of Vegetated Underdrained Soil Filter BMP (VUSF) sized to meet or exceed the requirements set forth within the MDEP Volume III: BMPs Technical Design Manual Section 7.1. Filtration BMPs have been shown to be very effective at removing a wide range of pollutants from stormwater runoff.



The treatment of the impervious and developed surfaces by the Stormwater BMPs is summarized in Table 1.

Table 1: New Impervious Area Treatment						
	Existing Impervious Area (SF)	Proposed Total Impervious Area (SF)	Net change in Impervious Area (SF)	Proposed Impervious Area with Treatment (SF)	% Overall New Imp. Area Treated	MDEP Req.
Linear	25,787	184,168	144,646	145,988	101%	75%
PRUD*	0	35,921	35,921	34,239	95%	95%
House Lots	8,928	147,000	138,072	105,750	77%	0%

*Area excludes linear driveway to the PRUD.

As shown in Table 1, the project significantly exceeds the required treatment for new impervious surfaces.

Furthermore, the MDEP defines developed area as “Disturbed area” excluding area that within one calendar year of being disturbed is returned to a condition with the same drainage pattern that existed prior to the disturbance and is revegetated, provided the area is not mowed more than once per year.

Based upon this definition, Table 2 summarizes the proposed disturbance and treatment areas.

Table 2: Developed Area Treatment				
	Proposed Total Developed Area (SF)	Proposed Developed Area with Treatment (SF)	% Overall Developed Area Treated	MDEP Requirement
Linear	207,483	190,455	92%	50%
PRUD	139,036	110,572	80%	80%
House Lots	826,346	665,109	80%	0%

As shown in Table 2, the project anticipates exceeding the required treatment for the total developed area.

Filter Area Size

Per the requirements for an vegetated underdrain sand filter (VUSF) as defined in Volume III BMPs Technical Design Manual, Chapter 7.1, the surface area of the filter shall be no less than the sum of 5% of the tributary impervious area and 2% of the tributary landscaped area.

The filter area is calculated by the following formula:

$$\text{Filter Area (sf)} = (\text{Impervious Area} \times 0.05) + (\text{Landscaped Area} \times 0.02)$$

Table 3 – Total Filter Surface Area, displays the proposed sand filter sizing requirements and the actual size. Tributary impervious areas include linear (roadway) and non-linear (parking and buildings) to the VUSF.



Table 3 –Total Filter Surface Area				
	Tributary Landscaped Area (SF)	Tributary Impervious Area (SF)	Filter Area Required (SF)	Filter Area Provided (SF)
VUSF (Pond 3)	72,000	43,080	3,594	3,610

The outflow from the sand filter structure is then tributary to the outlet control structure before outletting to the level lip spreader. As shown, the size of the soil filter area will meet and exceed the surface area requirements. Please note the design for the PRUD and associated grading and drainage area is still being developed. It is anticipated that tributary and landscape area will change as the plans evolve, however the minimum requirements will be met.

Buffers

Stormwater quality and quantity will be provided by the open space meadow buffers. Stormwater detention is provided within the micro-topography of the existing buffers and wetlands. The water quality and quantity benefits of the open space meadow buffers have not been quantified at this time.

Water Quality Volume (Channel Protection Volume)

In accordance with the Volume III: BMPs Technical Design Manual, a water quality volume of 1.0-inch times the tributary roadway and PRUD impervious area plus 0.4-inch times the roadway and PRUD tributary landscaped developed area is required to be treated by the Underdrained Subsurface Sand Filter. The water quality volume is calculated by the following formula:

$$\text{Treatment Volume (cf)} = \frac{((\text{Impervious Area} \times 1.0") + (\text{Disturbed Area} \times 0.4"))}{(12"/1')}$$

A summary of the proposed water quality volume is as follows:

Table 4 – Water Quality Volume Table, displays the tributary landscaped area, tributary impervious area, treatment volume required, and treatment volume provided.

Table 4 - Water Quality Volume Table (CPV)				
	Tributary Landscaped Area (SF)	Tributary Impervious Area (SF)	Treatment Volume Required (CF)	Treatment Volume Provided
Pond 1*	27,417	55,881	5,570	5,690
Pond 2*	38,659	83,387	8,237	8,237
Pond 3	72,000	43,080	5,990	8,457

*Excludes single family house lots

As shown, the size of the combined water quality volume will meet and exceed the treatment volume requirements. The treatment volumes provided are based upon the artificial rainfall and associated storage provided within the Pond, further discussed below. The HydroCAD reports may be provided



for each individual pond water quality volume, if requested.

HydroCAD Adjustments

Given that the water quality volumetric infiltration rates through the soil filter vary, a water quality outlet is modeled to provide the required minimum 24-hour release time. This is completed by adjusting the artificial rainfall amount in HydroCAD until the inflow volume is equal to or greater than the water quality volume (CPV). The storm events are modeled as type III, 24-hour storm events in HydroCAD.

A vertical orifice is modeled in HydroCAD at the outlet structures of the Pond 1 and 2 and VUSF 1 (Pond 3). The orifice diameter is sized to detain the stormwater for an approximate period of 24 hours. The orifice for the water quantity volume is then set above the peak elevation determined for the water quality volume.

FLOODING STANDARD – WATER QUANTITY

To evaluate the project with respect to the Flooding Standard, the proposed development was modeled using HydroCAD to verify that the post-development conditions do not exceed the pre-development conditions. A 24-hour SCS Type III storm distribution for the 2, 10, and 25-year storm events were used. The corresponding rainfall amounts for these storms are 3.1", 4.6", 5.8", respectively. Rainfall amounts are sourced from the Northeast Regional Climate Center website (<http://precip.eas.cornell.edu>), Extreme Precipitation Tables.

Due to the numerous variables, and inherent inaccuracies with the modeling program used to calculate stormwater runoff it is custom at Acorn Engineering, Inc. for a project of this land area to round to the nearest whole number, of a cubic foot per second (cfs).

Modeling Assumptions

Time of Concentration (Tc)

The times of concentration for subcatchments in both the pre and post conditions were calculated by entering the flow path with the associated ground cover and slopes. HydroCAD then calculated the Tc's and incorporated the total Tc for each subcatchment into the model. The Tc's were derived as outlined in Post-development Calculations section. HydroCAD recommends a sheet flow length not to exceed 100 feet.

Curve Number (CN)

In both the pre and post conditions, curve numbers were chosen conservatively. The following curve numbers were used in both conditions:

- Paved parking: 98
- Roofs: 98
- Gravel Surface: 96
- <50% Grass cover, Poor, HSG D: 89
- <50% Grass cover, Poor, HSG C: 86
- 50-75% Grass cover, Fair, HSG D: 84



- 50-75% Grass cover, Fair, HSG C: 79
- >75% Grass cover, Good, HSG D: 80
- >75% Grass cover, Good, HSG C: 74
- Woods/grass comb., Poor, HSG D: 86
- Woods/grass comb., Poor, HSG C: 82
- Woods/grass comb., Fair, HSG D: 82
- Woods/grass comb., Fair, HSG C: 76
- Woods/grass comb., Good, HSG D: 79
- Woods/grass comb., Good, HSG C: 72

The areas assumed to be “<50% Grass cover, Poor” were areas that contained a large amount of gravel, however there was some grass present. Alternatively, these areas could have been labeled “Pasture, grassland or range, Poor”, however the CN values for both conditions are identical.

The areas assumed to be “50-75% Grass cover, Fair”, were located in one of the following locations:

- Within the pasture, where cow paths were evident.
- On residential lawns, where approximately half of the grass was dead.

Alternatively, these areas could have been labeled “Pasture, grassland or range, Fair”, however the CN values for both conditions are identical.

The majority of the areas assumed to be “Woods/grass comb., Poor” were found on existing residential properties. These areas were most likely man made, either by planting minimal trees or by cutting down a large majority of trees in a specific area.

The areas assumed to be “Woods/grass comb., Fair” were areas that contained approximately 50-75% trees and the remaining area was grass.

Additionally, conservative wetland curve number runoff was used within the subcatchments, as follows:

- Wetlands: 90

A curve number of 90 was used for all wetlands. This was based upon recommendations provided on the online hydroCAD index, in the swamp modeling section.

Wetlands

Flow traveling through a wetland was modeled using assumptions based off information found in the Swamp Modeling Section of the HydroCAD Manual. The manual states that flow through a swamp or wetland, without a specific outlet control, should be modeled as a standard reach routing. The reach might be a vee or trapezoidal shape, typically with low side-slopes (high Z-value). Additionally, the wetlands should be modeled using a high Manning’s value (up to 0.15) to represent the extreme “roughness” of flow through weeds, brush, or woods. The flow depth was assumed to be 2 feet. The bottom width of the channel was estimated by measuring the width of the wetland on the survey drawing.



Pre-development Calculations

The pre-development condition was modeled as six subcatchments including:

- Subcatchment 1: Tributary to Partridge Circle
- Subcatchment 2A: Tributary to Westbrook Street
- Subcatchment 2B: Tributary to Westbrook Street
- Subcatchment 3: Tributary to the Stroudwater River
- Subcatchment 4: Tributary to the Stroudwater River
- Subcatchment 5: Tributary to the Stroudwater River

A full copy of the HydroCAD calculations is included within Attachment C of this report.

A Pre-development Watershed Map developed for this project showing the subcatchments is included as Attachment A.

The peak flow rates for the 2, 10, and 25-year storm events at POI #1 Partridge Subdivision, POI#2 Westbrook St and POI#99 Stroudwater River. are presented in Table 3 below, and a full copy of the HydroCAD calculations is included within Attachment C of this report.

Table 3: Pre - Development Peak Stormwater Flows			
Drainage Area	2-yr Storm (CFS)	10-yr Storm (CFS)	25-yr Storm (CFS)
POI #1 (Partridge)	2	4	5
POI #2 (Westbrook St)	11	17	20
POI #99 (Stroudwater)	36	70	98

Post-development Calculations

Nomenclature for subcatchment labeling is consistent with the pre-development drainage model, however, the names of subcatchments that have been further divided continue with a decimal followed by a new numeric identification, starting with “1”. For example, what was subcatchment 3 in the pre-development model has been divided into subcatchment 3.1 and subcatchment 3.2 in the post-development model. The sum of the area of subcatchments in the post-development model is equal to the area of subcatchments in the pre-development model.

Ground cover changes associated with the development of driveways, buildings, and lawns within the proposed single-family lots were included in the stormwater model for analysis of the MaineDEP and City flooding standards. These ground cover changes were based upon the assumption that each of the ninety-eight (98) lots would be developed to include a total developed area that is the size of the lot, 600 (50’X12’) square feet being driveway, 900 (25’X36’) square feet being rooftop, and the remainder being lawn or landscaped area. Existing drainage patterns will be generally maintained with the proposed stormwater management design.

The post-development condition was modeled as thirty-seven subcatchments including:

- Subcatchment 1: Tributary to Partridge Circle



- Subcatchment 2A: Tributary to Westbrook Street
- Subcatchment 2B: Tributary to Westbrook Street
- Subcatchment 3: Tributary to the Stroudwater River
 - 3.2-11: Tributary to Filterra Water Quality Units then to Pond 1 before outletting to the Stroudwater River. Excluding subcat, 3.1, 3.12, 3.13, 3.14 tributary to Pond 1 only.
 - 3.20: Tributary to Pond 1 before outletting to the Stroudwater River
 - The Filterra Water Quality Units utilize a relative elevation of 100.
- Subcatchment 4: Tributary to the Stroudwater River
- Subcatchment 5: Tributary to the PRUD culvert before outletting in the Stroudwater River
 - 5.1-5.15 Tributary to Filterra Water Quality Units then to Pond 2 before outletting to the Stroudwater River. Excluding subcat, 5.2,5.3,5.6,5.7 tributary to Pond 2 Only.
 - The Filterra Water Quality Units utilize a relative elevation of 100.
 - 5.20: Tributary to Pond 2 before outletting to the Stroudwater River.
 - 5.22, 5.30: Tributary to the VUSF 1 (Pond 3) before outletting to the Stroudwater River.
 - 5.20: Tributary to the Stroudwater River

A post-development Watershed Map for this project showing the subcatchments is included as Attachment B.

Post-development peak flow rates for the 2, 10, and 25 storm events are summarized below for each of the subcatchments. The HydroCAD calculations are included within Attachment C.

Table 4: Post - Development Peak Stormwater Flows			
Drainage Area	2-yr Storm (CFS)	10-yr Storm (CFS)	25-yr Storm (CFS)
POI #1 (Partridge)	1	3	4
POI #2 (Westbrook St)	6	13	17
POI #99 (Stroudwater)	36	69	96

The post-development flowrates are then compared to the pre-development flowrates in the table below.

Table 5: Pre & Post - Development Comparison						
Drainage Area	2-yr Storm Event (CFS)		10-yr Storm Event (CFS)		25-yr Storm Event (CFS)	
	Pre	Post	Pre	Post	Pre	Post
POI #1	2	1	4	3	5	4
POI #2	11	6	17	13	20	17
POI #99	36	36	70	69	98	96

As shown in Table 5, the post-development peak flows from the property are well below the pre-development levels. A Post-Development Watershed Map developed for this project is included as Attachment B.



INSPECTIONS & MAINTENANCE

Provisions for periodic inspection and maintenance of the stormwater BMPs are included in the Post Construction – Stormwater Inspection & Maintenance Plan to be developed under separate cover. The agreement outlines the maintenance and inspection requirements for the site BMPs including providing inspection logs and information on qualified inspectors as well as required maintenance activities and related inspection and maintenance frequencies. The Plan will outline the various responsible parties and be recorded with the Cumberland County Registry of Deeds.

SOILS

Onsite soil information includes the following:

- Class B High Intensity Soil Survey performed by Mark Hampton Associates.

Please refer to Document 11 for the report and explorations that accompany the attached Soil Map.

The site is comprised of primarily Lamoine and Buxton soils which are classified as types C and D hydrologic soils, respectively. The areas where Lamoine has been identified, have been classified as somewhat poorly drained. The areas where Buxton has been identified, have been classified as moderately well drained.

Small parts of the site are comprised of Podunk soils which is characterized by moderately well drained soils. Permeability is moderately rapid to rapid.

Lastly, eight wetlands with scantic soils exist on site which are poorly drained and has a saturated hydraulic conductivity of the surface and subsurface horizons that are moderately high or high and low or moderately low in the subsoil and substratum.

An impermeable liner will be placed across the entire bottom and sideslopes to the top of the channel protection volume so that stormwater runoff does from the development does not mix directly with the groundwater.

These existing soils were modeled in their respective hydrologic groups in both the pre and post conditions.

The area within and surrounding the project includes soils types listed in the table below. The susceptibility of soils to erosion is indicated on a relative “K” scale of values over a range of 0.02 to 0.69. Higher “K” values indicate more erodible soils.

Table 1 - “K” Value		
Soils Type	Subsurface	Substratum
Lamoine	0.37	0.37
Buxton	0.49	0.49
Podunk	0.37	0.37
Scantic	0.49	0.49

The soil “K” values for the soils, listed above, indicate a moderate susceptibility to erosion. The site’s



susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County and the USDA Soil Survey.

CONCLUSION

The proposed development was designed to meet the requirements implemented by the MDEP under the Stormwater Management Statute (38 M.R.S.A. § 420-D) as well as the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards. The design does not anticipate to create erosion, drainage, or runoff problems for the development, the city, or abutting properties.

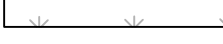
ATTACHMENTS

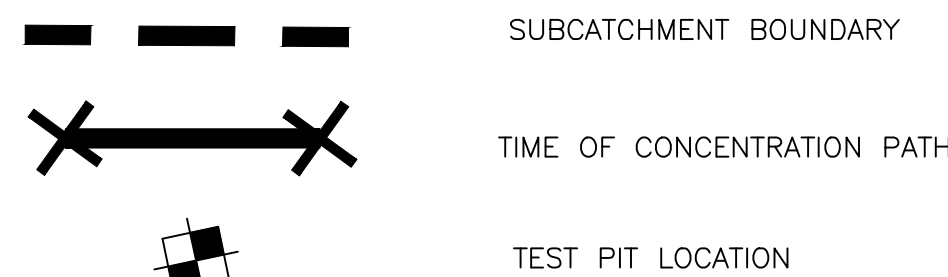
Attachment A: Pre – Development Watershed Map

Attachment B: Post – Development Watershed Map

Attachment C: HydroCAD Calculations



	WOODS/GRASS COMB., GOOD
	WOODS/GRASS COMB., FAIR
	WOODS/GRASS COMB., POOR
	GRAVEL SURFACE
	WETLAND



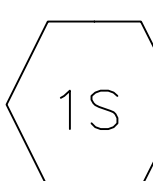
POI-1 POINT OF INTEREST



POND



REACH



SUBCATCHMENT NUMBER

PRELIMINARY
SUBMISSION

ISSUED FOR	BY
PRELIMINARY	DATE
	WHS
	8/23/17
REVISION	REV.
	DATE

POST-DEVELOPMENT WATERSHED MAP

STROUDWATER PRESERVE

AGENT: STROUDWATER DEVELOPMENT PARTNERS, LLC
KENNEBUNK, ME 04043

DRAWING NAME:

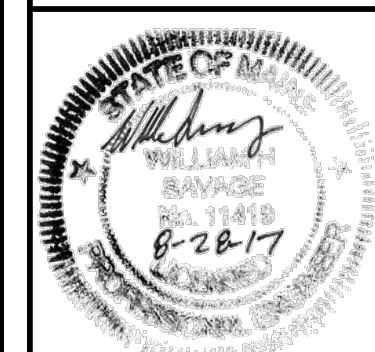
PROJECT NAME:

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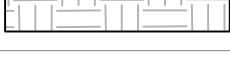
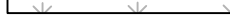
A C E

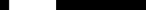
ACORN ENGINEERING, INC.
158 DANFORTH ST. PORTLAND MAINE 04102
(207) 775-2655

FILE:	CIVIL_1079
DATE:	8/23/17
JN:	1079
SCALE:	1"=100'
DESIGNED BY:	WHS
DRAWN BY:	ADG
CHECKED BY:	WHS



DRAWING NO.
PRE

	WOODS/GRASS COMB., GOOD
	WOODS/GRASS COMB., FAIR
	WOODS/GRASS COMBO., POOR
	GRAVEL SURFACE
	WETLAND

 SUBCATCHMENT BOUNDARY
 TIME OF CONCENTRATION PATH
 TEST PIT LOCATION

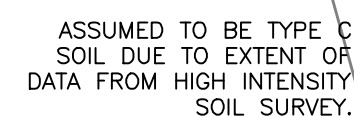
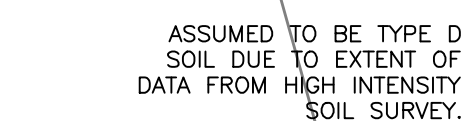
POI-1 POINT OF INTEREST



1P POND

1R

1S SUBCATCHMENT NUMBER



— ASSUMED TO BE TYPE C
SOIL DUE TO EXTENT OF
DATA FROM HIGH INTENSITY
SOIL SURVEY.

ASSUMED TO BE TYPE I
SOIL DUE TO EXTENT OF
DATA FROM HIGH INTENSITY
SOIL SURVEY

PRELIMINARY
SUBMISSION

ISSUED FOR	BY
PRELIMINARY	DATE
	WHS
	8/23/17
REVISION	REV.
	DATE

POST-DEVELOPMENT WATERSHED MAP

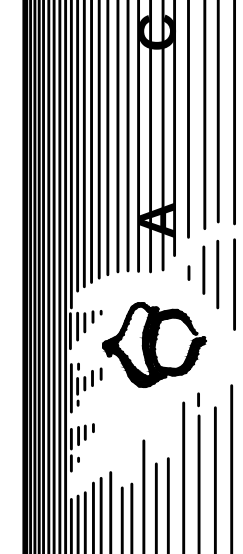
STROUDWATER PRESERVE

CLIENT: STROUDWATER DEVELOPMENT PARTNERS, LLC
KENNEBUNK, ME 04043

DRAWING NAME:

PROJECT NAME:

ENGINEERING, INC.



ACORN ENGINEERING, INC.
158 DANFORTH ST, PORTLAND MAINE 04102
(207) 775-2655

FILE: CIVIL_1079

DATE: 8/23/17

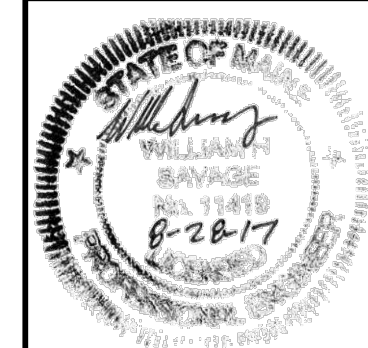
JN:	1079
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SCALE: 1"=100'

DESIGNED BY: WHS

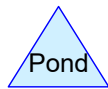
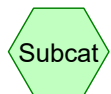
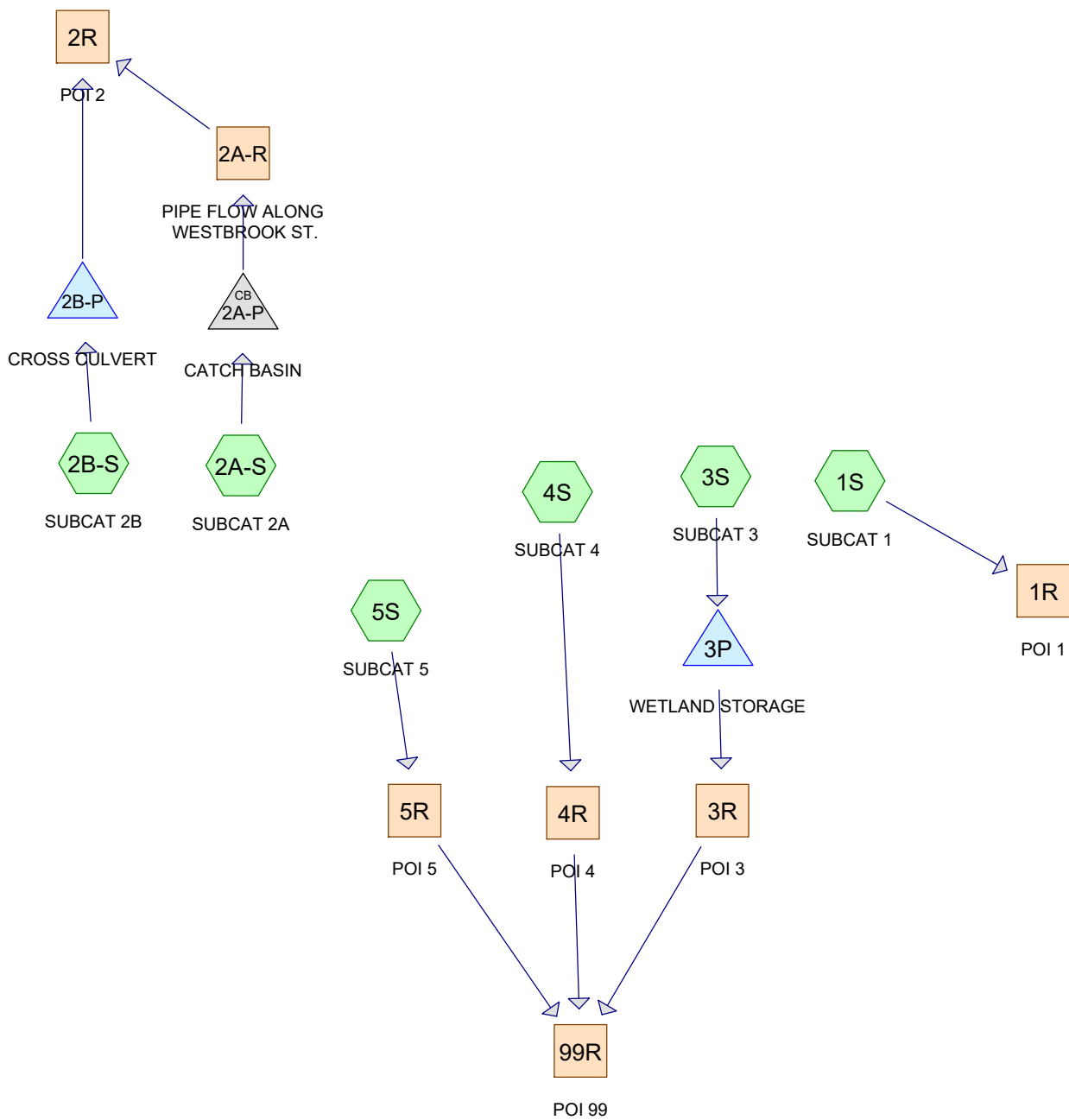
DRAWN BY: ADG

CHECKED BY: WHS



DRAWING NO.

POPT



Pre-development 8-24-17

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Printed 8/29/2017

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.566	72	Woods/grass comb., Good, HSG C (1S, 2A-S, 2B-S, 3S, 5S)
12.272	74	>75% Grass cover, Good, HSG C (1S, 2A-S, 2B-S, 3S, 4S, 5S)
9.461	79	50-75% Grass cover, Fair, HSG C (2A-S, 2B-S, 3S, 4S, 5S)
7.244	79	Woods/grass comb., Good, HSG D (2B-S, 3S, 4S, 5S)
11.880	80	>75% Grass cover, Good, HSG D (3S, 4S, 5S)
1.128	82	Woods/grass comb., Poor, HSG C (2A-S, 2B-S, 3S, 5S)
7.546	84	50-75% Grass cover, Fair, HSG D (3S, 5S)
0.728	86	<50% Grass cover, Poor, HSG C (2B-S, 5S)
0.417	89	<50% Grass cover, Poor, HSG D (5S)
6.689	90	Wetland, HSG D (2B-S, 3S, 4S, 5S)
0.546	96	Gravel surface, HSG C (2A-S, 2B-S, 5S)
0.047	96	Gravel surface, HSG D (4S)
1.124	98	Paved parking, HSG C (2A-S, 2B-S, 5S)
0.536	98	Roofs, HSG C (2A-S, 4S, 5S)
0.083	98	Roofs, HSG D (2B-S, 3S)
63.267		TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
29.361	HSG C	1S, 2A-S, 2B-S, 3S, 4S, 5S
33.906	HSG D	2B-S, 3S, 4S, 5S
0.000	Other	
63.267		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	2A-P	56.54	56.26	25.4	0.0110	0.011	12.0	0.0	0.0
2	2B-P	58.96	57.71	63.0	0.0198	0.012	18.0	0.0	0.0

Pre-development 8-24-17

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Type III 24-hr 2-year Rainfall=3.10"

Printed 8/29/2017

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCAT 1Runoff Area=144,495 sf 0.00% Impervious Runoff Depth=0.92"
Flow Length=771' Tc=44.5 min CN=73 Runoff=1.54 cfs 0.254 af**Subcatchment2A-S: SUBCAT 2A**Runoff Area=110,484 sf 27.91% Impervious Runoff Depth=1.39"
Flow Length=208' Tc=11.3 min CN=81 Runoff=3.43 cfs 0.294 af**Subcatchment2B-S: SUBCAT 2B**Runoff Area=273,265 sf 8.10% Impervious Runoff Depth=1.39"
Flow Length=295' Tc=12.6 min CN=81 Runoff=8.16 cfs 0.727 af**Subcatchment3S: SUBCAT 3**Runoff Area=740,582 sf 0.40% Impervious Runoff Depth=1.33"
Flow Length=1,124' Tc=37.1 min CN=80 Runoff=13.29 cfs 1.878 af**Subcatchment4S: SUBCAT 4**Runoff Area=222,926 sf 1.07% Impervious Runoff Depth=1.33"
Flow Length=1,311' Tc=24.3 min CN=80 Runoff=4.86 cfs 0.565 af**Subcatchment5S: SUBCAT 5**Runoff Area=1,264,164 sf 1.40% Impervious Runoff Depth=1.39"
Flow Length=1,562' Tc=50.3 min CN=81 Runoff=20.41 cfs 3.364 af**Reach 1R: POI 1**

Inflow=1.54 cfs 0.254 af

Outflow=1.54 cfs 0.254 af

Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.

Inflow=3.43 cfs 0.294 af

Outflow=3.43 cfs 0.294 af

Reach 2R: POI 2

Inflow=10.66 cfs 1.021 af

Outflow=10.66 cfs 1.021 af

Reach 3R: POI 3

Inflow=13.28 cfs 1.878 af

Outflow=13.28 cfs 1.878 af

Reach 4R: POI 4

Inflow=4.86 cfs 0.565 af

Outflow=4.86 cfs 0.565 af

Reach 5R: POI 5

Inflow=20.41 cfs 3.364 af

Outflow=20.41 cfs 3.364 af

Reach 99R: POI 99

Inflow=36.03 cfs 5.807 af

Outflow=36.03 cfs 5.807 af

Pond 2A-P: CATCH BASINPeak Elev=57.67' Inflow=3.43 cfs 0.294 af
12.0" Round Culvert n=0.011 L=25.4' S=0.0110 ' Outflow=3.43 cfs 0.294 af**Pond 2B-P: CROSS CULVERT**Peak Elev=60.49' Storage=898 cf Inflow=8.16 cfs 0.727 af
Outflow=7.52 cfs 0.727 af**Pond 3P: WETLAND STORAGE**Peak Elev=22.13' Storage=290 cf Inflow=13.29 cfs 1.878 af
Outflow=13.28 cfs 1.878 af

Pre-development 8-24-17

Prepared by Acorn Engineering, Inc.

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Type III 24-hr 2-year Rainfall=3.10"

Printed 8/29/2017

Total Runoff Area = 63.267 ac Runoff Volume = 7.082 af Average Runoff Depth = 1.34"
97.24% Pervious = 61.524 ac 2.76% Impervious = 1.744 ac

Pre-development 8-24-17

Prepared by Acorn Engineering, Inc.

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Type III 24-hr 10-year Rainfall=4.60"

Printed 8/29/2017

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCAT 1Runoff Area=144,495 sf 0.00% Impervious Runoff Depth=1.97"
Flow Length=771' Tc=44.5 min CN=73 Runoff=3.52 cfs 0.545 af**Subcatchment2A-S: SUBCAT 2A**Runoff Area=110,484 sf 27.91% Impervious Runoff Depth=2.63"
Flow Length=208' Tc=11.3 min CN=81 Runoff=6.57 cfs 0.557 af**Subcatchment2B-S: SUBCAT 2B**Runoff Area=273,265 sf 8.10% Impervious Runoff Depth=2.63"
Flow Length=295' Tc=12.6 min CN=81 Runoff=15.66 cfs 1.377 af**Subcatchment3S: SUBCAT 3**Runoff Area=740,582 sf 0.40% Impervious Runoff Depth=2.55"
Flow Length=1,124' Tc=37.1 min CN=80 Runoff=25.94 cfs 3.609 af**Subcatchment4S: SUBCAT 4**Runoff Area=222,926 sf 1.07% Impervious Runoff Depth=2.55"
Flow Length=1,311' Tc=24.3 min CN=80 Runoff=9.50 cfs 1.086 af**Subcatchment5S: SUBCAT 5**Runoff Area=1,264,164 sf 1.40% Impervious Runoff Depth=2.63"
Flow Length=1,562' Tc=50.3 min CN=81 Runoff=39.19 cfs 6.372 af**Reach 1R: POI 1**

Inflow=3.52 cfs 0.545 af

Outflow=3.52 cfs 0.545 af

Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.

Inflow=6.57 cfs 0.557 af

Outflow=6.57 cfs 0.557 af

Reach 2R: POI 2

Inflow=16.70 cfs 1.934 af

Outflow=16.70 cfs 1.934 af

Reach 3R: POI 3

Inflow=25.93 cfs 3.609 af

Outflow=25.93 cfs 3.609 af

Reach 4R: POI 4

Inflow=9.50 cfs 1.086 af

Outflow=9.50 cfs 1.086 af

Reach 5R: POI 5

Inflow=39.19 cfs 6.372 af

Outflow=39.19 cfs 6.372 af

Reach 99R: POI 99

Inflow=69.82 cfs 11.067 af

Outflow=69.82 cfs 11.067 af

Pond 2A-P: CATCH BASINPeak Elev=59.08' Inflow=6.57 cfs 0.557 af
12.0" Round Culvert n=0.011 L=25.4' S=0.0110 ' Outflow=6.57 cfs 0.557 af**Pond 2B-P: CROSS CULVERT**Peak Elev=61.28' Storage=4,304 cf Inflow=15.66 cfs 1.377 af
Outflow=10.68 cfs 1.377 af**Pond 3P: WETLAND STORAGE**Peak Elev=22.21' Storage=497 cf Inflow=25.94 cfs 3.609 af
Outflow=25.93 cfs 3.609 af

Pre-development 8-24-17

Prepared by Acorn Engineering, Inc.

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Type III 24-hr 10-year Rainfall=4.60"

Printed 8/29/2017

Total Runoff Area = 63.267 ac Runoff Volume = 13.546 af Average Runoff Depth = 2.57"
97.24% Pervious = 61.524 ac 2.76% Impervious = 1.744 ac

Pre-development 8-24-17

Prepared by Acorn Engineering, Inc.

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Type III 24-hr 25-year Rainfall=5.80"

Printed 8/29/2017

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCAT 1Runoff Area=144,495 sf 0.00% Impervious Runoff Depth=2.92"
Flow Length=771' Tc=44.5 min CN=73 Runoff=5.29 cfs 0.808 af**Subcatchment2A-S: SUBCAT 2A**Runoff Area=110,484 sf 27.91% Impervious Runoff Depth=3.70"
Flow Length=208' Tc=11.3 min CN=81 Runoff=9.20 cfs 0.782 af**Subcatchment2B-S: SUBCAT 2B**Runoff Area=273,265 sf 8.10% Impervious Runoff Depth=3.70"
Flow Length=295' Tc=12.6 min CN=81 Runoff=21.93 cfs 1.935 af**Subcatchment3S: SUBCAT 3**Runoff Area=740,582 sf 0.40% Impervious Runoff Depth=3.60"
Flow Length=1,124' Tc=37.1 min CN=80 Runoff=36.69 cfs 5.102 af**Subcatchment4S: SUBCAT 4**Runoff Area=222,926 sf 1.07% Impervious Runoff Depth=3.60"
Flow Length=1,311' Tc=24.3 min CN=80 Runoff=13.42 cfs 1.536 af**Subcatchment5S: SUBCAT 5**Runoff Area=1,264,164 sf 1.40% Impervious Runoff Depth=3.70"
Flow Length=1,562' Tc=50.3 min CN=81 Runoff=54.94 cfs 8.953 af**Reach 1R: POI 1**

Inflow=5.29 cfs 0.808 af

Outflow=5.29 cfs 0.808 af

Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.

Inflow=9.20 cfs 0.782 af

Outflow=9.20 cfs 0.782 af

Reach 2R: POI 2

Inflow=20.00 cfs 2.718 af

Outflow=20.00 cfs 2.718 af

Reach 3R: POI 3

Inflow=36.67 cfs 5.102 af

Outflow=36.67 cfs 5.102 af

Reach 4R: POI 4

Inflow=13.42 cfs 1.536 af

Outflow=13.42 cfs 1.536 af

Reach 5R: POI 5

Inflow=54.94 cfs 8.953 af

Outflow=54.94 cfs 8.953 af

Reach 99R: POI 99

Inflow=98.23 cfs 15.591 af

Outflow=98.23 cfs 15.591 af

Pond 2A-P: CATCH BASINPeak Elev=60.82' Inflow=9.20 cfs 0.782 af
12.0" Round Culvert n=0.011 L=25.4' S=0.0110 '/' Outflow=9.20 cfs 0.782 af**Pond 2B-P: CROSS CULVERT**Peak Elev=61.56' Storage=9,901 cf Inflow=21.93 cfs 1.935 af
Outflow=11.57 cfs 1.935 af**Pond 3P: WETLAND STORAGE**Peak Elev=22.27' Storage=665 cf Inflow=36.69 cfs 5.102 af
Outflow=36.67 cfs 5.102 af

Pre-development 8-24-17

Type III 24-hr 25-year Rainfall=5.80"

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Total Runoff Area = 63.267 ac Runoff Volume = 19.117 af Average Runoff Depth = 3.63"
97.24% Pervious = 61.524 ac 2.76% Impervious = 1.744 ac

Pre-development 8-24-17

Prepared by Acorn Engineering, Inc.

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Type III 24-hr 25-year Rainfall=5.80"

Printed 8/29/2017

Summary for Subcatchment 1S: SUBCAT 1

Runoff = 5.29 cfs @ 12.61 hrs, Volume= 0.808 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
43,973	72	Woods/grass comb., Good, HSG C
100,522	74	>75% Grass cover, Good, HSG C
144,495	73	Weighted Average
144,495		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5	100	0.0013	0.06		Sheet Flow, A to B Range n= 0.130 P2= 3.10"
13.5	402	0.0050	0.49		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
2.3	58	0.0071	0.42		Shallow Concentrated Flow, C-D Woodland Kv= 5.0 fps
1.6	173	0.0658	1.80		Shallow Concentrated Flow, D-E Short Grass Pasture Kv= 7.0 fps
0.6	38	0.0429	1.04		Shallow Concentrated Flow, E-F Woodland Kv= 5.0 fps
44.5	771	Total			

Pre-development 8-24-17

Type III 24-hr 25-year Rainfall=5.80"

Prepared by Acorn Engineering, Inc.

Printed 8/29/2017

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Summary for Subcatchment 2A-S: SUBCAT 2A

Runoff = 9.20 cfs @ 12.15 hrs, Volume= 0.782 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
19,972	98	Paved parking, HSG C
10,861	98	Roofs, HSG C
2,798	82	Woods/grass comb., Poor, HSG C
28,926	72	Woods/grass comb., Good, HSG C
8,096	79	50-75% Grass cover, Fair, HSG C
36,064	74	>75% Grass cover, Good, HSG C
3,767	96	Gravel surface, HSG C
110,484	81	Weighted Average
79,651		72.09% Pervious Area
30,833		27.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0232	0.18		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
1.9	108	0.0355	0.94		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
11.3	208	Total			

Pre-development 8-24-17

Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 2B-S: SUBCAT 2B

Runoff = 21.93 cfs @ 12.17 hrs, Volume= 1.935 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
21,440	98	Paved parking, HSG C
698	98	Roofs, HSG D
16,430	82	Woods/grass comb., Poor, HSG C
20,162	72	Woods/grass comb., Good, HSG C
26,628	79	Woods/grass comb., Good, HSG D
1,155	86	<50% Grass cover, Poor, HSG C
127,949	79	50-75% Grass cover, Fair, HSG C
40,537	74	>75% Grass cover, Good, HSG C
13,579	96	Gravel surface, HSG C
* 4,687	90	Wetland, HSG D
273,265	81	Weighted Average
251,127		91.90% Pervious Area
22,138		8.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0185	0.18		Sheet Flow, A-B
					Range n= 0.130 P2= 3.10"
3.4	195	0.0186	0.95		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
12.6	295	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3S: SUBCAT 3

Runoff = 36.69 cfs @ 12.49 hrs, Volume= 5.102 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,937	98	Roofs, HSG D
4,329	82	Woods/grass comb., Poor, HSG C
43,145	79	Woods/grass comb., Good, HSG D
42,073	72	Woods/grass comb., Good, HSG C
169,626	84	50-75% Grass cover, Fair, HSG D
96,244	79	50-75% Grass cover, Fair, HSG C
150,700	80	>75% Grass cover, Good, HSG D
151,466	74	>75% Grass cover, Good, HSG C
* 80,062	90	Wetland, HSG D
740,582	80	Weighted Average
737,645		99.60% Pervious Area
2,937		0.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0011	0.06		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
4.2	274	0.0238	1.08		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
1.6	332	0.0547	3.51		Shallow Concentrated Flow, C-D Grassed Waterway Kv= 15.0 fps
1.6	257	0.0459	2.61	224.14	Trap/Vee/Rect Channel Flow, D-E, WETLAND Bot.W=23.00' D=2.00' Z= 10.0 '/' Top.W=63.00' n= 0.150
1.4	161	0.0281	1.97	145.91	Trap/Vee/Rect Channel Flow, E-F, WETLAND Bot.W=17.00' D=2.00' Z= 10.0 '/' Top.W=57.00' n= 0.150
37.1	1,124	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 4S: SUBCAT 4

Runoff = 13.42 cfs @ 12.34 hrs, Volume= 1.536 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,391	98	Roofs, HSG C
4,174	79	Woods/grass comb., Good, HSG D
24,054	79	50-75% Grass cover, Fair, HSG C
66,075	74	>75% Grass cover, Good, HSG C
99,065	80	>75% Grass cover, Good, HSG D
2,029	96	Gravel surface, HSG D
* 25,138	90	Wetland, HSG D
222,926	80	Weighted Average
220,535		98.93% Pervious Area
2,391		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0147	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
5.3	216	0.0094	0.68		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
1.3	97	0.0340	1.29		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
0.6	123	0.0500	3.35		Shallow Concentrated Flow, D-E Grassed Waterway Kv= 15.0 fps
2.6	430	0.0410	2.71	401.23	Trap/Vee/Rect Channel Flow, E-F, WETLAND Bot.W=54.00' D=2.00' Z= 10.0 ' Top.W=94.00' n= 0.150
2.2	290	0.0340	2.17	160.49	Trap/Vee/Rect Channel Flow, F-G, WETLAND Bot.W=17.00' D=2.00' Z= 10.0 ' Top.W=57.00' n= 0.150
1.0	55	0.0330	0.91		Shallow Concentrated Flow, G-H Woodland Kv= 5.0 fps
24.3	1,311	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5S: SUBCAT 5

Runoff = 54.94 cfs @ 12.69 hrs, Volume= 8.953 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
7,567	98	Paved parking, HSG C
10,086	98	Roofs, HSG C
25,596	82	Woods/grass comb., Poor, HSG C
20,197	72	Woods/grass comb., Good, HSG C
241,580	79	Woods/grass comb., Good, HSG D
18,185	89	<50% Grass cover, Poor, HSG D
30,567	86	<50% Grass cover, Poor, HSG C
155,775	79	50-75% Grass cover, Fair, HSG C
159,085	84	50-75% Grass cover, Fair, HSG D
267,724	80	>75% Grass cover, Good, HSG D
139,890	74	>75% Grass cover, Good, HSG C
6,434	96	Gravel surface, HSG C
* 181,478	90	Wetland, HSG D
1,264,164	81	Weighted Average
1,246,511		98.60% Pervious Area
17,653		1.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0100	0.06		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.10"
8.5	273	0.0115	0.54		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.5	130	0.0165	1.45	89.64	Trap/Vee/Rect Channel Flow, C-D, WETLAND Bot.W=11.00' D=2.00' Z= 10.0 ' Top.W=51.00' n= 0.150
1.1	95	0.0456	1.49		Shallow Concentrated Flow, D-E Short Grass Pasture Kv= 7.0 fps
0.6	86	0.1121	2.34		Shallow Concentrated Flow, E-F Short Grass Pasture Kv= 7.0 fps
0.3	88	0.1143	4.22	413.93	Trap/Vee/Rect Channel Flow, F-G, WETLAND Bot.W=29.00' D=2.00' Z= 10.0 ' Top.W=69.00' n= 0.150
3.3	463	0.0325	2.34	280.36	Trap/Vee/Rect Channel Flow, G-H, WETLAND Bot.W=40.00' D=2.00' Z= 10.0 ' Top.W=80.00' n= 0.150
6.2	327	0.0044	0.88	117.26	Trap/Vee/Rect Channel Flow, H-I, WETLAND Bot.W=47.00' D=2.00' Z= 10.0 ' Top.W=87.00' n= 0.150
50.3	1,562	Total			

Pre-development 8-24-17*Type III 24-hr 25-year Rainfall=5.80"*

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Summary for Reach 1R: POI 1

Inflow Area = 3.317 ac, 0.00% Impervious, Inflow Depth = 2.92" for 25-year event
Inflow = 5.29 cfs @ 12.61 hrs, Volume= 0.808 af
Outflow = 5.29 cfs @ 12.61 hrs, Volume= 0.808 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.

Inflow Area = 2.536 ac, 27.91% Impervious, Inflow Depth = 3.70" for 25-year event
Inflow = 9.20 cfs @ 12.15 hrs, Volume= 0.782 af
Outflow = 9.20 cfs @ 12.15 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Pre-development 8-24-17*Type III 24-hr 25-year Rainfall=5.80"*

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Summary for Reach 2R: POI 2

Inflow Area = 8.810 ac, 13.80% Impervious, Inflow Depth = 3.70" for 25-year event

Inflow = 20.00 cfs @ 12.17 hrs, Volume= 2.718 af

Outflow = 20.00 cfs @ 12.17 hrs, Volume= 2.718 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Pre-development 8-24-17*Type III 24-hr 25-year Rainfall=5.80"*

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Summary for Reach 3R: POI 3

Inflow Area = 17.001 ac, 0.40% Impervious, Inflow Depth = 3.60" for 25-year event
Inflow = 36.67 cfs @ 12.50 hrs, Volume= 5.102 af
Outflow = 36.67 cfs @ 12.50 hrs, Volume= 5.102 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Pre-development 8-24-17*Type III 24-hr 25-year Rainfall=5.80"*

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Summary for Reach 4R: POI 4

Inflow Area = 5.118 ac, 1.07% Impervious, Inflow Depth = 3.60" for 25-year event
Inflow = 13.42 cfs @ 12.34 hrs, Volume= 1.536 af
Outflow = 13.42 cfs @ 12.34 hrs, Volume= 1.536 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Pre-development 8-24-17*Type III 24-hr 25-year Rainfall=5.80"*

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Summary for Reach 5R: POI 5

Inflow Area = 29.021 ac, 1.40% Impervious, Inflow Depth = 3.70" for 25-year event
Inflow = 54.94 cfs @ 12.69 hrs, Volume= 8.953 af
Outflow = 54.94 cfs @ 12.69 hrs, Volume= 8.953 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Pre-development 8-24-17*Type III 24-hr 25-year Rainfall=5.80"*

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Summary for Reach 99R: POI 99

Inflow Area = 51.140 ac, 1.03% Impervious, Inflow Depth = 3.66" for 25-year event
Inflow = 98.23 cfs @ 12.57 hrs, Volume= 15.591 af
Outflow = 98.23 cfs @ 12.57 hrs, Volume= 15.591 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 2A-P: CATCH BASIN

Inflow Area = 2.536 ac, 27.91% Impervious, Inflow Depth = 3.70" for 25-year event
Inflow = 9.20 cfs @ 12.15 hrs, Volume= 0.782 af
Outflow = 9.20 cfs @ 12.15 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min
Primary = 9.20 cfs @ 12.15 hrs, Volume= 0.782 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 60.82' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	56.54'	12.0" Round Culvert L= 25.4' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 56.54' / 56.26' S= 0.0110 ' / ' Cc= 0.900 n= 0.011

Primary OutFlow Max=9.19 cfs @ 12.15 hrs HW=60.81' (Free Discharge)↑**1=Culvert** (Barrel Controls 9.19 cfs @ 11.70 fps)

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 2B-P: CROSS CULVERT

Inflow Area = 6.273 ac, 8.10% Impervious, Inflow Depth = 3.70" for 25-year event
 Inflow = 21.93 cfs @ 12.17 hrs, Volume= 1.935 af
 Outflow = 11.57 cfs @ 12.41 hrs, Volume= 1.935 af, Atten= 47%, Lag= 14.6 min
 Primary = 11.57 cfs @ 12.41 hrs, Volume= 1.935 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 61.56' @ 12.41 hrs Surf.Area= 26,312 sf Storage= 9,901 cf

Plug-Flow detention time= 5.0 min calculated for 1.935 af (100% of inflow)
 Center-of-Mass det. time= 5.0 min (824.0 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	58.96'	30,434 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.96	100	0	0
60.00	624	376	376
61.00	2,395	1,510	1,886
62.10	49,511	28,548	30,434

Device	Routing	Invert	Outlet Devices
#1	Primary	58.96'	18.0" Round 18" Ex. Culvert L= 63.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.96' / 57.71' S= 0.0198 ' S= 0.0198 ' Cc= 0.900 n= 0.012 Concrete pipe, finished
#2	Primary	62.00'	50.0' long x 16.0' breadth Westbrook Street Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.57 cfs @ 12.41 hrs HW=61.56' (Free Discharge)

1=18" Ex. Culvert (Inlet Controls 11.57 cfs @ 6.55 fps)

2=Westbrook Street (Controls 0.00 cfs)

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 3P: WETLAND STORAGE

Inflow Area = 17.001 ac, 0.40% Impervious, Inflow Depth = 3.60" for 25-year event
 Inflow = 36.69 cfs @ 12.49 hrs, Volume= 5.102 af
 Outflow = 36.67 cfs @ 12.50 hrs, Volume= 5.102 af, Atten= 0%, Lag= 0.4 min
 Primary = 36.67 cfs @ 12.50 hrs, Volume= 5.102 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 22.27' @ 12.50 hrs Surf.Area= 3,240 sf Storage= 665 cf

Plug-Flow detention time= 0.4 min calculated for 5.101 af (100% of inflow)
 Center-of-Mass det. time= 0.4 min (844.8 - 844.4)

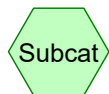
Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	15,910 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	1,777	0	0
23.00	7,298	4,538	4,538
24.00	15,446	11,372	15,910

Device	Routing	Invert	Outlet Devices
#1	Primary	22.00'	100.0' long x 98.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=36.65 cfs @ 12.50 hrs HW=22.27' (Free Discharge)

1=Broad-Crested Rectangular Weir (Weir Controls 36.65 cfs @ 1.38 fps)



Reach



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.857	79	50-75% Grass cover, Fair, HSG C (2A-S, 2B-S, 5.20S, 5S)
4.599	84	50-75% Grass cover, Fair, HSG D (3.20S, 3S, 5.20S, 5.22S)
0.331	86	<50% Grass cover, Poor, HSG C (5S)
0.502	89	<50% Grass cover, Poor, HSG D (5.20S, 5S)
15.294	74	>75% Grass cover, Good, HSG C (1S, 2A-S, 2B-S, 3.10S, 3.11S, 3.12S, 3.13S, 3.14S, 3.1S, 3.2S, 3.3S, 3.4S, 3.5S, 3.6S, 3.7S, 3.8S, 5.10S, 5.11S, 5.12S, 5.13S, 5.14S, 5.15S, 5.1S, 5.2S, 5.30S, 5.3S, 5.4S, 5.5S, 5.6S, 5.7S, 5.8S, 5.9S, 5S)
12.010	80	>75% Grass cover, Good, HSG D (3.10S, 3.14S, 3.6S, 3.7S, 3.8S, 3.9S, 3S, 4S, 5.10S, 5.11S, 5.12S, 5.13S, 5.14S, 5.15S, 5.1S, 5.20S, 5.21S, 5.30S)
0.325	96	Gravel surface, HSG C (2A-S, 2B-S)
0.093	96	Gravel surface, HSG D (4S, 5S)
0.825	98	Paved parking, HSG D (2A-S, 2B-S, 5S)
3.881	98	Paved roads w/curbs & sewers, HSG D (3.10S, 3.11S, 3.12S, 3.13S, 3.14S, 3.1S, 3.2S, 3.3S, 3.4S, 3.5S, 3.6S, 3.7S, 3.8S, 3.9S, 5.10S, 5.11S, 5.12S, 5.13S, 5.14S, 5.15S, 5.1S, 5.2S, 5.30S, 5.3S, 5.4S, 5.5S, 5.6S, 5.7S, 5.8S, 5.9S)
0.495	98	Roofs, HSG D (2A-S, 2B-S, 5S)
3.111	98	Unconnected roofs, HSG D (3.10S, 3.11S, 3.12S, 3.13S, 3.14S, 3.1S, 3.2S, 3.3S, 3.4S, 3.5S, 3.6S, 3.7S, 3.8S, 3.9S, 5.10S, 5.11S, 5.12S, 5.13S, 5.14S, 5.15S, 5.1S, 5.30S, 5.3S, 5.4S, 5.5S, 5.6S, 5.7S, 5.8S, 5.9S)
1.038	98	Water Surface, HSG D (3.20S, 5.21S, 5.22S)
6.470	90	Wetland, HSG D (2B-S, 3.20S, 3S, 4S, 5.20S, 5S)
3.165	72	Woods/grass comb., Good, HSG C (1S, 2A-S, 2B-S, 3.20S, 5.20S, 5S)
6.646	79	Woods/grass comb., Good, HSG D (3S, 4S, 5.20S, 5S)
0.522	82	Woods/grass comb., Poor, HSG C (2A-S, 2B-S, 5S)
0.102	86	Woods/grass comb., Poor, HSG D (3.20S)
63.267	82	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
23.495	HSG C	1S, 2A-S, 2B-S, 3.10S, 3.11S, 3.12S, 3.13S, 3.14S, 3.1S, 3.20S, 3.2S, 3.3S, 3.4S, 3.5S, 3.6S, 3.7S, 3.8S, 5.10S, 5.11S, 5.12S, 5.13S, 5.14S, 5.15S, 5.1S, 5.20S, 5.2S, 5.30S, 5.3S, 5.4S, 5.5S, 5.6S, 5.7S, 5.8S, 5.9S, 5S
39.772	HSG D	2A-S, 2B-S, 3.10S, 3.11S, 3.12S, 3.13S, 3.14S, 3.1S, 3.20S, 3.2S, 3.3S, 3.4S, 3.5S, 3.6S, 3.7S, 3.8S, 3.9S, 3S, 4S, 5.10S, 5.11S, 5.12S, 5.13S, 5.14S, 5.15S, 5.1S, 5.20S, 5.21S, 5.22S, 5.2S, 5.30S, 5.3S, 5.4S, 5.5S, 5.6S, 5.7S, 5.8S, 5.9S, 5S
0.000	Other	
63.267		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	3.857	4.599	0.000	8.457	50-75% Grass cover, Fair	2A- S, 2B- S, 3.20 S, 3S, 5.20 S, 5.22 S, 5S
0.000	0.000	0.331	0.502	0.000	0.832	<50% Grass cover, Poor	5.20 S, 5S
0.000	0.000	15.294	12.010	0.000	27.304	>75% Grass cover, Good	1S, 2A- S, 2B- S, 3.10 S, 3.11 S, 3.12 S, 3.13 S, 3.14 S, 3.1S , 3.2S , 3.3S , 3.4S , 3.5S , 3.6S , 3.7S , 3.8S ,

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Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.325	0.093	0.000	0.418	Gravel surface	2A- S, 2B- S, 4S, 5S
0.000	0.000	0.000	0.825	0.000	0.825	Paved parking	2A- S, 2B- S, 5S
0.000	0.000	0.000	3.881	0.000	3.881	Paved roads w/curbs & sewers	3.10 S, 3.11 S, 3.12 S, 3.13 S, 3.14 S, 3.1S , 3.2S , 3.3S , 3.4S , 3.5S , 3.6S , 3.7S , 3.8S , 3.9S , 5.10 S, 5.11 S, 5.12 S, 5.13

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Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.495	0.000	0.495	Roofs	2A- S, 2B- S, 5S
0.000	0.000	0.000	3.111	0.000	3.111	Unconnected roofs	3.10 S, 3.11 S, 3.12 S, 3.13 S, 3.14 S, 3.1S , 3.2S , 3.3S , 3.4S , 3.5S , 3.6S , 3.7S , 3.8S , 3.9S , 5.10 S, 5.11 S, 5.12 S, 5.13 S, 5.14 S, 5.15 S, 5.1S

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Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.038	0.000	1.038	Water Surface	3.20 S, 5.21 S, 5.22 S
0.000	0.000	0.000	6.470	0.000	6.470	Wetland	2B- S, 3.20 S, 3S, 4S, 5.20 S, 5S
0.000	0.000	3.165	6.646	0.000	9.812	Woods/grass comb., Good	1S, 2A- S, 2B- S, 3.20 S, 3S, 4S, 5.20 S, 5S
0.000	0.000	0.522	0.102	0.000	0.624	Woods/grass comb., Poor	2A- S, 2B- S, 3.20 S, 5S
0.000	0.000	23.495	39.772	0.000	63.267	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	32.90	31.00	60.0	0.0317	0.013	12.0	0.0	0.0
2	2A-P	56.54	56.26	25.4	0.0110	0.011	12.0	0.0	0.0
3	2B-P	58.96	57.71	63.0	0.0198	0.012	18.0	0.0	0.0
4	2P	27.90	27.65	25.0	0.0100	0.013	15.0	0.0	0.0
5	3P	23.90	23.00	170.0	0.0053	0.013	12.0	0.0	0.0
6	5P	31.20	28.50	72.0	0.0375	0.013	24.0	0.0	12.0

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Type III 24-hr 2-year Rainfall=3.10"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 1	Runoff Area=69,758 sf 0.00% Impervious Runoff Depth=0.92" Flow Length=368' Tc=15.0 min CN=73 Runoff=1.20 cfs 0.123 af
Subcatchment2A-S: 2A	Runoff Area=129,920 sf 25.77% Impervious Runoff Depth=1.46" Flow Length=208' Tc=11.3 min CN=82 Runoff=4.25 cfs 0.362 af
Subcatchment2B-S: 2B	Runoff Area=185,601 sf 8.37% Impervious Runoff Depth=1.26" Flow Length=579' Tc=25.7 min CN=79 Runoff=3.74 cfs 0.448 af
Subcatchment3.10S: 3.10	Runoff Area=16,463 sf 41.35% Impervious Runoff Depth=1.75" Flow Length=255' Tc=7.0 min CN=86 Runoff=0.75 cfs 0.055 af
Subcatchment3.11S: 3.11	Runoff Area=22,818 sf 38.20% Impervious Runoff Depth=1.53" Flow Length=160' Tc=1.4 min CN=83 Runoff=1.11 cfs 0.067 af
Subcatchment3.12S: CB-2	Runoff Area=29,503 sf 24.70% Impervious Runoff Depth=1.20" Flow Length=313' Tc=14.2 min UI Adjusted CN=78 Runoff=0.72 cfs 0.068 af
Subcatchment3.13S: CB-3	Runoff Area=13,062 sf 36.99% Impervious Runoff Depth=1.53" Flow Length=225' Tc=8.0 min CN=83 Runoff=0.50 cfs 0.038 af
Subcatchment3.14S: CB-4	Runoff Area=9,436 sf 34.58% Impervious Runoff Depth=1.60" Flow Length=230' Slope=0.0300 '/' Tc=1.5 min CN=84 Runoff=0.48 cfs 0.029 af
Subcatchment3.1S: 3.1	Runoff Area=5,704 sf 48.54% Impervious Runoff Depth=1.75" Flow Length=115' Slope=0.0200 '/' Tc=11.1 min CN=86 Runoff=0.23 cfs 0.019 af
Subcatchment3.20S: 3.20	Runoff Area=46,483 sf 29.22% Impervious Runoff Depth=1.91" Flow Length=272' Tc=10.0 min CN=88 Runoff=2.08 cfs 0.170 af
Subcatchment3.2S: 3.2	Runoff Area=28,301 sf 29.96% Impervious Runoff Depth=1.33" Flow Length=360' Tc=13.8 min UI Adjusted CN=80 Runoff=0.78 cfs 0.072 af
Subcatchment3.3S: 3.3	Runoff Area=14,630 sf 33.63% Impervious Runoff Depth=1.46" Flow Length=289' Tc=8.6 min CN=82 Runoff=0.52 cfs 0.041 af
Subcatchment3.4S: 3.4	Runoff Area=21,170 sf 33.11% Impervious Runoff Depth=1.46" Flow Length=362' Tc=14.7 min CN=82 Runoff=0.63 cfs 0.059 af
Subcatchment3.5S: 3.5	Runoff Area=36,887 sf 30.24% Impervious Runoff Depth=1.39" Flow Length=432' Tc=13.3 min CN=81 Runoff=1.08 cfs 0.098 af
Subcatchment3.6S: 3.6	Runoff Area=24,469 sf 26.85% Impervious Runoff Depth=1.39" Flow Length=311' Tc=11.6 min UI Adjusted CN=81 Runoff=0.75 cfs 0.065 af
Subcatchment3.7S: 3.7	Runoff Area=29,265 sf 22.99% Impervious Runoff Depth=1.39" Flow Length=255' Tc=7.0 min UI Adjusted CN=81 Runoff=1.05 cfs 0.078 af

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Subcatchment3.8S: 3.8	Runoff Area=57,330 sf 22.10% Impervious Runoff Depth=1.39" Flow Length=255' Tc=7.0 min UI Adjusted CN=81 Runoff=2.05 cfs 0.153 af
Subcatchment3.9S: 3.9	Runoff Area=15,285 sf 53.44% Impervious Runoff Depth=2.08" Flow Length=342' Tc=6.1 min CN=90 Runoff=0.84 cfs 0.061 af
Subcatchment3S: 4	Runoff Area=285,246 sf 0.00% Impervious Runoff Depth=1.60" Flow Length=732' Tc=9.7 min CN=84 Runoff=10.81 cfs 0.873 af
Subcatchment4S: 6	Runoff Area=123,011 sf 0.00% Impervious Runoff Depth=1.46" Flow Length=649' Tc=13.3 min CN=82 Runoff=3.80 cfs 0.343 af
Subcatchment5.10S: 5.10	Runoff Area=47,324 sf 23.69% Impervious Runoff Depth=1.20" Flow Length=304' Tc=9.5 min UI Adjusted CN=78 Runoff=1.32 cfs 0.109 af
Subcatchment5.11S: 5.11	Runoff Area=9,602 sf 88.19% Impervious Runoff Depth=2.65" Flow Length=200' Tc=4.7 min CN=96 Runoff=0.67 cfs 0.049 af
Subcatchment5.12S: 5.12	Runoff Area=64,167 sf 23.84% Impervious Runoff Depth=1.20" Flow Length=308' Tc=7.3 min UI Adjusted CN=78 Runoff=1.93 cfs 0.147 af
Subcatchment5.13S: 5.13	Runoff Area=16,127 sf 75.66% Impervious Runoff Depth=2.35" Flow Length=373' Slope=0.0200 '/' Tc=6.4 min CN=93 Runoff=0.98 cfs 0.072 af
Subcatchment5.14S: 5.14	Runoff Area=54,863 sf 30.59% Impervious Runoff Depth=1.60" Flow Length=733' Slope=0.0100 '/' Tc=7.0 min CN=84 Runoff=2.28 cfs 0.168 af
Subcatchment5.15S: 5.15	Runoff Area=45,229 sf 32.57% Impervious Runoff Depth=1.46" Flow Length=369' Slope=0.0100 '/' Tc=4.0 min CN=82 Runoff=1.90 cfs 0.126 af
Subcatchment5.1S: 5.1	Runoff Area=60,576 sf 30.85% Impervious Runoff Depth=1.46" Flow Length=643' Tc=16.9 min CN=82 Runoff=1.70 cfs 0.169 af
Subcatchment5.20S: 5.20	Runoff Area=691,370 sf 0.00% Impervious Runoff Depth=1.53" Flow Length=621' Tc=17.5 min CN=83 Runoff=20.13 cfs 2.020 af
Subcatchment5.21S: 5.21	Runoff Area=75,046 sf 29.67% Impervious Runoff Depth=1.67" Flow Length=98' Tc=5.3 min CN=85 Runoff=3.47 cfs 0.240 af
Subcatchment5.22S: 5.22	Runoff Area=18,481 sf 50.68% Impervious Runoff Depth=2.16" Flow Length=228' Tc=6.6 min CN=91 Runoff=1.04 cfs 0.077 af
Subcatchment5.2S: 5.2	Runoff Area=7,018 sf 68.04% Impervious Runoff Depth=2.08" Flow Length=226' Slope=0.0150 '/' Tc=2.2 min CN=90 Runoff=0.45 cfs 0.028 af
Subcatchment5.30S: 5.30	Runoff Area=138,171 sf 31.18% Impervious Runoff Depth=1.53" Flow Length=484' Tc=8.6 min CN=83 Runoff=5.18 cfs 0.404 af
Subcatchment5.3S: 5.3	Runoff Area=9,428 sf 58.60% Impervious Runoff Depth=1.91" Flow Length=224' Slope=0.0150 '/' Tc=2.2 min CN=88 Runoff=0.55 cfs 0.034 af
Subcatchment5.4S: 5.4	Runoff Area=28,885 sf 40.00% Impervious Runoff Depth=1.60" Flow Length=412' Tc=12.4 min CN=84 Runoff=1.01 cfs 0.088 af

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Type III 24-hr 2-year Rainfall=3.10"

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Subcatchment 5.5S: 5.5	Runoff Area=16,333 sf 47.08% Impervious Runoff Depth=1.67" Flow Length=367' Tc=7.0 min CN=85 Runoff=0.71 cfs 0.052 af
Subcatchment 5.6S: 5.6	Runoff Area=34,516 sf 29.47% Impervious Runoff Depth=1.26" Flow Length=352' Tc=14.7 min UI Adjusted CN=79 Runoff=0.87 cfs 0.083 af
Subcatchment 5.7S: 5.7	Runoff Area=9,723 sf 54.22% Impervious Runoff Depth=1.83" Flow Length=225' Tc=6.0 min CN=87 Runoff=0.48 cfs 0.034 af
Subcatchment 5.8S: 5.8	Runoff Area=45,544 sf 29.07% Impervious Runoff Depth=1.26" Flow Length=402' Tc=15.2 min UI Adjusted CN=79 Runoff=1.14 cfs 0.110 af
Subcatchment 5.9S: 5.9	Runoff Area=18,933 sf 34.48% Impervious Runoff Depth=1.46" Flow Length=249' Tc=6.4 min CN=82 Runoff=0.73 cfs 0.053 af
Subcatchment 5S: 7A	Runoff Area=200,238 sf 4.24% Impervious Runoff Depth=1.33" Flow Length=820' Tc=41.8 min CN=80 Runoff=3.39 cfs 0.508 af
Reach 1R: POI 1	Inflow=1.20 cfs 0.123 af Outflow=1.20 cfs 0.123 af
Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.	Inflow=4.25 cfs 0.362 af Outflow=4.25 cfs 0.362 af
Reach 2R: POI 2	Inflow=6.46 cfs 0.811 af Outflow=6.46 cfs 0.811 af
Reach 4R: POI 4	Inflow=11.66 cfs 1.854 af Outflow=11.66 cfs 1.854 af
Reach 5.0R: Filterras	Inflow=14.58 cfs 1.323 af Outflow=14.58 cfs 1.323 af
Reach 5R: POI 5	Inflow=22.63 cfs 4.313 af Outflow=22.63 cfs 4.313 af
Reach 6R: POI 4	Inflow=3.80 cfs 0.343 af Outflow=3.80 cfs 0.343 af
Reach 7A-R: 7A-R	Inflow=3.11 cfs 0.508 af Outflow=3.11 cfs 0.508 af
Reach 15R: Filterra	Inflow=9.91 cfs 0.902 af Outflow=9.91 cfs 0.902 af
Reach 99R: POI 99	Inflow=35.85 cfs 6.511 af Outflow=35.85 cfs 6.511 af
Pond 1P: Pond 1	Peak Elev=36.17' Storage=22,768 cf Inflow=11.97 cfs 1.071 af Outflow=1.46 cfs 0.982 af

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Type III 24-hr 2-year Rainfall=3.10"

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Pond 2A-P: CATCH BASINPeak Elev=58.02' Inflow=4.25 cfs 0.362 af
12.0" Round Culvert n=0.011 L=25.4' S=0.0110 '/' Outflow=4.25 cfs 0.362 af**Pond 2B-P: CROSS CULVERT**Peak Elev=59.88' Storage=306 cf Inflow=3.74 cfs 0.448 af
Outflow=3.72 cfs 0.448 af**Pond 2P: Pond 2**Peak Elev=30.73' Storage=35,874 cf Inflow=17.90 cfs 1.563 af
Outflow=1.63 cfs 1.411 af**Pond 3.10P: Filterra 4x8**Peak Elev=103.11' Storage=43 cf Inflow=0.75 cfs 0.055 af
Primary=0.21 cfs 0.045 af Secondary=0.54 cfs 0.010 af Outflow=0.75 cfs 0.055 af**Pond 3.11P: Filterra 6X8**Peak Elev=103.16' Storage=34 cf Inflow=1.11 cfs 0.067 af
Primary=0.16 cfs 0.048 af Secondary=0.95 cfs 0.018 af Outflow=1.10 cfs 0.067 af**Pond 3.2P: Filterra 4X8**Peak Elev=103.11' Storage=44 cf Inflow=0.78 cfs 0.072 af
Primary=0.21 cfs 0.056 af Secondary=0.57 cfs 0.016 af Outflow=0.78 cfs 0.072 af**Pond 3.3P: Filterra 4X6**Peak Elev=103.08' Storage=32 cf Inflow=0.52 cfs 0.041 af
Primary=0.16 cfs 0.034 af Secondary=0.37 cfs 0.007 af Outflow=0.52 cfs 0.041 af**Pond 3.4P: Filterra 4x8**Peak Elev=103.09' Storage=43 cf Inflow=0.63 cfs 0.059 af
Primary=0.21 cfs 0.048 af Secondary=0.42 cfs 0.011 af Outflow=0.63 cfs 0.059 af**Pond 3.5P: Filterra 6X8**Peak Elev=103.14' Storage=66 cf Inflow=1.08 cfs 0.098 af
Primary=0.31 cfs 0.078 af Secondary=0.77 cfs 0.020 af Outflow=1.08 cfs 0.098 af**Pond 3.6P: Filterra 4x6**Peak Elev=103.11' Storage=33 cf Inflow=0.75 cfs 0.065 af
Primary=0.16 cfs 0.048 af Secondary=0.60 cfs 0.017 af Outflow=0.75 cfs 0.065 af**Pond 3.7P: Filterra 4x8**Peak Elev=103.14' Storage=45 cf Inflow=1.05 cfs 0.078 af
Primary=0.22 cfs 0.059 af Secondary=0.84 cfs 0.019 af Outflow=1.05 cfs 0.078 af**Pond 3.8P: Filterra 6X8**Peak Elev=103.23' Storage=71 cf Inflow=2.05 cfs 0.153 af
Primary=0.31 cfs 0.108 af Secondary=1.74 cfs 0.045 af Outflow=2.05 cfs 0.153 af**Pond 3.9P: Filterra 4x8**Peak Elev=103.12' Storage=44 cf Inflow=0.84 cfs 0.061 af
Primary=0.21 cfs 0.049 af Secondary=0.63 cfs 0.012 af Outflow=0.84 cfs 0.061 af**Pond 3P: Pond 3 (VUSF)**Peak Elev=29.34' Storage=10,589 cf Inflow=6.17 cfs 0.480 af
Outflow=0.84 cfs 0.375 af**Pond 4P: WETLAND STORAGE**Peak Elev=22.12' Storage=247 cf Inflow=10.81 cfs 0.873 af
Outflow=10.80 cfs 0.873 af**Pond 5.10P: Filterra 6X8**Peak Elev=103.16' Storage=68 cf Inflow=1.32 cfs 0.109 af
Primary=0.31 cfs 0.084 af Secondary=1.01 cfs 0.025 af Outflow=1.32 cfs 0.109 af**Pond 5.11P: Filterra 6X6**Peak Elev=103.09' Storage=48 cf Inflow=0.67 cfs 0.049 af
Primary=0.24 cfs 0.043 af Secondary=0.43 cfs 0.005 af Outflow=0.67 cfs 0.049 af**Pond 5.12P: Filterra 6X10**Peak Elev=103.22' Storage=88 cf Inflow=1.93 cfs 0.147 af
Primary=0.39 cfs 0.111 af Secondary=1.54 cfs 0.036 af Outflow=1.93 cfs 0.147 af

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Pond 5.13P: Filterra 6X8

Peak Elev=103.12' Storage=66 cf Inflow=0.98 cfs 0.072 af
Primary=0.31 cfs 0.062 af Secondary=0.66 cfs 0.010 af Outflow=0.97 cfs 0.072 af

Pond 5.14P: Filterra 6X12

Peak Elev=103.25' Storage=90 cf Inflow=2.28 cfs 0.168 af
Primary=0.39 cfs 0.121 af Secondary=1.89 cfs 0.046 af Outflow=2.28 cfs 0.168 af

Pond 5.15P: Filterra 6X10

Peak Elev=103.21' Storage=88 cf Inflow=1.90 cfs 0.126 af
Primary=0.39 cfs 0.098 af Secondary=1.51 cfs 0.028 af Outflow=1.90 cfs 0.126 af

Pond 5.1P: Filterra 6X12

Peak Elev=103.19' Storage=103 cf Inflow=1.70 cfs 0.169 af
Primary=0.47 cfs 0.130 af Secondary=1.24 cfs 0.039 af Outflow=1.70 cfs 0.169 af

Pond 5.4P: Filterra 6X8

Peak Elev=103.13' Storage=66 cf Inflow=1.01 cfs 0.088 af
Primary=0.31 cfs 0.072 af Secondary=0.70 cfs 0.017 af Outflow=1.01 cfs 0.088 af

Pond 5.5P: Filterra 4x8

Peak Elev=103.10' Storage=43 cf Inflow=0.71 cfs 0.052 af
Primary=0.21 cfs 0.043 af Secondary=0.50 cfs 0.009 af Outflow=0.71 cfs 0.052 af

Pond 5.8P: Filterra 6X10

Peak Elev=103.13' Storage=83 cf Inflow=1.14 cfs 0.110 af
Primary=0.40 cfs 0.090 af Secondary=0.75 cfs 0.020 af Outflow=1.14 cfs 0.110 af

Pond 5.9P: Filterra 4x8

Peak Elev=103.10' Storage=43 cf Inflow=0.73 cfs 0.053 af
Primary=0.21 cfs 0.044 af Secondary=0.52 cfs 0.009 af Outflow=0.73 cfs 0.053 af

Pond 5P: 24" Culvert

Peak Elev=32.96' Storage=1,358 cf Inflow=3.39 cfs 0.508 af
24.0" Round Culvert w/ 12.0" inside fill n=0.013 L=72.0' S=0.0375 '/' Outflow=3.11 cfs 0.508 af

Total Runoff Area = 63.267 ac Runoff Volume = 7.792 af Average Runoff Depth = 1.48"
85.22% Pervious = 53.916 ac 14.78% Impervious = 9.351 ac

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Type III 24-hr 10-year Rainfall=4.60"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 1	Runoff Area=69,758 sf 0.00% Impervious Runoff Depth=1.97" Flow Length=368' Tc=15.0 min CN=73 Runoff=2.75 cfs 0.263 af
Subcatchment2A-S: 2A	Runoff Area=129,920 sf 25.77% Impervious Runoff Depth=2.72" Flow Length=208' Tc=11.3 min CN=82 Runoff=7.99 cfs 0.677 af
Subcatchment2B-S: 2B	Runoff Area=185,601 sf 8.37% Impervious Runoff Depth=2.46" Flow Length=579' Tc=25.7 min CN=79 Runoff=7.45 cfs 0.874 af
Subcatchment3.10S: 3.10	Runoff Area=16,463 sf 41.35% Impervious Runoff Depth=3.10" Flow Length=255' Tc=7.0 min CN=86 Runoff=1.31 cfs 0.097 af
Subcatchment3.11S: 3.11	Runoff Area=22,818 sf 38.20% Impervious Runoff Depth=2.81" Flow Length=160' Tc=1.4 min CN=83 Runoff=2.04 cfs 0.123 af
Subcatchment3.12S: CB-2	Runoff Area=29,503 sf 24.70% Impervious Runoff Depth=2.38" Flow Length=313' Tc=14.2 min UI Adjusted CN=78 Runoff=1.46 cfs 0.134 af
Subcatchment3.13S: CB-3	Runoff Area=13,062 sf 36.99% Impervious Runoff Depth=2.81" Flow Length=225' Tc=8.0 min CN=83 Runoff=0.92 cfs 0.070 af
Subcatchment3.14S: CB-4	Runoff Area=9,436 sf 34.58% Impervious Runoff Depth=2.91" Flow Length=230' Slope=0.0300 '/' Tc=1.5 min CN=84 Runoff=0.87 cfs 0.052 af
Subcatchment3.1S: 3.1	Runoff Area=5,704 sf 48.54% Impervious Runoff Depth=3.10" Flow Length=115' Slope=0.0200 '/' Tc=11.1 min CN=86 Runoff=0.40 cfs 0.034 af
Subcatchment3.20S: 3.20	Runoff Area=46,483 sf 29.22% Impervious Runoff Depth=3.29" Flow Length=272' Tc=10.0 min CN=88 Runoff=3.54 cfs 0.293 af
Subcatchment3.2S: 3.2	Runoff Area=28,301 sf 29.96% Impervious Runoff Depth=2.55" Flow Length=360' Tc=13.8 min UI Adjusted CN=80 Runoff=1.52 cfs 0.138 af
Subcatchment3.3S: 3.3	Runoff Area=14,630 sf 33.63% Impervious Runoff Depth=2.72" Flow Length=289' Tc=8.6 min CN=82 Runoff=0.98 cfs 0.076 af
Subcatchment3.4S: 3.4	Runoff Area=21,170 sf 33.11% Impervious Runoff Depth=2.72" Flow Length=362' Tc=14.7 min CN=82 Runoff=1.19 cfs 0.110 af
Subcatchment3.5S: 3.5	Runoff Area=36,887 sf 30.24% Impervious Runoff Depth=2.63" Flow Length=432' Tc=13.3 min CN=81 Runoff=2.07 cfs 0.186 af
Subcatchment3.6S: 3.6	Runoff Area=24,469 sf 26.85% Impervious Runoff Depth=2.63" Flow Length=311' Tc=11.6 min UI Adjusted CN=81 Runoff=1.44 cfs 0.123 af
Subcatchment3.7S: 3.7	Runoff Area=29,265 sf 22.99% Impervious Runoff Depth=2.63" Flow Length=255' Tc=7.0 min UI Adjusted CN=81 Runoff=2.00 cfs 0.148 af

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Subcatchment3.8S: 3.8	Runoff Area=57,330 sf 22.10% Impervious Runoff Depth=2.63" Flow Length=255' Tc=7.0 min UI Adjusted CN=81 Runoff=3.93 cfs 0.289 af
Subcatchment3.9S: 3.9	Runoff Area=15,285 sf 53.44% Impervious Runoff Depth=3.49" Flow Length=342' Tc=6.1 min CN=90 Runoff=1.39 cfs 0.102 af
Subcatchment3S: 4	Runoff Area=285,246 sf 0.00% Impervious Runoff Depth=2.91" Flow Length=732' Tc=9.7 min CN=84 Runoff=19.62 cfs 1.586 af
Subcatchment4S: 6	Runoff Area=123,011 sf 0.00% Impervious Runoff Depth=2.72" Flow Length=649' Tc=13.3 min CN=82 Runoff=7.14 cfs 0.641 af
Subcatchment5.10S: 5.10	Runoff Area=47,324 sf 23.69% Impervious Runoff Depth=2.38" Flow Length=304' Tc=9.5 min UI Adjusted CN=78 Runoff=2.68 cfs 0.215 af
Subcatchment5.11S: 5.11	Runoff Area=9,602 sf 88.19% Impervious Runoff Depth=4.14" Flow Length=200' Tc=4.7 min CN=96 Runoff=1.02 cfs 0.076 af
Subcatchment5.12S: 5.12	Runoff Area=64,167 sf 23.84% Impervious Runoff Depth=2.38" Flow Length=308' Tc=7.3 min UI Adjusted CN=78 Runoff=3.92 cfs 0.292 af
Subcatchment5.13S: 5.13	Runoff Area=16,127 sf 75.66% Impervious Runoff Depth=3.81" Flow Length=373' Slope=0.0200 '/' Tc=6.4 min CN=93 Runoff=1.54 cfs 0.117 af
Subcatchment5.14S: 5.14	Runoff Area=54,863 sf 30.59% Impervious Runoff Depth=2.91" Flow Length=733' Slope=0.0100 '/' Tc=7.0 min CN=84 Runoff=4.13 cfs 0.305 af
Subcatchment5.15S: 5.15	Runoff Area=45,229 sf 32.57% Impervious Runoff Depth=2.72" Flow Length=369' Slope=0.0100 '/' Tc=4.0 min CN=82 Runoff=3.56 cfs 0.236 af
Subcatchment5.1S: 5.1	Runoff Area=60,576 sf 30.85% Impervious Runoff Depth=2.72" Flow Length=643' Tc=16.9 min CN=82 Runoff=3.21 cfs 0.316 af
Subcatchment5.20S: 5.20	Runoff Area=691,370 sf 0.00% Impervious Runoff Depth=2.81" Flow Length=621' Tc=17.5 min CN=83 Runoff=37.31 cfs 3.723 af
Subcatchment5.21S: 5.21	Runoff Area=75,046 sf 29.67% Impervious Runoff Depth=3.00" Flow Length=98' Tc=5.3 min CN=85 Runoff=6.17 cfs 0.431 af
Subcatchment5.22S: 5.22	Runoff Area=18,481 sf 50.68% Impervious Runoff Depth=3.59" Flow Length=228' Tc=6.6 min CN=91 Runoff=1.69 cfs 0.127 af
Subcatchment5.2S: 5.2	Runoff Area=7,018 sf 68.04% Impervious Runoff Depth=3.49" Flow Length=226' Slope=0.0150 '/' Tc=2.2 min CN=90 Runoff=0.73 cfs 0.047 af
Subcatchment5.30S: 5.30	Runoff Area=138,171 sf 31.18% Impervious Runoff Depth=2.81" Flow Length=484' Tc=8.6 min CN=83 Runoff=9.55 cfs 0.744 af
Subcatchment5.3S: 5.3	Runoff Area=9,428 sf 58.60% Impervious Runoff Depth=3.29" Flow Length=224' Slope=0.0150 '/' Tc=2.2 min CN=88 Runoff=0.94 cfs 0.059 af
Subcatchment5.4S: 5.4	Runoff Area=28,885 sf 40.00% Impervious Runoff Depth=2.91" Flow Length=412' Tc=12.4 min CN=84 Runoff=1.83 cfs 0.161 af

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Subcatchment 5.5S: 5.5	Runoff Area=16,333 sf 47.08% Impervious Runoff Depth=3.00" Flow Length=367' Tc=7.0 min CN=85 Runoff=1.27 cfs 0.094 af
Subcatchment 5.6S: 5.6	Runoff Area=34,516 sf 29.47% Impervious Runoff Depth=2.46" Flow Length=352' Tc=14.7 min UI Adjusted CN=79 Runoff=1.74 cfs 0.162 af
Subcatchment 5.7S: 5.7	Runoff Area=9,723 sf 54.22% Impervious Runoff Depth=3.19" Flow Length=225' Tc=6.0 min CN=87 Runoff=0.82 cfs 0.059 af
Subcatchment 5.8S: 5.8	Runoff Area=45,544 sf 29.07% Impervious Runoff Depth=2.46" Flow Length=402' Tc=15.2 min UI Adjusted CN=79 Runoff=2.27 cfs 0.214 af
Subcatchment 5.9S: 5.9	Runoff Area=18,933 sf 34.48% Impervious Runoff Depth=2.72" Flow Length=249' Tc=6.4 min CN=82 Runoff=1.37 cfs 0.099 af
Subcatchment 5S: 7A	Runoff Area=200,238 sf 4.24% Impervious Runoff Depth=2.55" Flow Length=820' Tc=41.8 min CN=80 Runoff=6.62 cfs 0.976 af
Reach 1R: POI 1	Inflow=2.75 cfs 0.263 af Outflow=2.75 cfs 0.263 af
Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.	Inflow=7.99 cfs 0.677 af Outflow=7.99 cfs 0.677 af
Reach 2R: POI 2	Inflow=12.55 cfs 1.551 af Outflow=12.55 cfs 1.551 af
Reach 4R: POI 4	Inflow=21.50 cfs 3.467 af Outflow=21.50 cfs 3.467 af
Reach 5.0R: Filterras	Inflow=27.29 cfs 2.453 af Outflow=27.29 cfs 2.453 af
Reach 5R: POI 5	Inflow=43.81 cfs 8.153 af Outflow=43.81 cfs 8.153 af
Reach 6R: POI 4	Inflow=7.14 cfs 0.641 af Outflow=7.14 cfs 0.641 af
Reach 7A-R: 7A-R	Inflow=5.52 cfs 0.976 af Outflow=5.52 cfs 0.976 af
Reach 15R: Filterra	Inflow=18.65 cfs 1.683 af Outflow=18.65 cfs 1.683 af
Reach 99R: POI 99	Inflow=69.14 cfs 12.261 af Outflow=69.14 cfs 12.261 af
Pond 1P: Pond 1	Peak Elev=37.88' Storage=39,690 cf Inflow=22.15 cfs 1.976 af Outflow=4.46 cfs 1.881 af

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Pond 2A-P: CATCH BASINPeak Elev=59.94' Inflow=7.99 cfs 0.677 af
12.0" Round Culvert n=0.011 L=25.4' S=0.0110 '/' Outflow=7.99 cfs 0.677 af**Pond 2B-P: CROSS CULVERT**Peak Elev=60.42' Storage=797 cf Inflow=7.45 cfs 0.874 af
Outflow=7.22 cfs 0.874 af**Pond 2P: Pond 2**Peak Elev=32.87' Storage=72,026 cf Inflow=33.17 cfs 2.884 af
Outflow=2.40 cfs 2.695 af**Pond 3.10P: Filterra 4x8**Peak Elev=103.17' Storage=46 cf Inflow=1.31 cfs 0.097 af
Primary=0.21 cfs 0.069 af Secondary=1.10 cfs 0.028 af Outflow=1.31 cfs 0.097 af**Pond 3.11P: Filterra 6X8**Peak Elev=103.25' Storage=36 cf Inflow=2.04 cfs 0.123 af
Primary=0.16 cfs 0.077 af Secondary=1.88 cfs 0.046 af Outflow=2.03 cfs 0.123 af**Pond 3.2P: Filterra 4X8**Peak Elev=103.19' Storage=46 cf Inflow=1.52 cfs 0.138 af
Primary=0.21 cfs 0.090 af Secondary=1.31 cfs 0.048 af Outflow=1.52 cfs 0.138 af**Pond 3.3P: Filterra 4X6**Peak Elev=103.14' Storage=33 cf Inflow=0.98 cfs 0.076 af
Primary=0.16 cfs 0.054 af Secondary=0.82 cfs 0.023 af Outflow=0.98 cfs 0.076 af**Pond 3.4P: Filterra 4x8**Peak Elev=103.16' Storage=45 cf Inflow=1.19 cfs 0.110 af
Primary=0.21 cfs 0.076 af Secondary=0.98 cfs 0.034 af Outflow=1.18 cfs 0.110 af**Pond 3.5P: Filterra 6X8**Peak Elev=103.24' Storage=71 cf Inflow=2.07 cfs 0.186 af
Primary=0.31 cfs 0.125 af Secondary=1.76 cfs 0.061 af Outflow=2.07 cfs 0.186 af**Pond 3.6P: Filterra 4x6**Peak Elev=103.19' Storage=35 cf Inflow=1.44 cfs 0.123 af
Primary=0.16 cfs 0.077 af Secondary=1.29 cfs 0.046 af Outflow=1.44 cfs 0.123 af**Pond 3.7P: Filterra 4x8**Peak Elev=103.24' Storage=48 cf Inflow=2.00 cfs 0.148 af
Primary=0.21 cfs 0.094 af Secondary=1.79 cfs 0.053 af Outflow=2.00 cfs 0.147 af**Pond 3.8P: Filterra 6X8**Peak Elev=103.38' Storage=83 cf Inflow=3.93 cfs 0.289 af
Primary=0.31 cfs 0.172 af Secondary=3.61 cfs 0.117 af Outflow=3.92 cfs 0.289 af**Pond 3.9P: Filterra 4x8**Peak Elev=103.18' Storage=46 cf Inflow=1.39 cfs 0.102 af
Primary=0.21 cfs 0.073 af Secondary=1.18 cfs 0.029 af Outflow=1.39 cfs 0.102 af**Pond 3P: Pond 3 (VUSF)**Peak Elev=30.61' Storage=17,213 cf Inflow=11.16 cfs 0.871 af
Outflow=2.62 cfs 0.760 af**Pond 4P: WETLAND STORAGE**Peak Elev=22.17' Storage=395 cf Inflow=19.62 cfs 1.586 af
Outflow=19.60 cfs 1.586 af**Pond 5.10P: Filterra 6X8**Peak Elev=103.29' Storage=74 cf Inflow=2.68 cfs 0.215 af
Primary=0.31 cfs 0.139 af Secondary=2.37 cfs 0.076 af Outflow=2.68 cfs 0.215 af**Pond 5.11P: Filterra 6X6**Peak Elev=103.14' Storage=50 cf Inflow=1.02 cfs 0.076 af
Primary=0.23 cfs 0.062 af Secondary=0.78 cfs 0.014 af Outflow=1.02 cfs 0.076 af**Pond 5.12P: Filterra 6X10**Peak Elev=103.37' Storage=102 cf Inflow=3.92 cfs 0.292 af
Primary=0.39 cfs 0.184 af Secondary=3.52 cfs 0.108 af Outflow=3.91 cfs 0.292 af

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Type III 24-hr 10-year Rainfall=4.60"

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Pond 5.13P: Filterra 6X8

Peak Elev=103.19' Storage=69 cf Inflow=1.54 cfs 0.117 af
Primary=0.31 cfs 0.090 af Secondary=1.23 cfs 0.027 af Outflow=1.54 cfs 0.118 af

Pond 5.14P: Filterra 6X12

Peak Elev=103.39' Storage=104 cf Inflow=4.13 cfs 0.305 af
Primary=0.39 cfs 0.191 af Secondary=3.73 cfs 0.114 af Outflow=4.12 cfs 0.305 af

Pond 5.15P: Filterra 6X10

Peak Elev=103.35' Storage=99 cf Inflow=3.56 cfs 0.236 af
Primary=0.39 cfs 0.157 af Secondary=3.17 cfs 0.079 af Outflow=3.56 cfs 0.235 af

Pond 5.1P: Filterra 6X12

Peak Elev=103.32' Storage=114 cf Inflow=3.21 cfs 0.316 af
Primary=0.47 cfs 0.206 af Secondary=2.74 cfs 0.110 af Outflow=3.21 cfs 0.316 af

Pond 5.4P: Filterra 6X8

Peak Elev=103.21' Storage=70 cf Inflow=1.83 cfs 0.161 af
Primary=0.31 cfs 0.112 af Secondary=1.52 cfs 0.049 af Outflow=1.83 cfs 0.161 af

Pond 5.5P: Filterra 4x8

Peak Elev=103.17' Storage=45 cf Inflow=1.27 cfs 0.094 af
Primary=0.22 cfs 0.067 af Secondary=1.06 cfs 0.026 af Outflow=1.26 cfs 0.094 af

Pond 5.8P: Filterra 6X10

Peak Elev=103.25' Storage=90 cf Inflow=2.27 cfs 0.214 af
Primary=0.41 cfs 0.148 af Secondary=1.88 cfs 0.067 af Outflow=2.27 cfs 0.215 af

Pond 5.9P: Filterra 4x8

Peak Elev=103.18' Storage=46 cf Inflow=1.37 cfs 0.099 af
Primary=0.21 cfs 0.070 af Secondary=1.16 cfs 0.029 af Outflow=1.37 cfs 0.099 af

Pond 5P: 24" Culvert

Peak Elev=33.50' Storage=3,680 cf Inflow=6.62 cfs 0.976 af
24.0" Round Culvert w/ 12.0" inside fill n=0.013 L=72.0' S=0.0375 '/' Outflow=5.52 cfs 0.976 af

Total Runoff Area = 63.267 ac Runoff Volume = 14.469 af Average Runoff Depth = 2.74"
85.22% Pervious = 53.916 ac 14.78% Impervious = 9.351 ac

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Type III 24-hr 25-year Rainfall=5.80"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 1	Runoff Area=69,758 sf 0.00% Impervious Runoff Depth=2.92" Flow Length=368' Tc=15.0 min CN=73 Runoff=4.14 cfs 0.390 af
Subcatchment2A-S: 2A	Runoff Area=129,920 sf 25.77% Impervious Runoff Depth=3.80" Flow Length=208' Tc=11.3 min CN=82 Runoff=11.09 cfs 0.945 af
Subcatchment2B-S: 2B	Runoff Area=185,601 sf 8.37% Impervious Runoff Depth=3.50" Flow Length=579' Tc=25.7 min CN=79 Runoff=10.60 cfs 1.243 af
Subcatchment3.10S: 3.10	Runoff Area=16,463 sf 41.35% Impervious Runoff Depth=4.22" Flow Length=255' Tc=7.0 min CN=86 Runoff=1.77 cfs 0.133 af
Subcatchment3.11S: 3.11	Runoff Area=22,818 sf 38.20% Impervious Runoff Depth=3.91" Flow Length=160' Tc=1.4 min CN=83 Runoff=2.80 cfs 0.171 af
Subcatchment3.12S: CB-2	Runoff Area=29,503 sf 24.70% Impervious Runoff Depth=3.40" Flow Length=313' Tc=14.2 min UI Adjusted CN=78 Runoff=2.09 cfs 0.192 af
Subcatchment3.13S: CB-3	Runoff Area=13,062 sf 36.99% Impervious Runoff Depth=3.91" Flow Length=225' Tc=8.0 min CN=83 Runoff=1.27 cfs 0.098 af
Subcatchment3.14S: CB-4	Runoff Area=9,436 sf 34.58% Impervious Runoff Depth=4.01" Flow Length=230' Slope=0.0300 '/' Tc=1.5 min CN=84 Runoff=1.18 cfs 0.072 af
Subcatchment3.1S: 3.1	Runoff Area=5,704 sf 48.54% Impervious Runoff Depth=4.22" Flow Length=115' Slope=0.0200 '/' Tc=11.1 min CN=86 Runoff=0.54 cfs 0.046 af
Subcatchment3.20S: 3.20	Runoff Area=46,483 sf 29.22% Impervious Runoff Depth=4.43" Flow Length=272' Tc=10.0 min CN=88 Runoff=4.70 cfs 0.394 af
Subcatchment3.2S: 3.2	Runoff Area=28,301 sf 29.96% Impervious Runoff Depth=3.60" Flow Length=360' Tc=13.8 min UI Adjusted CN=80 Runoff=2.14 cfs 0.195 af
Subcatchment3.3S: 3.3	Runoff Area=14,630 sf 33.63% Impervious Runoff Depth=3.80" Flow Length=289' Tc=8.6 min CN=82 Runoff=1.36 cfs 0.106 af
Subcatchment3.4S: 3.4	Runoff Area=21,170 sf 33.11% Impervious Runoff Depth=3.80" Flow Length=362' Tc=14.7 min CN=82 Runoff=1.65 cfs 0.154 af
Subcatchment3.5S: 3.5	Runoff Area=36,887 sf 30.24% Impervious Runoff Depth=3.70" Flow Length=432' Tc=13.3 min CN=81 Runoff=2.90 cfs 0.261 af
Subcatchment3.6S: 3.6	Runoff Area=24,469 sf 26.85% Impervious Runoff Depth=3.70" Flow Length=311' Tc=11.6 min UI Adjusted CN=81 Runoff=2.02 cfs 0.173 af
Subcatchment3.7S: 3.7	Runoff Area=29,265 sf 22.99% Impervious Runoff Depth=3.70" Flow Length=255' Tc=7.0 min UI Adjusted CN=81 Runoff=2.80 cfs 0.207 af

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Subcatchment3.8S: 3.8	Runoff Area=57,330 sf 22.10% Impervious Runoff Depth=3.70" Flow Length=255' Tc=7.0 min UI Adjusted CN=81 Runoff=5.49 cfs 0.406 af
Subcatchment3.9S: 3.9	Runoff Area=15,285 sf 53.44% Impervious Runoff Depth=4.65" Flow Length=342' Tc=6.1 min CN=90 Runoff=1.82 cfs 0.136 af
Subcatchment3S: 4	Runoff Area=285,246 sf 0.00% Impervious Runoff Depth=4.01" Flow Length=732' Tc=9.7 min CN=84 Runoff=26.83 cfs 2.188 af
Subcatchment4S: 6	Runoff Area=123,011 sf 0.00% Impervious Runoff Depth=3.80" Flow Length=649' Tc=13.3 min CN=82 Runoff=9.92 cfs 0.895 af
Subcatchment5.10S: 5.10	Runoff Area=47,324 sf 23.69% Impervious Runoff Depth=3.40" Flow Length=304' Tc=9.5 min UI Adjusted CN=78 Runoff=3.85 cfs 0.308 af
Subcatchment5.11S: 5.11	Runoff Area=9,602 sf 88.19% Impervious Runoff Depth=5.33" Flow Length=200' Tc=4.7 min CN=96 Runoff=1.30 cfs 0.098 af
Subcatchment5.12S: 5.12	Runoff Area=64,167 sf 23.84% Impervious Runoff Depth=3.40" Flow Length=308' Tc=7.3 min UI Adjusted CN=78 Runoff=5.61 cfs 0.418 af
Subcatchment5.13S: 5.13	Runoff Area=16,127 sf 75.66% Impervious Runoff Depth=4.99" Flow Length=373' Slope=0.0200 '/' Tc=6.4 min CN=93 Runoff=1.99 cfs 0.154 af
Subcatchment5.14S: 5.14	Runoff Area=54,863 sf 30.59% Impervious Runoff Depth=4.01" Flow Length=733' Slope=0.0100 '/' Tc=7.0 min CN=84 Runoff=5.64 cfs 0.421 af
Subcatchment5.15S: 5.15	Runoff Area=45,229 sf 32.57% Impervious Runoff Depth=3.80" Flow Length=369' Slope=0.0100 '/' Tc=4.0 min CN=82 Runoff=4.94 cfs 0.329 af
Subcatchment5.1S: 5.1	Runoff Area=60,576 sf 30.85% Impervious Runoff Depth=3.80" Flow Length=643' Tc=16.9 min CN=82 Runoff=4.46 cfs 0.441 af
Subcatchment5.20S: 5.20	Runoff Area=691,370 sf 0.00% Impervious Runoff Depth=3.91" Flow Length=621' Tc=17.5 min CN=83 Runoff=51.48 cfs 5.166 af
Subcatchment5.21S: 5.21	Runoff Area=75,046 sf 29.67% Impervious Runoff Depth=4.11" Flow Length=98' Tc=5.3 min CN=85 Runoff=8.37 cfs 0.591 af
Subcatchment5.22S: 5.22	Runoff Area=18,481 sf 50.68% Impervious Runoff Depth=4.76" Flow Length=228' Tc=6.6 min CN=91 Runoff=2.20 cfs 0.168 af
Subcatchment5.2S: 5.2	Runoff Area=7,018 sf 68.04% Impervious Runoff Depth=4.65" Flow Length=226' Slope=0.0150 '/' Tc=2.2 min CN=90 Runoff=0.96 cfs 0.062 af
Subcatchment5.30S: 5.30	Runoff Area=138,171 sf 31.18% Impervious Runoff Depth=3.91" Flow Length=484' Tc=8.6 min CN=83 Runoff=13.16 cfs 1.033 af
Subcatchment5.3S: 5.3	Runoff Area=9,428 sf 58.60% Impervious Runoff Depth=4.43" Flow Length=224' Slope=0.0150 '/' Tc=2.2 min CN=88 Runoff=1.25 cfs 0.080 af
Subcatchment5.4S: 5.4	Runoff Area=28,885 sf 40.00% Impervious Runoff Depth=4.01" Flow Length=412' Tc=12.4 min CN=84 Runoff=2.51 cfs 0.222 af

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Subcatchment 5.5S: 5.5	Runoff Area=16,333 sf 47.08% Impervious Runoff Depth=4.11" Flow Length=367' Tc=7.0 min CN=85 Runoff=1.72 cfs 0.129 af
Subcatchment 5.6S: 5.6	Runoff Area=34,516 sf 29.47% Impervious Runoff Depth=3.50" Flow Length=352' Tc=14.7 min UI Adjusted CN=79 Runoff=2.48 cfs 0.231 af
Subcatchment 5.7S: 5.7	Runoff Area=9,723 sf 54.22% Impervious Runoff Depth=4.33" Flow Length=225' Tc=6.0 min CN=87 Runoff=1.10 cfs 0.080 af
Subcatchment 5.8S: 5.8	Runoff Area=45,544 sf 29.07% Impervious Runoff Depth=3.50" Flow Length=402' Tc=15.2 min UI Adjusted CN=79 Runoff=3.23 cfs 0.305 af
Subcatchment 5.9S: 5.9	Runoff Area=18,933 sf 34.48% Impervious Runoff Depth=3.80" Flow Length=249' Tc=6.4 min CN=82 Runoff=1.90 cfs 0.138 af
Subcatchment 5S: 7A	Runoff Area=200,238 sf 4.24% Impervious Runoff Depth=3.60" Flow Length=820' Tc=41.8 min CN=80 Runoff=9.35 cfs 1.380 af
Reach 1R: POI 1	Inflow=4.14 cfs 0.390 af Outflow=4.14 cfs 0.390 af
Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.	Inflow=11.09 cfs 0.945 af Outflow=11.09 cfs 0.945 af
Reach 2R: POI 2	Inflow=17.31 cfs 2.189 af Outflow=17.31 cfs 2.189 af
Reach 4R: POI 4	Inflow=30.83 cfs 4.834 af Outflow=30.83 cfs 4.834 af
Reach 5.0R: Filterras	Inflow=37.87 cfs 3.416 af Outflow=37.87 cfs 3.416 af
Reach 5R: POI 5	Inflow=60.17 cfs 11.413 af Outflow=60.17 cfs 11.413 af
Reach 6R: POI 4	Inflow=9.92 cfs 0.895 af Outflow=9.92 cfs 0.895 af
Reach 7A-R: 7A-R	Inflow=7.04 cfs 1.380 af Outflow=7.04 cfs 1.380 af
Reach 15R: Filterra	Inflow=25.94 cfs 2.351 af Outflow=25.94 cfs 2.351 af
Reach 99R: POI 99	Inflow=95.87 cfs 17.142 af Outflow=95.87 cfs 17.142 af
Pond 1P: Pond 1	Peak Elev=39.24' Storage=55,608 cf Inflow=30.59 cfs 2.745 af Outflow=5.81 cfs 2.646 af

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Type III 24-hr 25-year Rainfall=5.80"

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Pond 2A-P: CATCH BASINPeak Elev=62.43' Inflow=11.09 cfs 0.945 af
12.0" Round Culvert n=0.011 L=25.4' S=0.0110 '/' Outflow=11.09 cfs 0.945 af**Pond 2B-P: CROSS CULVERT**Peak Elev=61.00' Storage=1,896 cf Inflow=10.60 cfs 1.243 af
Outflow=9.68 cfs 1.243 af**Pond 2P: Pond 2**Peak Elev=34.49' Storage=104,453 cf Inflow=45.85 cfs 4.006 af
Outflow=2.85 cfs 3.779 af**Pond 3.10P: Filterra 4x8**Peak Elev=103.22' Storage=47 cf Inflow=1.77 cfs 0.133 af
Primary=0.21 cfs 0.089 af Secondary=1.56 cfs 0.044 af Outflow=1.77 cfs 0.133 af**Pond 3.11P: Filterra 6X8**Peak Elev=103.31' Storage=39 cf Inflow=2.80 cfs 0.171 af
Primary=0.16 cfs 0.097 af Secondary=2.64 cfs 0.073 af Outflow=2.79 cfs 0.170 af**Pond 3.2P: Filterra 4X8**Peak Elev=103.25' Storage=48 cf Inflow=2.14 cfs 0.195 af
Primary=0.21 cfs 0.116 af Secondary=1.93 cfs 0.079 af Outflow=2.14 cfs 0.195 af**Pond 3.3P: Filterra 4X6**Peak Elev=103.18' Storage=34 cf Inflow=1.36 cfs 0.106 af
Primary=0.16 cfs 0.069 af Secondary=1.20 cfs 0.037 af Outflow=1.36 cfs 0.107 af**Pond 3.4P: Filterra 4x8**Peak Elev=103.21' Storage=47 cf Inflow=1.65 cfs 0.154 af
Primary=0.21 cfs 0.098 af Secondary=1.44 cfs 0.056 af Outflow=1.65 cfs 0.154 af**Pond 3.5P: Filterra 6X8**Peak Elev=103.30' Storage=75 cf Inflow=2.90 cfs 0.261 af
Primary=0.31 cfs 0.161 af Secondary=2.59 cfs 0.100 af Outflow=2.90 cfs 0.261 af**Pond 3.6P: Filterra 4x6**Peak Elev=103.24' Storage=36 cf Inflow=2.02 cfs 0.173 af
Primary=0.16 cfs 0.098 af Secondary=1.86 cfs 0.075 af Outflow=2.02 cfs 0.173 af**Pond 3.7P: Filterra 4x8**Peak Elev=103.30' Storage=51 cf Inflow=2.80 cfs 0.207 af
Primary=0.21 cfs 0.121 af Secondary=2.59 cfs 0.086 af Outflow=2.80 cfs 0.207 af**Pond 3.8P: Filterra 6X8**Peak Elev=103.48' Storage=99 cf Inflow=5.49 cfs 0.406 af
Primary=0.31 cfs 0.217 af Secondary=5.17 cfs 0.189 af Outflow=5.48 cfs 0.406 af**Pond 3.9P: Filterra 4x8**Peak Elev=103.22' Storage=47 cf Inflow=1.82 cfs 0.136 af
Primary=0.21 cfs 0.092 af Secondary=1.61 cfs 0.044 af Outflow=1.82 cfs 0.136 af**Pond 3P: Pond 3 (VUSF)**Peak Elev=31.65' Storage=23,806 cf Inflow=15.27 cfs 1.201 af
Outflow=3.45 cfs 1.088 af**Pond 4P: WETLAND STORAGE**Peak Elev=22.22' Storage=511 cf Inflow=26.83 cfs 2.188 af
Outflow=26.80 cfs 2.188 af**Pond 5.10P: Filterra 6X8**Peak Elev=103.37' Storage=82 cf Inflow=3.85 cfs 0.308 af
Primary=0.31 cfs 0.180 af Secondary=3.53 cfs 0.128 af Outflow=3.84 cfs 0.308 af**Pond 5.11P: Filterra 6X6**Peak Elev=103.17' Storage=51 cf Inflow=1.30 cfs 0.098 af
Primary=0.23 cfs 0.075 af Secondary=1.06 cfs 0.023 af Outflow=1.29 cfs 0.098 af**Pond 5.12P: Filterra 6X10**Peak Elev=103.49' Storage=120 cf Inflow=5.61 cfs 0.418 af
Primary=0.39 cfs 0.237 af Secondary=5.22 cfs 0.180 af Outflow=5.61 cfs 0.418 af

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Type III 24-hr 25-year Rainfall=5.80"

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Pond 5.13P: Filterra 6X8

Peak Elev=103.23' Storage=71 cf Inflow=1.99 cfs 0.154 af
Primary=0.31 cfs 0.112 af Secondary=1.67 cfs 0.042 af Outflow=1.98 cfs 0.154 af

Pond 5.14P: Filterra 6X12

Peak Elev=103.49' Storage=120 cf Inflow=5.64 cfs 0.421 af
Primary=0.39 cfs 0.242 af Secondary=5.24 cfs 0.178 af Outflow=5.63 cfs 0.421 af

Pond 5.15P: Filterra 6X10

Peak Elev=103.44' Storage=112 cf Inflow=4.94 cfs 0.329 af
Primary=0.39 cfs 0.203 af Secondary=4.54 cfs 0.126 af Outflow=4.93 cfs 0.329 af

Pond 5.1P: Filterra 6X12

Peak Elev=103.41' Storage=126 cf Inflow=4.46 cfs 0.441 af
Primary=0.47 cfs 0.264 af Secondary=3.99 cfs 0.177 af Outflow=4.46 cfs 0.441 af

Pond 5.4P: Filterra 6X8

Peak Elev=103.27' Storage=73 cf Inflow=2.51 cfs 0.222 af
Primary=0.31 cfs 0.144 af Secondary=2.19 cfs 0.078 af Outflow=2.51 cfs 0.222 af

Pond 5.5P: Filterra 4x8

Peak Elev=103.21' Storage=47 cf Inflow=1.72 cfs 0.129 af
Primary=0.21 cfs 0.086 af Secondary=1.51 cfs 0.042 af Outflow=1.72 cfs 0.129 af

Pond 5.8P: Filterra 6X10

Peak Elev=103.32' Storage=96 cf Inflow=3.23 cfs 0.305 af
Primary=0.39 cfs 0.191 af Secondary=2.84 cfs 0.114 af Outflow=3.23 cfs 0.305 af

Pond 5.9P: Filterra 4x8

Peak Elev=103.23' Storage=47 cf Inflow=1.90 cfs 0.138 af
Primary=0.21 cfs 0.090 af Secondary=1.69 cfs 0.047 af Outflow=1.90 cfs 0.138 af

Pond 5P: 24" Culvert

Peak Elev=34.03' Storage=6,686 cf Inflow=9.35 cfs 1.380 af
24.0" Round Culvert w/ 12.0" inside fill n=0.013 L=72.0' S=0.0375 '/' Outflow=7.04 cfs 1.380 af

Total Runoff Area = 63.267 ac Runoff Volume = 20.160 af Average Runoff Depth = 3.82"
85.22% Pervious = 53.916 ac 14.78% Impervious = 9.351 ac

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 1S: 1

Runoff = 4.14 cfs @ 12.21 hrs, Volume= 0.390 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
37,862	72	Woods/grass comb., Good, HSG C
31,896	74	>75% Grass cover, Good, HSG C
69,758	73	Weighted Average
69,758		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0166	0.16		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
4.3	268	0.0440	1.05		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
15.0	368	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 2A-S: 2A

Runoff = 11.09 cfs @ 12.15 hrs, Volume= 0.945 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
19,676	98	Paved parking, HSG D
13,805	98	Roofs, HSG D
2,799	82	Woods/grass comb., Poor, HSG C
27,402	72	Woods/grass comb., Good, HSG C
24,494	79	50-75% Grass cover, Fair, HSG C
37,967	74	>75% Grass cover, Good, HSG C
3,777	96	Gravel surface, HSG C
129,920	82	Weighted Average
96,439		74.23% Pervious Area
33,481		25.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0232	0.18		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
1.9	108	0.0355	0.94		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
11.3	208	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 2B-S: 2B

Runoff = 10.60 cfs @ 12.36 hrs, Volume= 1.243 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
14,844	98	Paved parking, HSG D
697	98	Roofs, HSG D
10,901	82	Woods/grass comb., Poor, HSG C
49,690	72	Woods/grass comb., Good, HSG C
56,075	79	50-75% Grass cover, Fair, HSG C
38,333	74	>75% Grass cover, Good, HSG C
10,379	96	Gravel surface, HSG C
* 4,682	90	Wetland, HSG D
185,601	79	Weighted Average
170,060		91.63% Pervious Area
15,541		8.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0082	0.12		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
10.1	300	0.0011	0.50		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
1.4	179	0.0194	2.09		Shallow Concentrated Flow, C-D Grassed Waterway Kv= 15.0 fps
25.7	579	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.10S: 3.10

Runoff = 1.77 cfs @ 12.10 hrs, Volume= 0.133 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,807	98	Paved roads w/curbs & sewers, HSG D
3,000	98	Unconnected roofs, HSG D
3,090	74	>75% Grass cover, Good, HSG C
6,566	80	>75% Grass cover, Good, HSG D
16,463	86	Weighted Average
9,656		58.65% Pervious Area
6,807		41.35% Impervious Area
3,000		44.07% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0667	0.27		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
0.9	155	0.0200	2.87		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
7.0	255	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.11S: 3.11

Runoff = 2.80 cfs @ 12.02 hrs, Volume= 0.171 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,967	98	Paved roads w/curbs & sewers, HSG D
3,750	98	Unconnected roofs, HSG D
14,101	74	>75% Grass cover, Good, HSG C
22,818	83	Weighted Average
14,101		61.80% Pervious Area
8,717		38.20% Impervious Area
3,750		43.02% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.89		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.10"
0.5	110	0.0300	3.52		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.4	160	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.12S: CB-2

Runoff = 2.09 cfs @ 12.20 hrs, Volume= 0.192 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
3,537	98		Paved roads w/curbs & sewers, HSG D
3,750	98		Unconnected roofs, HSG D
22,216	74		>75% Grass cover, Good, HSG C
29,503	80	78	Weighted Average, UI Adjusted
22,216			75.30% Pervious Area
7,287			24.70% Impervious Area
3,750			51.46% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	137	0.0200	0.18		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
1.4	176	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
14.2	313	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.13S: CB-3

Runoff = 1.27 cfs @ 12.11 hrs, Volume= 0.098 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,581	98	Paved roads w/curbs & sewers, HSG D
2,250	98	Unconnected roofs, HSG D
8,231	74	>75% Grass cover, Good, HSG C
13,062	83	Weighted Average
8,231		63.01% Pervious Area
4,831		36.99% Impervious Area
2,250		46.57% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	61	0.0200	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
1.3	164	0.0100	2.03		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
8.0	225	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.14S: CB-4

Runoff = 1.18 cfs @ 12.02 hrs, Volume= 0.072 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,513	98	Paved roads w/curbs & sewers, HSG D
750	98	Unconnected roofs, HSG D
2,843	74	>75% Grass cover, Good, HSG C
3,330	80	>75% Grass cover, Good, HSG D
9,436	84	Weighted Average
6,173		65.42% Pervious Area
3,263		34.58% Impervious Area
750		22.98% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0300	1.39		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.10"
0.9	180	0.0300	3.52		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.5	230	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.1S: 3.1

Runoff = 0.54 cfs @ 12.15 hrs, Volume= 0.046 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,019	98	Paved roads w/curbs & sewers, HSG D
750	98	Unconnected roofs, HSG D
2,935	74	>75% Grass cover, Good, HSG C
5,704	86	Weighted Average
2,935		51.46% Pervious Area
2,769		48.54% Impervious Area
750		27.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	115	0.0200	0.17		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.20S: 3.20

Runoff = 4.70 cfs @ 12.14 hrs, Volume= 0.394 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
13,582	98	Water Surface, HSG D
3,663	72	Woods/grass comb., Good, HSG C
4,432	86	Woods/grass comb., Poor, HSG D
* 1,340	90	Wetland, HSG D
23,466	84	50-75% Grass cover, Fair, HSG D
46,483	88	Weighted Average
32,901		70.78% Pervious Area
13,582		29.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0667	0.19		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 3.10"
1.0	172	0.3300	2.87		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
10.0	272	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.2S: 3.2

Runoff = 2.14 cfs @ 12.19 hrs, Volume= 0.195 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
4,730	98		Paved roads w/curbs & sewers, HSG D
3,750	98		Unconnected roofs, HSG D
19,821	74		>75% Grass cover, Good, HSG C
28,301	81	80	Weighted Average, UI Adjusted
19,821			70.04% Pervious Area
8,480			29.96% Impervious Area
3,750			44.22% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	125	0.0200	0.18		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
1.9	235	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
13.8	360	Total			

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Summary for Subcatchment 3.3S: 3.3

Runoff = 1.36 cfs @ 12.12 hrs, Volume= 0.106 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,420	98	Paved roads w/curbs & sewers, HSG D
1,500	98	Unconnected roofs, HSG D
9,710	74	>75% Grass cover, Good, HSG C
14,630	82	Weighted Average
9,710		66.37% Pervious Area
4,920		33.63% Impervious Area
1,500		30.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	61	0.0200	0.15		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
1.9	228	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
8.6	289	Total			

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Summary for Subcatchment 3.4S: 3.4

Runoff = 1.65 cfs @ 12.20 hrs, Volume= 0.154 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,010	98	Paved roads w/curbs & sewers, HSG D
3,000	98	Unconnected roofs, HSG D
14,160	74	>75% Grass cover, Good, HSG C
21,170	82	Weighted Average
14,160		66.89% Pervious Area
7,010		33.11% Impervious Area
3,000		42.80% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	138	0.0200	0.18		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
1.8	224	0.0100	2.03		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
14.7	362	Total			

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Summary for Subcatchment 3.5S: 3.5

Runoff = 2.90 cfs @ 12.18 hrs, Volume= 0.261 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
7,405	98	Paved roads w/curbs & sewers, HSG D
3,750	98	Unconnected roofs, HSG D
25,732	74	>75% Grass cover, Good, HSG C
36,887	81	Weighted Average
25,732		69.76% Pervious Area
11,155		30.24% Impervious Area
3,750		33.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0200	0.17		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
2.7	324	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
13.3	432	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.6S: 3.6

Runoff = 2.02 cfs @ 12.16 hrs, Volume= 0.173 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
2,820	98		Paved roads w/curbs & sewers, HSG D
3,750	98		Unconnected roofs, HSG D
9,265	74		>75% Grass cover, Good, HSG C
8,634	80		>75% Grass cover, Good, HSG D
24,469	83	81	Weighted Average, UI Adjusted
17,899			73.15% Pervious Area
6,570			26.85% Impervious Area
3,750			57.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	108	0.0200	0.17		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
1.0	203	0.0275	3.37		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
11.6	311	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.7S: 3.7

Runoff = 2.80 cfs @ 12.10 hrs, Volume= 0.207 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
3,727	98		Paved roads w/curbs & sewers, HSG D
3,000	98		Unconnected roofs, HSG D
11,269	74		>75% Grass cover, Good, HSG C
11,269	80		>75% Grass cover, Good, HSG D
29,265	82	81	Weighted Average, UI Adjusted
22,538			77.01% Pervious Area
6,727			22.99% Impervious Area
3,000			44.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0667	0.27		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
0.9	155	0.0200	2.87		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
7.0	255	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.8S: 3.8

Runoff = 5.49 cfs @ 12.10 hrs, Volume= 0.406 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
5,921	98		Paved roads w/curbs & sewers, HSG D
6,750	98		Unconnected roofs, HSG D
21,436	74		>75% Grass cover, Good, HSG C
23,223	80		>75% Grass cover, Good, HSG D
57,330	82	81	Weighted Average, UI Adjusted
44,659			77.90% Pervious Area
12,671			22.10% Impervious Area
6,750			53.27% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0667	0.27		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
0.9	155	0.0200	2.87		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
7.0	255	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3.9S: 3.9

Runoff = 1.82 cfs @ 12.09 hrs, Volume= 0.136 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,419	98	Paved roads w/curbs & sewers, HSG D
3,750	98	Unconnected roofs, HSG D
7,116	80	>75% Grass cover, Good, HSG D
15,285	90	Weighted Average
7,116		46.56% Pervious Area
8,169		53.44% Impervious Area
3,750		45.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	32	0.0200	0.13		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
2.1	310	0.0150	2.49		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
6.1	342	Total			

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Summary for Subcatchment 3S: 4

Runoff = 26.83 cfs @ 12.13 hrs, Volume= 2.188 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
37,374	79	Woods/grass comb., Good, HSG D
3,209	79	Woods/grass comb., Good, HSG D
83,760	84	50-75% Grass cover, Fair, HSG D
* 75,213	90	Wetland, HSG D
85,690	80	>75% Grass cover, Good, HSG D
285,246	84	Weighted Average
285,246		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	80	0.0950	0.30		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
2.9	418	0.0330	2.42	343.30	Trap/Vee/Rect Channel Flow, B-C, WETLAND Bot.W=51.00' D=2.00' Z= 10.0 ' Top.W=91.00' n= 0.150
2.3	234	0.0201	1.67	123.40	Trap/Vee/Rect Channel Flow, C-D, WETLAND Bot.W=17.00' D=2.00' Z= 10.0 ' Top.W=57.00' n= 0.150
9.7	732	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 4S: 6

Runoff = 9.92 cfs @ 12.18 hrs, Volume= 0.895 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,174	79	Woods/grass comb., Good, HSG D
92,734	80	>75% Grass cover, Good, HSG D
* 24,074	90	Wetland, HSG D
* 2,029	96	Gravel surface, HSG D
123,011	82	Weighted Average
123,011		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	150	0.0370	0.26		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
1.4	238	0.0462	2.82	366.88	Trap/Vee/Rect Channel Flow, B-C, WETLAND Bot.W=45.00' D=2.00' Z= 10.0 '/' Top.W=85.00' n= 0.150
1.3	206	0.0470	2.55	188.70	Trap/Vee/Rect Channel Flow, C-D, WETLAND Bot.W=17.00' D=2.00' Z= 10.0 '/' Top.W=57.00' n= 0.150
1.0	55	0.0330	0.91		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
13.3	649	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.10S: 5.10

Runoff = 3.85 cfs @ 12.13 hrs, Volume= 0.308 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
2,960	98		Paved roads w/curbs & sewers, HSG D
8,250	98		Unconnected roofs, HSG D
33,947	74		>75% Grass cover, Good, HSG C
2,167	80		>75% Grass cover, Good, HSG D
47,324	80	78	Weighted Average, UI Adjusted
36,114			76.31% Pervious Area
11,210			23.69% Impervious Area
8,250			73.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0667	0.27		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
3.4	204	0.0200	0.99		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
9.5	304	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.11S: 5.11

Runoff = 1.30 cfs @ 12.07 hrs, Volume= 0.098 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,968	98	Paved roads w/curbs & sewers, HSG D
4,500	98	Unconnected roofs, HSG D
374	74	>75% Grass cover, Good, HSG C
760	80	>75% Grass cover, Good, HSG D
9,602	96	Weighted Average
1,134		11.81% Pervious Area
8,468		88.19% Impervious Area
4,500		53.14% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	33	0.0200	0.13		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
0.6	167	0.0500	4.54		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
4.7	200	Total			

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Summary for Subcatchment 5.12S: 5.12

Runoff = 5.61 cfs @ 12.11 hrs, Volume= 0.418 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
6,296	98		Paved roads w/curbs & sewers, HSG D
9,000	98		Unconnected roofs, HSG D
44,473	74		>75% Grass cover, Good, HSG C
4,398	80		>75% Grass cover, Good, HSG D
64,167	80	78	Weighted Average, UI Adjusted
48,871			76.16% Pervious Area
15,296			23.84% Impervious Area
9,000			58.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0667	0.27		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
1.2	208	0.0200	2.87		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
7.3	308	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.13S: 5.13

Runoff = 1.99 cfs @ 12.09 hrs, Volume= 0.154 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,701	98	Paved roads w/curbs & sewers, HSG D
7,500	98	Unconnected roofs, HSG D
1,374	74	>75% Grass cover, Good, HSG C
2,552	80	>75% Grass cover, Good, HSG D
16,127	93	Weighted Average
3,926		24.34% Pervious Area
12,201		75.66% Impervious Area
7,500		61.47% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	36	0.0200	0.14		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
2.0	337	0.0200	2.87		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
6.4	373	Total			

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Summary for Subcatchment 5.14S: 5.14

Runoff = 5.64 cfs @ 12.10 hrs, Volume= 0.421 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
10,782	98	Paved roads w/curbs & sewers, HSG D
6,000	98	Unconnected roofs, HSG D
12,319	74	>75% Grass cover, Good, HSG C
25,762	80	>75% Grass cover, Good, HSG D
54,863	84	Weighted Average
38,081		69.41% Pervious Area
16,782		30.59% Impervious Area
6,000		35.75% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	150	0.0100	1.11		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.10"
4.8	583	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
7.0	733	Total			

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Summary for Subcatchment 5.15S: 5.15

Runoff = 4.94 cfs @ 12.06 hrs, Volume= 0.329 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
7,980	98	Paved roads w/curbs & sewers, HSG D
6,750	98	Unconnected roofs, HSG D
30,195	74	>75% Grass cover, Good, HSG C
304	80	>75% Grass cover, Good, HSG D
45,229	82	Weighted Average
30,499		67.43% Pervious Area
14,730		32.57% Impervious Area
6,750		45.82% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	135	0.0100	1.09		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.10"
1.9	234	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
4.0	369	Total			

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Summary for Subcatchment 5.1S: 5.1

Runoff = 4.46 cfs @ 12.23 hrs, Volume= 0.441 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
10,438	98	Paved roads w/curbs & sewers, HSG D
8,250	98	Unconnected roofs, HSG D
38,537	74	>75% Grass cover, Good, HSG C
3,351	80	>75% Grass cover, Good, HSG D
60,576	82	Weighted Average
41,888		69.15% Pervious Area
18,688		30.85% Impervious Area
8,250		44.15% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	136	0.0200	0.18		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
4.2	507	0.0100	2.03		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
16.9	643	Total			

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Summary for Subcatchment 5.20S: 5.20

Runoff = 51.48 cfs @ 12.23 hrs, Volume= 5.166 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,115	72	Woods/grass comb., Good, HSG C
204,937	79	Woods/grass comb., Good, HSG D
* 158,830	90	Wetland, HSG D
83,996	84	50-75% Grass cover, Fair, HSG D
61,544	79	50-75% Grass cover, Fair, HSG C
15,969	89	<50% Grass cover, Poor, HSG D
163,979	80	>75% Grass cover, Good, HSG D
691,370	83	Weighted Average
691,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0330	0.25		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
1.3	146	0.0710	1.87		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
6.1	325	0.0044	0.88	127.38	Trap/Vee/Rect Channel Flow, C-D, Wetland Bot.W=52.00' D=2.00' Z= 10.0 ' Top.W=92.00' n= 0.150
17.5	621	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.21S: 5.21

Runoff = 8.37 cfs @ 12.08 hrs, Volume= 0.591 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
52,777	80	>75% Grass cover, Good, HSG D
22,269	98	Water Surface, HSG D
75,046	85	Weighted Average
52,777		70.33% Pervious Area
22,269		29.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	50	0.1000	0.31		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
2.6	48	0.3300	0.30		Sheet Flow, B-C Grass: Dense n= 0.240 P2= 3.10"
5.3	98	Total			

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Summary for Subcatchment 5.22S: 5.22

Runoff = 2.20 cfs @ 12.09 hrs, Volume= 0.168 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
9,366	98	Water Surface, HSG D
9,115	84	50-75% Grass cover, Fair, HSG D
18,481	91	Weighted Average
9,115		49.32% Pervious Area
9,366		50.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0667	0.27		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
0.5	128	0.3300	4.02		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
6.6	228	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.2S: 5.2

Runoff = 0.96 cfs @ 12.03 hrs, Volume= 0.062 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,775	98	Paved roads w/curbs & sewers, HSG D
0	98	Unconnected roofs, HSG D
2,243	74	>75% Grass cover, Good, HSG C
7,018	90	Weighted Average
2,243		31.96% Pervious Area
4,775		68.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.10"
0.8	126	0.0150	2.49		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.2	226	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.30S: 5.30

Runoff = 13.16 cfs @ 12.12 hrs, Volume= 1.033 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
29,805	98	Paved roads w/curbs & sewers, HSG D
13,275	98	Unconnected roofs, HSG D
28,527	80	>75% Grass cover, Good, HSG D
66,564	74	>75% Grass cover, Good, HSG C
138,171	83	Weighted Average
95,091		68.82% Pervious Area
43,080		31.18% Impervious Area
13,275		30.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	150	0.1229	0.38		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.10"
0.5	158	0.0571	4.85		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
1.4	176	0.0100	2.03		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
8.6	484	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.3S: 5.3

Runoff = 1.25 cfs @ 12.03 hrs, Volume= 0.080 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,775	98	Paved roads w/curbs & sewers, HSG D
750	98	Unconnected roofs, HSG D
3,903	74	>75% Grass cover, Good, HSG C
9,428	88	Weighted Average
3,903		41.40% Pervious Area
5,525		58.60% Impervious Area
750		13.57% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.10"
0.8	124	0.0150	2.49		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
2.2	224	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.4S: 5.4

Runoff = 2.51 cfs @ 12.17 hrs, Volume= 0.222 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
6,305	98	Paved roads w/curbs & sewers, HSG D
5,250	98	Unconnected roofs, HSG D
17,330	74	>75% Grass cover, Good, HSG C
28,885	84	Weighted Average
17,330		60.00% Pervious Area
11,555		40.00% Impervious Area
5,250		45.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	98	0.0200	0.17		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
2.6	314	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
12.4	412	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.5S: 5.5

Runoff = 1.72 cfs @ 12.10 hrs, Volume= 0.129 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,690	98	Paved roads w/curbs & sewers, HSG D
3,000	98	Unconnected roofs, HSG D
8,643	74	>75% Grass cover, Good, HSG C
16,333	85	Weighted Average
8,643		52.92% Pervious Area
7,690		47.08% Impervious Area
3,000		39.01% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	35	0.0200	0.14		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
2.7	332	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
7.0	367	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.6S: 5.6

Runoff = 2.48 cfs @ 12.20 hrs, Volume= 0.231 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
4,171	98		Paved roads w/curbs & sewers, HSG D
6,000	98		Unconnected roofs, HSG D
24,345	74		>75% Grass cover, Good, HSG C
34,516	81	79	Weighted Average, UI Adjusted
24,345			70.53% Pervious Area
10,171			29.47% Impervious Area
6,000			58.99% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	140	0.0200	0.18		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
1.7	212	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
14.7	352	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.7S: 5.7

Runoff = 1.10 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,022	98	Paved roads w/curbs & sewers, HSG D
2,250	98	Unconnected roofs, HSG D
4,451	74	>75% Grass cover, Good, HSG C
9,723	87	Weighted Average
4,451		45.78% Pervious Area
5,272		54.22% Impervious Area
2,250		42.68% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	37	0.0200	0.14		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
1.5	188	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
6.0	225	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.8S: 5.8

Runoff = 3.23 cfs @ 12.21 hrs, Volume= 0.305 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Adj	Description
4,990	98		Paved roads w/curbs & sewers, HSG D
8,250	98		Unconnected roofs, HSG D
32,304	74		>75% Grass cover, Good, HSG C
45,544	81	79	Weighted Average, UI Adjusted
32,304			70.93% Pervious Area
13,240			29.07% Impervious Area
8,250			62.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	140	0.0200	0.18		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
2.2	262	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
15.2	402	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5.9S: 5.9

Runoff = 1.90 cfs @ 12.09 hrs, Volume= 0.138 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,529	98	Paved roads w/curbs & sewers, HSG D
3,000	98	Unconnected roofs, HSG D
12,404	74	>75% Grass cover, Good, HSG C
18,933	82	Weighted Average
12,404		65.52% Pervious Area
6,529		34.48% Impervious Area
3,000		45.95% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	50	0.0200	0.15		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.10"
0.7	199	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
6.4	249	Total			

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5S: 7A

Runoff = 9.35 cfs @ 12.58 hrs, Volume= 1.380 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,436	98	Paved parking, HSG D
7,057	98	Roofs, HSG D
9,042	82	Woods/grass comb., Poor, HSG C
17,153	72	Woods/grass comb., Good, HSG C
39,818	79	Woods/grass comb., Good, HSG D
5,895	89	<50% Grass cover, Poor, HSG D
14,399	86	<50% Grass cover, Poor, HSG C
25,916	79	50-75% Grass cover, Fair, HSG C
59,810	74	>75% Grass cover, Good, HSG C
* 2,024	96	Gravel surface, HSG D
* 17,688	90	Wetland, HSG D
200,238	80	Weighted Average
191,745		95.76% Pervious Area
8,493		4.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.8	100	0.0100	0.06		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.10"
8.5	273	0.0115	0.54		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.5	130	0.0165	1.45	89.64	Trap/Vee/Rect Channel Flow, C-D, WETLAND Bot.W=11.00' D=2.00' Z= 10.0 ' Top.W=51.00' n= 0.150
1.5	95	0.0456	1.07		Shallow Concentrated Flow, D-E Woodland Kv= 5.0 fps
0.9	86	0.1121	1.67		Shallow Concentrated Flow, E-F Woodland Kv= 5.0 fps
0.3	88	0.1143	4.22	413.93	Trap/Vee/Rect Channel Flow, F-G, WETLAND Bot.W=29.00' D=2.00' Z= 10.0 ' Top.W=69.00' n= 0.150
0.3	48	0.0558	3.11	410.39	Trap/Vee/Rect Channel Flow, G-H, WETLAND Bot.W=46.00' D=2.00' Z= 10.0 ' Top.W=86.00' n= 0.150
41.8	820	Total			

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Summary for Reach 1R: POI 1

Inflow Area = 1.601 ac, 0.00% Impervious, Inflow Depth = 2.92" for 25-year event
Inflow = 4.14 cfs @ 12.21 hrs, Volume= 0.390 af
Outflow = 4.14 cfs @ 12.21 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 2A-R: PIPE FLOW ALONG WESTBROOK ST.

Inflow Area = 2.983 ac, 25.77% Impervious, Inflow Depth = 3.80" for 25-year event
Inflow = 11.09 cfs @ 12.15 hrs, Volume= 0.945 af
Outflow = 11.09 cfs @ 12.15 hrs, Volume= 0.945 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 2R: POI 2

Inflow Area = 7.243 ac, 15.54% Impervious, Inflow Depth = 3.63" for 25-year event

Inflow = 17.31 cfs @ 12.19 hrs, Volume= 2.189 af

Outflow = 17.31 cfs @ 12.19 hrs, Volume= 2.189 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 4R: POI 4

Inflow Area = 15.061 ac, 17.22% Impervious, Inflow Depth > 3.85" for 25-year event
Inflow = 30.83 cfs @ 12.14 hrs, Volume= 4.834 af
Outflow = 30.83 cfs @ 12.14 hrs, Volume= 4.834 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Reach 5.0R: Filterras

Inflow Area = 10.750 ac, 34.62% Impervious, Inflow Depth = 3.81" for 25-year event
Inflow = 37.87 cfs @ 12.11 hrs, Volume= 3.416 af
Outflow = 37.87 cfs @ 12.11 hrs, Volume= 3.416 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 5R: POI 5

Inflow Area = 36.538 ac, 15.41% Impervious, Inflow Depth > 3.75" for 25-year event
Inflow = 60.17 cfs @ 12.24 hrs, Volume= 11.413 af
Outflow = 60.17 cfs @ 12.24 hrs, Volume= 11.413 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 6R: POI 4

Inflow Area = 2.824 ac, 0.00% Impervious, Inflow Depth = 3.80" for 25-year event
Inflow = 9.92 cfs @ 12.18 hrs, Volume= 0.895 af
Outflow = 9.92 cfs @ 12.18 hrs, Volume= 0.895 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 7A-R: 7A-R

Inflow Area = 4.597 ac, 4.24% Impervious, Inflow Depth = 3.60" for 25-year event
Inflow = 7.04 cfs @ 12.85 hrs, Volume= 1.380 af
Outflow = 7.04 cfs @ 12.85 hrs, Volume= 1.380 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 15R: Filterra

Inflow Area = 7.445 ac, 30.64% Impervious, Inflow Depth = 3.79" for 25-year event
Inflow = 25.94 cfs @ 12.12 hrs, Volume= 2.351 af
Outflow = 25.94 cfs @ 12.12 hrs, Volume= 2.351 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Summary for Reach 99R: POI 99

Inflow Area = 54.422 ac, 15.11% Impervious, Inflow Depth > 3.78" for 25-year event
Inflow = 95.87 cfs @ 12.19 hrs, Volume= 17.142 af
Outflow = 95.87 cfs @ 12.19 hrs, Volume= 17.142 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 1P: Pond 1

Inflow Area = 8.513 ac, 30.46% Impervious, Inflow Depth = 3.87" for 25-year event
 Inflow = 30.59 cfs @ 12.12 hrs, Volume= 2.745 af
 Outflow = 5.81 cfs @ 12.68 hrs, Volume= 2.646 af, Atten= 81%, Lag= 33.6 min
 Primary = 5.81 cfs @ 12.68 hrs, Volume= 2.646 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 39.24' @ 12.68 hrs Surf.Area= 12,585 sf Storage= 55,608 cf

Plug-Flow detention time= 186.6 min calculated for 2.646 af (96% of inflow)

Center-of-Mass det. time= 165.9 min (977.2 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	33.00'	65,572 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.00	5,606	0	0
33.75	6,330	4,476	4,476
34.00	6,575	1,613	6,089
35.00	7,600	7,088	13,177
36.00	8,685	8,143	21,319
37.00	9,825	9,255	30,574
38.00	11,021	10,423	40,997
39.00	12,273	11,647	52,644
40.00	13,582	12,928	65,572

Device	Routing	Invert	Outlet Devices
#1	Primary	32.90'	12.0" Round 12" Culvert L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.90' / 31.00' S= 0.0317 ' S= 0.0317 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	33.00'	1.7" Vert. WQ Orifice C= 0.600
#3	Device 1	33.95'	6.0" Vert. 2- YR Quantity Orifice C= 0.600
#4	Device 1	36.15'	9.0" Vert. 10/25 - YR Quantity Orifice C= 0.600
#5	Primary	39.25'	15.0' long x 6.0' breadth Emergency Spillway 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=5.81 cfs @ 12.68 hrs HW=39.24' (Free Discharge)

1=12" Culvert (Passes 5.81 cfs of 7.21 cfs potential flow)
 2=WQ Orifice (Orifice Controls 0.19 cfs @ 11.96 fps)
 3=2- YR Quantity Orifice (Orifice Controls 2.12 cfs @ 10.81 fps)
 4=10/25 - YR Quantity Orifice (Orifice Controls 3.50 cfs @ 7.93 fps)
 5=Emergency Spillway (Controls 0.00 cfs)

Summary for Pond 2A-P: CATCH BASIN

Inflow Area = 2.983 ac, 25.77% Impervious, Inflow Depth = 3.80" for 25-year event
 Inflow = 11.09 cfs @ 12.15 hrs, Volume= 0.945 af
 Outflow = 11.09 cfs @ 12.15 hrs, Volume= 0.945 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.09 cfs @ 12.15 hrs, Volume= 0.945 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.43' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	56.54'	12.0" Round Culvert L= 25.4' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 56.54' / 56.26' S= 0.0110 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf

Primary OutFlow Max=11.08 cfs @ 12.15 hrs HW=62.43' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 11.08 cfs @ 14.11 fps)

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Summary for Pond 2B-P: CROSS CULVERT

Inflow Area = 4.261 ac, 8.37% Impervious, Inflow Depth = 3.50" for 25-year event
 Inflow = 10.60 cfs @ 12.36 hrs, Volume= 1.243 af
 Outflow = 9.68 cfs @ 12.46 hrs, Volume= 1.243 af, Atten= 9%, Lag= 6.2 min
 Primary = 9.68 cfs @ 12.46 hrs, Volume= 1.243 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 61.00 @ 12.46 hrs Surf.Area= 2,584 sf Storage= 1,896 cf

Plug-Flow detention time= 2.0 min calculated for 1.243 af (100% of inflow)

Center-of-Mass det. time= 2.0 min (838.4 - 836.4)

Volume	Invert	Avail.Storage	Storage Description
#1	58.96'	27,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.96	100	0	0
60.00	624	376	376
61.00	2,395	1,510	1,886
62.00	49,511	25,953	27,839

Device	Routing	Invert	Outlet Devices
#1	Primary	58.96'	18.0" Round Culvert L= 63.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 58.96' / 57.71' S= 0.0198 ' S= 0.0198 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Primary	62.00'	50.0' long x 16.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.68 cfs @ 12.46 hrs HW=61.00' (Free Discharge)

1=Culvert (Inlet Controls 9.68 cfs @ 5.48 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 2P: Pond 2

Inflow Area = 12.473 ac, 33.94% Impervious, Inflow Depth = 3.85" for 25-year event
 Inflow = 45.85 cfs @ 12.10 hrs, Volume= 4.006 af
 Outflow = 2.85 cfs @ 14.59 hrs, Volume= 3.779 af, Atten= 94%, Lag= 149.5 min
 Primary = 2.85 cfs @ 14.59 hrs, Volume= 3.779 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 34.49' @ 14.59 hrs Surf.Area= 21,379 sf Storage= 104,453 cf

Plug-Flow detention time= 454.1 min calculated for 3.778 af (94% of inflow)

Center-of-Mass det. time= 423.3 min (1,233.9 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	115,544 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.00	11,200	0	0
29.00	12,610	11,905	11,905
29.75	13,705	9,868	21,773
30.00	14,078	3,473	25,246
31.00	15,600	14,839	40,085
32.00	17,185	16,393	56,478
33.00	18,822	18,004	74,481
34.00	20,517	19,670	94,151
35.00	22,269	21,393	115,544

Device	Routing	Invert	Outlet Devices
#1	Primary	27.90'	15.0" Round 15" Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.90' / 27.65' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	28.00'	2.2" Vert. WQ Orifice C= 0.600
#3	Device 1	28.70'	6.4" Vert. Quantity Orifice C= 0.600
#4	Primary	34.50'	15.0' long x 10.0' breadth Emergency Spillway Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.85 cfs @ 14.59 hrs HW=34.49' (Free Discharge)

1=15" Culvert (Passes 2.85 cfs of 11.39 cfs potential flow)
 2=WQ Orifice (Orifice Controls 0.32 cfs @ 12.18 fps)
 3=Quantity Orifice (Orifice Controls 2.53 cfs @ 11.32 fps)
 4=Emergency Spillway (Controls 0.00 cfs)

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Summary for Pond 3.10P: Filterra 4x8

Inflow Area = 0.378 ac, 41.35% Impervious, Inflow Depth = 4.22" for 25-year event
 Inflow = 1.77 cfs @ 12.10 hrs, Volume= 0.133 af
 Outflow = 1.77 cfs @ 12.10 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.21 cfs @ 11.61 hrs, Volume= 0.089 af
 Secondary = 1.56 cfs @ 12.10 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.22' @ 12.10 hrs Surf.Area= 64 sf Storage= 47 cf

Plug-Flow detention time= 1.1 min calculated for 0.133 af (100% of inflow)

Center-of-Mass det. time= 0.9 min (800.7 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.61 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)**Secondary OutFlow** Max=1.56 cfs @ 12.10 hrs HW=103.22' (Free Discharge)↑**2=CB** (Weir Controls 1.56 cfs @ 1.52 fps)

Summary for Pond 3.11P: Filterra 6X8

Inflow Area = 0.524 ac, 38.20% Impervious, Inflow Depth = 3.91" for 25-year event
 Inflow = 2.80 cfs @ 12.02 hrs, Volume= 0.171 af
 Outflow = 2.79 cfs @ 12.02 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.16 cfs @ 11.18 hrs, Volume= 0.097 af
 Secondary = 2.64 cfs @ 12.02 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.31' @ 12.02 hrs Surf.Area= 48 sf Storage= 39 cf

Plug-Flow detention time= 1.1 min calculated for 0.170 af (100% of inflow)

Center-of-Mass det. time= 0.9 min (804.2 - 803.3)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12 cf	4.00'W x 6.00'L x 2.50'H Media/Stone 60 cf Overall x 20.0% Voids
#2	102.25'	24 cf	4.00'W x 6.00'L x 1.00'H Prismatic
#3	103.25'	28 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		64 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	24	0	0
103.50	200	28	28

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 11.18 hrs HW=102.25' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Secondary OutFlow Max=2.62 cfs @ 12.02 hrs HW=103.31' (Free Discharge)

↑**2=CB** (Weir Controls 2.62 cfs @ 1.81 fps)

Summary for Pond 3.2P: Filterra 4X8

Inflow Area = 0.650 ac, 29.96% Impervious, Inflow Depth = 3.60" for 25-year event
 Inflow = 2.14 cfs @ 12.19 hrs, Volume= 0.195 af
 Outflow = 2.14 cfs @ 12.19 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.21 cfs @ 11.55 hrs, Volume= 0.116 af
 Secondary = 1.93 cfs @ 12.19 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 103.25' @ 12.19 hrs Surf.Area= 64 sf Storage= 48 cf

Plug-Flow detention time= 1.0 min calculated for 0.195 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (823.7 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.55 hrs HW=102.25' (Free Discharge)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Secondary OutFlow Max=1.93 cfs @ 12.19 hrs HW=103.25' (Free Discharge)
 ↳ **2=CB** (Weir Controls 1.93 cfs @ 1.64 fps)

Summary for Pond 3.3P: Filterra 4X6

Inflow Area = 0.336 ac, 33.63% Impervious, Inflow Depth = 3.80" for 25-year event
 Inflow = 1.36 cfs @ 12.12 hrs, Volume= 0.106 af
 Outflow = 1.36 cfs @ 12.12 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.16 cfs @ 11.63 hrs, Volume= 0.069 af
 Secondary = 1.20 cfs @ 12.12 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.18' @ 12.12 hrs Surf.Area= 48 sf Storage= 34 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.9 min (813.6 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12 cf	4.00'W x 6.00'L x 2.50'H Media/Stone 60 cf Overall x 20.0% Voids
#2	102.25'	24 cf	4.00'W x 6.00'L x 1.00'H Prismatic
#3	103.25'	28 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		64 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	24	0	0
103.50	200	28	28

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 11.63 hrs HW=102.25' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Secondary OutFlow Max=1.20 cfs @ 12.12 hrs HW=103.18' (Free Discharge)

↑**2=CB** (Weir Controls 1.20 cfs @ 1.40 fps)

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Summary for Pond 3.4P: Filterra 4x8

Inflow Area = 0.486 ac, 33.11% Impervious, Inflow Depth = 3.80" for 25-year event
 Inflow = 1.65 cfs @ 12.20 hrs, Volume= 0.154 af
 Outflow = 1.65 cfs @ 12.20 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.21 cfs @ 11.67 hrs, Volume= 0.098 af
 Secondary = 1.44 cfs @ 12.20 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.21' @ 12.20 hrs Surf.Area= 64 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.9 min (819.2 - 818.3)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.67 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)**Secondary OutFlow** Max=1.43 cfs @ 12.20 hrs HW=103.21' (Free Discharge)↑**2=CB** (Weir Controls 1.43 cfs @ 1.48 fps)

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Summary for Pond 3.5P: Filterra 6X8

Inflow Area = 0.847 ac, 30.24% Impervious, Inflow Depth = 3.70" for 25-year event
 Inflow = 2.90 cfs @ 12.18 hrs, Volume= 0.261 af
 Outflow = 2.90 cfs @ 12.18 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.31 cfs @ 11.61 hrs, Volume= 0.161 af
 Secondary = 2.59 cfs @ 12.18 hrs, Volume= 0.100 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 103.30' @ 12.18 hrs Surf.Area= 96 sf Storage= 75 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.0 min (820.7 - 819.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	24 cf	6.00'W x 8.00'L x 2.50'H Media/Stone 120 cf Overall x 20.0% Voids
#2	102.25'	48 cf	6.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	30 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		102 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	42	0	0
103.50	200	30	30

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 11.61 hrs HW=102.25' (Free Discharge)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Secondary OutFlow Max=2.58 cfs @ 12.18 hrs HW=103.30' (Free Discharge)
 ↳ **2=CB** (Weir Controls 2.58 cfs @ 1.80 fps)

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Summary for Pond 3.6P: Filterra 4x6

Inflow Area = 0.562 ac, 26.85% Impervious, Inflow Depth = 3.70" for 25-year event
 Inflow = 2.02 cfs @ 12.16 hrs, Volume= 0.173 af
 Outflow = 2.02 cfs @ 12.16 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.16 cfs @ 11.36 hrs, Volume= 0.098 af
 Secondary = 1.86 cfs @ 12.16 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.24' @ 12.16 hrs Surf.Area= 48 sf Storage= 36 cf

Plug-Flow detention time= 1.0 min calculated for 0.173 af (100% of inflow)

Center-of-Mass det. time= 0.9 min (819.0 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	12 cf	4.00'W x 6.00'L x 2.50'H Media/Stone 60 cf Overall x 20.0% Voids
#2	102.25'	24 cf	4.00'W x 6.00'L x 1.00'H Prismatic
#3	103.25'	28 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		64 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	24	0	0
103.50	200	28	28

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 11.36 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.16 cfs)**Secondary OutFlow** Max=1.86 cfs @ 12.16 hrs HW=103.24' (Free Discharge)↑**2=CB** (Weir Controls 1.86 cfs @ 1.62 fps)

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Summary for Pond 3.7P: Filterra 4x8

Inflow Area = 0.672 ac, 22.99% Impervious, Inflow Depth = 3.70" for 25-year event
 Inflow = 2.80 cfs @ 12.10 hrs, Volume= 0.207 af
 Outflow = 2.80 cfs @ 12.10 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.21 cfs @ 11.38 hrs, Volume= 0.121 af
 Secondary = 2.59 cfs @ 12.10 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.30' @ 12.10 hrs Surf.Area= 64 sf Storage= 51 cf

Plug-Flow detention time= 1.0 min calculated for 0.207 af (100% of inflow)

Center-of-Mass det. time= 0.9 min (814.8 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.38 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)**Secondary OutFlow** Max=2.59 cfs @ 12.10 hrs HW=103.30' (Free Discharge)↑**2=CB** (Weir Controls 2.59 cfs @ 1.80 fps)

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 3.8P: Filterra 6X8

Inflow Area = 1.316 ac, 22.10% Impervious, Inflow Depth = 3.70" for 25-year event
 Inflow = 5.49 cfs @ 12.10 hrs, Volume= 0.406 af
 Outflow = 5.48 cfs @ 12.10 hrs, Volume= 0.406 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.31 cfs @ 11.18 hrs, Volume= 0.217 af
 Secondary = 5.17 cfs @ 12.10 hrs, Volume= 0.189 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.48' @ 12.10 hrs Surf.Area= 96 sf Storage= 99 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.1 min (814.9 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	24 cf	6.00'W x 8.00'L x 2.50'H Media/Stone 120 cf Overall x 20.0% Voids
#2	102.25'	48 cf	6.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	30 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		102 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	42	0	0
103.50	200	30	30

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 11.18 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.31 cfs)**Secondary OutFlow** Max=5.16 cfs @ 12.10 hrs HW=103.48' (Free Discharge)↑**2=CB** (Weir Controls 5.16 cfs @ 2.27 fps)

Summary for Pond 3.9P: Filterra 4x8

Inflow Area = 0.351 ac, 53.44% Impervious, Inflow Depth = 4.65" for 25-year event
 Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.136 af
 Outflow = 1.82 cfs @ 12.09 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.21 cfs @ 11.58 hrs, Volume= 0.092 af
 Secondary = 1.61 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 103.22' @ 12.09 hrs Surf.Area= 64 sf Storage= 47 cf

Plug-Flow detention time= 1.6 min calculated for 0.136 af (100% of inflow)
 Center-of-Mass det. time= 0.9 min (786.8 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.58 hrs HW=102.25' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Secondary OutFlow Max=1.61 cfs @ 12.09 hrs HW=103.22' (Free Discharge)
 ↑**2=CB** (Weir Controls 1.61 cfs @ 1.54 fps)

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Summary for Pond 3P: Pond 3 (VUSF)

Inflow Area = 3.596 ac, 33.48% Impervious, Inflow Depth = 4.01" for 25-year event
 Inflow = 15.27 cfs @ 12.11 hrs, Volume= 1.201 af
 Outflow = 3.45 cfs @ 12.55 hrs, Volume= 1.088 af, Atten= 77%, Lag= 26.3 min
 Primary = 3.45 cfs @ 12.55 hrs, Volume= 1.088 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 31.65' @ 12.55 hrs Surf.Area= 12,841 sf Storage= 23,806 cf

Plug-Flow detention time= 204.4 min calculated for 1.087 af (91% of inflow)
 Center-of-Mass det. time= 158.1 min (964.2 - 806.1)

Volume	Invert	Avail.Storage	Storage Description
#1	23.85'	1,800 cf	3/4" Stone Storage (Prismatic) Listed below (Recalc) 4,500 cf Overall x 40.0% Voids
#2	25.35'	1,200 cf	Filter Storage (Prismatic) Listed below (Recalc) 6,000 cf Overall x 20.0% Voids
#3	27.35'	23,242 cf	CPV/DETENTION (Prismatic) Listed below (Recalc)
		26,242 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.85	3,000	0	0
25.35	3,000	4,500	4,500

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.35	3,000	0	0
27.35	3,000	6,000	6,000

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.35	3,000	0	0
28.00	3,515	2,117	2,117
28.85	4,220	3,287	5,405
29.00	4,350	643	6,047
30.00	5,240	4,795	10,842
31.00	6,185	5,713	16,555
32.00	7,190	6,688	23,242

Device	Routing	Invert	Outlet Devices
#1	Primary	23.90'	12.0" Round 12" Culvert L= 170.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.90' / 23.00' S= 0.0053 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	24.00'	1.3" Vert. WQ Orifice C= 0.600
#3	Device 1	28.85'	9.0" Vert. Quantity Orifice C= 0.600
#4	Primary	31.65'	10.0' long x 6.0' breadth Emergency Spillway 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

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Type III 24-hr 25-year Rainfall=5.80"

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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=3.44 cfs @ 12.55 hrs HW=31.65' (Free Discharge)

- 1=12" Culvert (Passes 3.44 cfs of 6.48 cfs potential flow)
- 2=WQ Orifice (Orifice Controls 0.12 cfs @ 13.27 fps)
- 3=Quantity Orifice (Orifice Controls 3.31 cfs @ 7.50 fps)
- 4=Emergency Spillway (Weir Controls 0.00 cfs @ 0.12 fps)

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 4P: WETLAND STORAGE

Inflow Area = 6.548 ac, 0.00% Impervious, Inflow Depth = 4.01" for 25-year event
 Inflow = 26.83 cfs @ 12.13 hrs, Volume= 2.188 af
 Outflow = 26.80 cfs @ 12.14 hrs, Volume= 2.188 af, Atten= 0%, Lag= 0.3 min
 Primary = 26.80 cfs @ 12.14 hrs, Volume= 2.188 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 22.22' @ 12.14 hrs Surf.Area= 2,966 sf Storage= 511 cf

Plug-Flow detention time= 0.5 min calculated for 2.187 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (808.7 - 808.2)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	15,910 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	1,777	0	0
23.00	7,298	4,538	4,538
24.00	15,446	11,372	15,910

Device	Routing	Invert	Outlet Devices
#1	Primary	22.00'	100.0' long x 98.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=26.76 cfs @ 12.14 hrs HW=22.22' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Weir Controls 26.76 cfs @ 1.24 fps)

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 5.10P: Filterra 6X8

Inflow Area = 1.086 ac, 23.69% Impervious, Inflow Depth = 3.40" for 25-year event
 Inflow = 3.85 cfs @ 12.13 hrs, Volume= 0.308 af
 Outflow = 3.84 cfs @ 12.13 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.31 cfs @ 11.49 hrs, Volume= 0.180 af
 Secondary = 3.53 cfs @ 12.13 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.37' @ 12.13 hrs Surf.Area= 96 sf Storage= 82 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.0 min (824.8 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	24 cf	6.00'W x 8.00'L x 2.50'H Media/Stone 120 cf Overall x 20.0% Voids
#2	102.25'	48 cf	6.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	30 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		102 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	42	0	0
103.50	200	30	30

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 11.49 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.31 cfs)**Secondary OutFlow** Max=3.52 cfs @ 12.13 hrs HW=103.37' (Free Discharge)↑**2=CB** (Weir Controls 3.52 cfs @ 2.00 fps)

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Summary for Pond 5.11P: Filterra 6X6

Inflow Area = 0.220 ac, 88.19% Impervious, Inflow Depth = 5.33" for 25-year event
 Inflow = 1.30 cfs @ 12.07 hrs, Volume= 0.098 af
 Outflow = 1.29 cfs @ 12.07 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.23 cfs @ 11.65 hrs, Volume= 0.075 af
 Secondary = 1.06 cfs @ 12.07 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.17' @ 12.07 hrs Surf.Area= 72 sf Storage= 51 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.7 min (758.5 - 757.8)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	18 cf	6.00'W x 6.00'L x 2.50'H Media/Stone 90 cf Overall x 20.0% Voids
#2	102.25'	36 cf	6.00'W x 6.00'L x 1.00'H Prismatic
#3	103.25'	30 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		84 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	36	0	0
103.50	200	30	30

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 11.65 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.23 cfs)**Secondary OutFlow** Max=1.05 cfs @ 12.07 hrs HW=103.17' (Free Discharge)↑**2=CB** (Weir Controls 1.05 cfs @ 1.34 fps)

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Summary for Pond 5.12P: Filterra 6X10

Inflow Area = 1.473 ac, 23.84% Impervious, Inflow Depth = 3.40" for 25-year event
 Inflow = 5.61 cfs @ 12.11 hrs, Volume= 0.418 af
 Outflow = 5.61 cfs @ 12.11 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.39 cfs @ 11.39 hrs, Volume= 0.237 af
 Secondary = 5.22 cfs @ 12.11 hrs, Volume= 0.180 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.49' @ 12.11 hrs Surf.Area= 120 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.0 min (822.8 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	30 cf	6.00'W x 10.00'L x 2.50'H Media/Stone 150 cf Overall x 20.0% Voids
#2	102.25'	60 cf	6.00'W x 10.00'L x 1.00'H Prismatic
#3	103.25'	33 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	60	0	0
103.50	200	33	33

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 11.39 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.39 cfs)**Secondary OutFlow** Max=5.21 cfs @ 12.11 hrs HW=103.49' (Free Discharge)↑**2=CB** (Weir Controls 5.21 cfs @ 2.28 fps)

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Summary for Pond 5.13P: Filterra 6X8

Inflow Area = 0.370 ac, 75.66% Impervious, Inflow Depth = 4.99" for 25-year event
 Inflow = 1.99 cfs @ 12.09 hrs, Volume= 0.154 af
 Outflow = 1.98 cfs @ 12.09 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.31 cfs @ 11.64 hrs, Volume= 0.112 af
 Secondary = 1.67 cfs @ 12.09 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.23' @ 12.09 hrs Surf.Area= 96 sf Storage= 71 cf

Plug-Flow detention time= 0.9 min calculated for 0.154 af (100% of inflow)

Center-of-Mass det. time= 0.8 min (775.2 - 774.3)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	24 cf	6.00'W x 8.00'L x 2.50'H Media/Stone 120 cf Overall x 20.0% Voids
#2	102.25'	48 cf	6.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	30 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		102 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	42	0	0
103.50	200	30	30

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 11.64 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.31 cfs)**Secondary OutFlow** Max=1.67 cfs @ 12.09 hrs HW=103.23' (Free Discharge)↑**2=CB** (Weir Controls 1.67 cfs @ 1.56 fps)

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Summary for Pond 5.14P: Filterra 6X12

Inflow Area = 1.259 ac, 30.59% Impervious, Inflow Depth = 4.01" for 25-year event
 Inflow = 5.64 cfs @ 12.10 hrs, Volume= 0.421 af
 Outflow = 5.63 cfs @ 12.10 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.39 cfs @ 11.26 hrs, Volume= 0.242 af
 Secondary = 5.24 cfs @ 12.10 hrs, Volume= 0.178 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.49' @ 12.10 hrs Surf.Area= 120 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.0 min (806.7 - 805.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	30 cf	6.00'W x 10.00'L x 2.50'H Media/Stone 150 cf Overall x 20.0% Voids
#2	102.25'	60 cf	6.00'W x 10.00'L x 1.00'H Prismatic
#3	103.25'	33 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	60	0	0
103.50	200	33	33

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 11.26 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.39 cfs)**Secondary OutFlow** Max=5.24 cfs @ 12.10 hrs HW=103.49' (Free Discharge)↑**2=CB** (Weir Controls 5.24 cfs @ 2.28 fps)

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Summary for Pond 5.15P: Filterra 6X10

Inflow Area = 1.038 ac, 32.57% Impervious, Inflow Depth = 3.80" for 25-year event
 Inflow = 4.94 cfs @ 12.06 hrs, Volume= 0.329 af
 Outflow = 4.93 cfs @ 12.06 hrs, Volume= 0.329 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.39 cfs @ 11.46 hrs, Volume= 0.203 af
 Secondary = 4.54 cfs @ 12.06 hrs, Volume= 0.126 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.44' @ 12.06 hrs Surf.Area= 120 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.9 min (809.3 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	30 cf	6.00'W x 10.00'L x 2.50'H Media/Stone 150 cf Overall x 20.0% Voids
#2	102.25'	60 cf	6.00'W x 10.00'L x 1.00'H Prismatic
#3	103.25'	33 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	60	0	0
103.50	200	33	33

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 11.46 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.39 cfs)**Secondary OutFlow** Max=4.53 cfs @ 12.06 hrs HW=103.44' (Free Discharge)↑**2=CB** (Weir Controls 4.53 cfs @ 2.17 fps)

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Summary for Pond 5.1P: Filtterra 6X12

Inflow Area = 1.391 ac, 30.85% Impervious, Inflow Depth = 3.80" for 25-year event
 Inflow = 4.46 cfs @ 12.23 hrs, Volume= 0.441 af
 Outflow = 4.46 cfs @ 12.23 hrs, Volume= 0.441 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.47 cfs @ 11.56 hrs, Volume= 0.264 af
 Secondary = 3.99 cfs @ 12.23 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.41' @ 12.23 hrs Surf.Area= 144 sf Storage= 126 cf

Plug-Flow detention time= 1.3 min calculated for 0.441 af (100% of inflow)

Center-of-Mass det. time= 1.0 min (821.4 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	36 cf	6.00'W x 12.00'L x 2.50'H Media/Stone 180 cf Overall x 20.0% Voids
#2	102.25'	72 cf	6.00'W x 12.00'L x 1.00'H Prismatic
#3	103.25'	34 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		142 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	72	0	0
103.50	200	34	34

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.47 cfs @ 11.56 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.47 cfs)**Secondary OutFlow** Max=3.99 cfs @ 12.23 hrs HW=103.41' (Free Discharge)↑**2=CB** (Weir Controls 3.99 cfs @ 2.08 fps)

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Summary for Pond 5.4P: Filterra 6X8

Inflow Area = 0.663 ac, 40.00% Impervious, Inflow Depth = 4.01" for 25-year event
 Inflow = 2.51 cfs @ 12.17 hrs, Volume= 0.222 af
 Outflow = 2.51 cfs @ 12.17 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.31 cfs @ 11.64 hrs, Volume= 0.144 af
 Secondary = 2.19 cfs @ 12.17 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.27' @ 12.17 hrs Surf.Area= 96 sf Storage= 73 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.9 min (811.6 - 810.7)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	24 cf	6.00'W x 8.00'L x 2.50'H Media/Stone 120 cf Overall x 20.0% Voids
#2	102.25'	48 cf	6.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	30 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		102 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	42	0	0
103.50	200	30	30

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 11.64 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.31 cfs)**Secondary OutFlow** Max=2.19 cfs @ 12.17 hrs HW=103.27' (Free Discharge)↑**2=CB** (Weir Controls 2.19 cfs @ 1.71 fps)

Summary for Pond 5.5P: Filterra 4x8

Inflow Area = 0.375 ac, 47.08% Impervious, Inflow Depth = 4.11" for 25-year event
 Inflow = 1.72 cfs @ 12.10 hrs, Volume= 0.129 af
 Outflow = 1.72 cfs @ 12.10 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.21 cfs @ 11.62 hrs, Volume= 0.086 af
 Secondary = 1.51 cfs @ 12.10 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 103.21' @ 12.10 hrs Surf.Area= 64 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.8 min (803.7 - 802.8)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.62 hrs HW=102.25' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Secondary OutFlow Max=1.51 cfs @ 12.10 hrs HW=103.21' (Free Discharge)
 ↑**2=CB** (Weir Controls 1.51 cfs @ 1.51 fps)

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Summary for Pond 5.8P: Filtterra 6X10

Inflow Area = 1.046 ac, 29.07% Impervious, Inflow Depth = 3.50" for 25-year event
 Inflow = 3.23 cfs @ 12.21 hrs, Volume= 0.305 af
 Outflow = 3.23 cfs @ 12.21 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.39 cfs @ 11.67 hrs, Volume= 0.191 af
 Secondary = 2.84 cfs @ 12.21 hrs, Volume= 0.114 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.32' @ 12.21 hrs Surf.Area= 120 sf Storage= 96 cf

Plug-Flow detention time= 1.2 min calculated for 0.305 af (100% of inflow)

Center-of-Mass det. time= 1.0 min (827.7 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	30 cf	6.00'W x 10.00'L x 2.50'H Media/Stone 150 cf Overall x 20.0% Voids
#2	102.25'	60 cf	6.00'W x 10.00'L x 1.00'H Prismatic
#3	103.25'	33 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		123 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	60	0	0
103.50	200	33	33

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 11.67 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.39 cfs)**Secondary OutFlow** Max=2.84 cfs @ 12.21 hrs HW=103.32' (Free Discharge)↑**2=CB** (Weir Controls 2.84 cfs @ 1.86 fps)

Post-development_8-28-17

Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 5.9P: Filterra 4x8

Inflow Area = 0.435 ac, 34.48% Impervious, Inflow Depth = 3.80" for 25-year event
 Inflow = 1.90 cfs @ 12.09 hrs, Volume= 0.138 af
 Outflow = 1.90 cfs @ 12.09 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.21 cfs @ 11.61 hrs, Volume= 0.090 af
 Secondary = 1.69 cfs @ 12.09 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 103.23' @ 12.09 hrs Surf.Area= 64 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.9 min (811.6 - 810.6)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	16 cf	4.00'W x 8.00'L x 2.50'H Media/Stone 80 cf Overall x 20.0% Voids
#2	102.25'	32 cf	4.00'W x 8.00'L x 1.00'H Prismatic
#3	103.25'	29 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		77 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
103.25	32	0	0
103.50	200	29	29

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	140.000 in/hr Exfiltration over Surface area Phase-In= 0.10'
#2	Secondary	103.00'	18.0" Horiz. CB C= 0.600 in 24.0" x 24.0" Grate (44% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 11.61 hrs HW=102.25' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.21 cfs)**Secondary OutFlow** Max=1.68 cfs @ 12.09 hrs HW=103.23' (Free Discharge)↑**2=CB** (Weir Controls 1.68 cfs @ 1.56 fps)

Post-development_8-28-17

Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 5P: 24" Culvert

Inflow Area = 4.597 ac, 4.24% Impervious, Inflow Depth = 3.60" for 25-year event
 Inflow = 9.35 cfs @ 12.58 hrs, Volume= 1.380 af
 Outflow = 7.04 cfs @ 12.85 hrs, Volume= 1.380 af, Atten= 25%, Lag= 16.3 min
 Primary = 7.04 cfs @ 12.85 hrs, Volume= 1.380 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 34.03' @ 12.85 hrs Surf.Area= 6,394 sf Storage= 6,686 cf

Plug-Flow detention time= 8.6 min calculated for 1.380 af (100% of inflow)
 Center-of-Mass det. time= 8.6 min (857.4 - 848.7)

Volume	Invert	Avail.Storage	Storage Description
#1	32.20'	13,784 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.20	100	0	0
33.00	3,660	1,504	1,504
34.00	6,340	5,000	6,504
35.00	8,220	7,280	13,784

Device	Routing	Invert	Outlet Devices
#1	Primary	32.20'	24.0" Round 24" Culvert w/ 12.0" inside fill L= 72.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.20' / 28.50' S= 0.0375 ' S= 0.0375 ' Cc= 0.900 n= 0.013, Flow Area= 1.57 sf

Primary OutFlow Max=7.04 cfs @ 12.85 hrs HW=34.03' (Free Discharge)
 ↑ **1=24" Culvert** (Inlet Controls 7.04 cfs @ 4.48 fps)

Section 13

Urban Impaired Stream Submissions



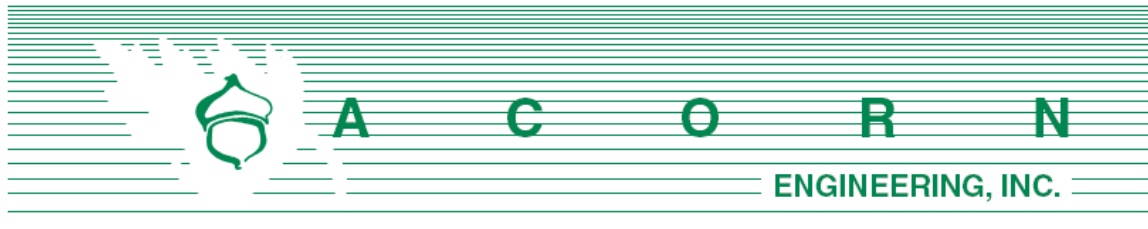
13. Urban Impaired Stream Submissions

The proposed project is not located within an urban impaired stream watershed.

Section 14

Basic Standards Submissions





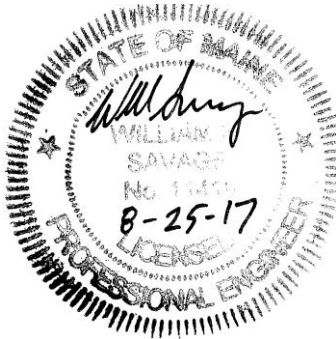
EROSION & SEDIMENTATION **CONTROL REPORT**

Prepared For:

**Stroudwater Development Partners, LLC
1700 Westbrook st.
Portland, Maine 04101**

Prepared By:

**Acorn Engineering, Inc.
158 Danforth Street
Portland, Maine 04102**



August 2017

INTRODUCTION

Acorn Engineering, Inc. has been retained by Stroudwater Development Partners, LLC to provide civil engineering services for the proposed single-family and townhouse development at 1700 Westbrook Street. The proposed project is to redevelop 55.3 acres of mainly farmland into a traditional single-family housing development. The proposed development includes 100 lots of which 98 are single family house lots, one planned unit residential lot and one open space lot.

The following Erosion and Sedimentation Control Report was developed in accordance with the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and the Maine DEP Chapter 500 Stormwater Management Appendix A and B (1), Amended January 11, 2015. This narrative also meets the standards required in the Maine DEP's Erosion & Sediment Control BMP's Manual, revised in 2014.

1.0 EXISTING CONDITIONS

The proposed project site is located on Westbrook Street, adjacent to the Stroudwater River. A boundary plan has been prepared by Titcomb Associates of Falmouth, Maine dated June 16, 2017.

Abutting Uses:

- North R-1 Zone Residential
- West IL Zone Industrial – Low impact
- South OP Zone Office Park
- East R-1 Zone Residential

The majority of the site is pervious with dense overgrowth and some mature tree growth. The average grade, closer to Westbrook Street, is relatively flat. The surface drops off closer to the Stroudwater River, with signs of erosion throughout the change in elevation.

1.1 Existing Soils

Onsite soil information includes the following:

- Class B – High Intensity Soil Survey performed by Mark Hampton Associates.

Please refer to Section 11 for additional information.

The site is comprised of primarily Lamoine and Buxton soils which are classified as types C and D hydrologic soils, respectively. The areas where Lamoine has been identified, have been classified as somewhat poorly drained. The areas where Buxton has been identified, have been classified as moderately well drained.

Small parts of the site are comprised of Podunk soils which is characterized by moderately well drained soils. Permeability is moderately rapid to rapid.

Lastly, eight wetlands with Scantic soils exist on site which are poorly drained.



These existing soils were modeled in their respective hydrologic groups in both the pre and post conditions.

The area within and surrounding the project includes soils types listed in the table below. The susceptibility of soils to erosion is indicated on a relative “K” scale of values over a range of 0.02 to 0.69. Higher “K” values indicate more erodible soils.

Table 1 - “K” Value		
Soils Type	Subsurface	Substratum
Lamoine	0.37	0.37
Buxton	0.49	0.49
Podunk	0.37	0.37
Scantic	0.49	0.49

The soil “K” values for the soils, listed above, indicate a moderate susceptibility to erosion. The site’s susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County and the USDA Soil Survey.

1.2 Existing Erosion Problems

There are signs of erosion on the south side of the parcel, where Lamoine soils have been identified.

1.3 Critical Areas

Critical areas that would require special attention during construction include, but are not limited to, the Stroudwater river and any exposed slopes.

1.4 Protected Natural Resource

There are eight wetlands on site. The proposed development is expected to impact 15,000 to 20,000 square-feet of wetland. A Tier 2 NRPA permit is forthcoming.

Additionally, a project description and copy of the development plans was sent to Maine Natural Areas Program (MNAP) and Maine Inland Fisheries and Wildlife (IF&W). MNAP did not find any rare botanical features within the project area. IF&W did not map any Essential or Significant Wildlife Habitats that would be directly affected by the proposed development.

1.5 Previous Construction Activity (5 years)

Acorn Engineering, Inc. is not aware of any construction related activities within the project limits within the past 5 years.

1.6 Timber Harvesting



Acorn Engineering, Inc. is not aware of any timber harvesting within the past five years.

2.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

As part of the site development, the following temporary and permanent erosion and sedimentation control devices shall be implemented. Devices shall be installed as described in this report or within the plan set. See the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices for further reference.

2.1 Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures are planned for the project's construction period:

- 2.1.1 Crushed stone stabilized construction entrances shall be placed at all access points to the project site where there are disturbed areas. The following specifications shall be followed at a minimum:
- Stone size shall be 2-3 inches, or reclaimed or recycled concrete equivalent.
 - The thickness of the entrance stone layer shall be no less than 6 inches.
 - The entrance shall not be less than 20 feet wide, however not less than the full width of points where ingress or egress occurs. The length shall not be less than 50 feet in length.
 - Geotextile fabric (woven or non-woven) shall be placed over the entire entrance area.
 - The entrance/exit shall be maintained to the extent that it will prevent the tracking of sediment onto public road ways.
- 2.1.2 Siltation fence or erosion control berm shall be installed down gradient of any disturbed areas to trap runoff borne sediments until permanent stabilization is achieved. The silt fence or erosion control berm shall be installed per the details provided in the plan set and inspected before and immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence line or berm. 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.
- 2.1.3 Hay mulch including hydro seeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and November 1st on slopes of less than 15 percent shall be covered by fabric netting and anchored with staples in accordance with the manufacturer's recommendation. Mulch placed between November 1st and April 15th on slopes equal to or steeper than 8 percent and equal to or flatter than 2:1 shall use mats or fabric netting and anchored with staples in accordance with the manufacturer's recommendation.



- 2.1.4 Sedimentation basin with a permanent outlet into Westbrook Street. Basin shall be installed before the ground is frozen and should be cleared of stumps, roots, brush, boulders, etc. Scarify the native soil and confirm that the soil has sufficient moisture for the first layer of fill. Contractor to construct overflow outlet or spillway (center minimum 6 inches lower than outer edges) within the embankment that is protected with geotextile fabric and riprap. Basin shall have a minimum depth of 2 feet. Stabilization of the embankments is critical and should be carried out through erosion control mix, riprap, or sand bags. The basin has been sized using the MDEP Erosion and Sediment Control BMP Manual's procedures. A 10-year storm in the pre-development condition was modeled. As a result, the required volume for the basin is approximately 450 cubic feet. Refer to the MDEP's Erosion and Sediment Control BMP Field Guide for a complete list of construction specifications.
- 2.1.5 At any time of the year, all slopes greater than 3:1 shall be stabilized with Double Net Erosion Control Blanket Bionet SC150BN by North American Green or Approved Equal, or Erosion Control Mix Slope Protection as detailed within the plans.
- 2.1.6 Westbrook Street shall be swept to control mud and dust from the construction site as necessary. Add additional stone to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.
- 2.1.7 During demolition, clearing and grubbing operations, stone check dams shall be installed at any areas of concentrated flow. The maximum height of the check dam shall not exceed 2 feet. The center of the check dam shall be 6 inches below the outer edges of the dam. The contractor shall mulch the side slopes and install stone check dams for all newly excavated ditch lines within 24 hours of their creation.
- 2.1.8 Silt fence stake spacing shall not exceed 6 feet unless the fence is supported with 14-gauge wire in which case the maximum spacing shall not exceed 10 feet. The silt fence shall be "toed" into the ground.
- 2.1.9 Stormdrain inlet protection shall be provided to stormdrains using any of the following: hay bale drop inlet structures, silt fence drop inlet sediment filter, gravel and wire mesh drop inlet sediment filter, or curb inlet sediment filter. Barriers shall be inspected after every rainfall event and repaired as necessary. Sediments shall be removed when accumulation has reached $\frac{1}{2}$ the design height.
- 2.1.10 Dust control shall be accomplished using any of the following: water, calcium chloride, stone, or an approved MDEP product. Dust control shall be applied as needed to accomplish dust control.



- 2.1.11 Temporary loam, seed, and mulching shall be used in areas where no other erosion control measure is used. Application rates for seeding are provided at the end of this report.
- 2.1.12 Stockpiles shall be stabilized within 7 days of formation unless a scheduled rain event occurs prior to the 7-day window, in which case the stockpile shall be stabilized prior to the rain event. Methods of stabilization shall be mulch, erosion control mix, or erosion control blankets/mats. Silt fence or a wood waste compost filter berm shall be placed downhill of any soil stockpile location.
- 2.1.13 For disturbance between November 1 and April 15, please refer to winter stabilization plan in this report and the Maine Erosion and Sediment Control BMP manual for further information.
- 2.1.14 It is of the utmost importance that stormwater runoff and potential sediment from the construction site be diverted around the proposed underdrains until the trench is backfilled.

2.2 Permanent Erosion Control Measures

The following permanent erosion control measures are intended for post disturbance areas of the project.

- 2.2.1 All disturbed areas during construction, not subject to other proposed conditions, shall receive a minimum 4" of loam, limed, and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in paragraph 4.1 of this report.
- 2.2.2 All stormwater devices shall be installed and tributary areas stabilized prior receiving stormwater.
- 2.2.3 Refer to the Maine Erosion and Sediment Control BMP manual for additional information.

3.0 EROSION AND SEDIMENTATION CONTROL PLAN

- 3.1 The Erosion and Sedimentation Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

- 4.1 Erosion Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

Winter Construction consists of earthwork disturbance between the dates of November 1 and April 15. If a construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15, then the site shall be protected with over-



winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on a road shall be considered open.

The contractor shall limit the work area to areas that work will occur in during the subsequent 15 days and so that it can be mulched one day prior to a snow event. The contractor shall stabilize work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching

All areas shall be considered to be denuded until 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. Erosion control mix must be applied with a minimum 4-inch thickness. 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 or adequately anchored so that ground surface is not visible through the mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall 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 the final treatment can be applied. If the date is after November 1st and if the exposed area has



not been loamed, final grading 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 placed prior to the placement of mulch or erosion control blankets. 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.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.
- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes 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 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade greater than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following action shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75%



of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.

- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod by October 1st. Proper installation includes the contractor 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 contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.
- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 2H:1V or having groundwater seeps on the slope face.
- Stabilize the soil with stone riprap – Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every two weeks, as well as after a “storm event”. A “storm event” shall consist 0.5 inches of rain within a 24-hour period. The following Erosion and Sediment Control - Best Management Practices (BMP's) shall be inspected in the manner as described.

6.1 Sediment Barriers

Hay bale barriers, silt fences and filter berms shall be inspected and repaired for the following if there are any signs of erosion or sedimentation below them. If there are signs of undercutting at the center or the edges of the barrier, or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits should be removed when deposits reach approximately one-half the height of the barrier. Filter berms should 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.

6.2 Sedimentation Basin

The sedimentation basin and outlet culvert shall be inspected and maintained during



construction. If embankments show signs of erosion or settlement, it will be necessary to repair or replace the erosion control device. Culvert should be checked for debris and other clogs. Inspect riprap outlet for signs of erosion and increase the length of the outlet apron if signs of erosion are present. In the spring, basin should be monitored for high flows of runoff.

6.3 Stabilized Stone Construction Entrances

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 and redistributed on site in a stable manner. The entrance should then be reconstructed. The contractor shall sweep or wash pavement at exits, which have experienced mud-tracking on to the pavement or traveled way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways.

6.3 Mulched Areas

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets must be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repair as needed.

6.4 Dust Control

When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.

6.5 Stormwater Appurtenances

All underdrains, storm drains, and catch basins need to be operating effectively and free of debris.

6.6 Erosion and Sedimentation Control Inspections:

Acorn Engineering has personnel qualified to conduct Erosion and Sedimentation Control Inspections. For further information, contact:

Contact: Will Savage, PE
Telephone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419



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207-775-2655 • PO Box 3372 • Portland • Maine • 04104

- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Report/Plan, including control of fugitive dust. The Contractor shall be responsible for any monetary penalties resulting from failure to comply with these standards.



7.0 IMPLEMENTATION SCHEDULE

The following implementation sequence is intended to maximize the effectiveness of the above described erosion control measures. Contractors should avoid overexposing disturbed areas and limit the amount of stabilization area.

1. Install a stabilized construction entrance in all locations where construction traffic will enter and exit the site.
2. Install perimeter silt fence or erosion control berm.
3. Install sedimentation basins.
4. Commence installation of drainage infrastructure within Westbrook Street into the site.
5. Install all other erosion control devices as necessary throughout the remainder of this schedule.
6. Commence earthwork operations, associated with the roadway construction.
7. Commence installation of utilities.
8. Continue earthwork and grading to subgrade as necessary for construction.
9. Complete installation of drainage infrastructure, as well as other utility work.
10. Complete remaining earthwork operations.
11. Install sub-base and base gravels in paved areas.
12. Install paving, curbing and brickwork.
13. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
14. Once the site is stabilized, 90% catch of grass has been obtained, or mulching of landscape areas is complete remove all temporary erosion control measures.
15. Touch up areas without a vigorous catch of grass with loam and seed.
16. Complete site signage and striping.
17. Execute proper maintenance of all temporary and permanent erosion control measures throughout the project.

The above implementation sequence should be generally followed by the site contractor. However, the contractor may construct several items simultaneously. The contractor shall submit to the owner a schedule of the completion of the work. If the contractor is to commence the construction of more than one item above, they shall limit the amount of exposed areas to those areas in which work is expected to be undertaken during the following 30 days.

The contractor shall re-vegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event. The contractor shall incorporate planned inlets and drainage systems as early as possible into the construction phase.

8.0 CONCLUSION

The above erosion control narrative is intended to minimize the development impact by implementing temporary and permanent erosion control measures. The contractor shall also refer to the Maine Erosion and Sediment Control BMP manual for additional information.

9.0 ATTACHMENTS



- Temporary Seeding Plan
- Permanent Seeding Plan



TEMPORARY SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded out to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P₂O₅-K₂O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of temporary seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.	Recommended Seeding Dates
Winter Rye	2.57	Aug-15 to Oct-1
Oats	1.84	Apr-1 to Jul-1 Aug-15 to Sep-15
Annual Ryegrass	0.92	Apr-1 to Jul-1
Sudangrass	0.92	May-15 to Aug-15
Perennial	0.92	Aug-15 to Sep-15

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to temporary seeding and mulching.



PERMANENT SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded out to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P₂O₅-K₂O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of permanent seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.
Kentucky Bluegrass	0.46
Creeping Red Fescue	0.46
Perennial Ryegrass	0.11
Total	1.03

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Recommendations

Permanent seeding is recommended to be completed in the spring. Later summer seeding is allowed if completed prior to September 1st. If seeding cannot be accomplished during the periods recommended for permanent seeding, then the contractor shall perform temporary seeding per the temporary seeding plan.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to permanent seeding and mulching.



Section 15

Groundwater



15. Groundwater

A. Narrative and Report

Location

See this section for a copy of a Bedrock and Surficial Geology map with the project location depicted.

Quantity

There will be no groundwater use or underground wastewater disposal. Potable water will be provided by Portland Water District.

Sources

The project will only generate normal household quantities of wastewater, solid waste, fuel and solvents. As the project will be serviced by municipal sewer, none of these items will be discharged into the groundwater.

Measures to Prevent Degradation

The majority of the 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

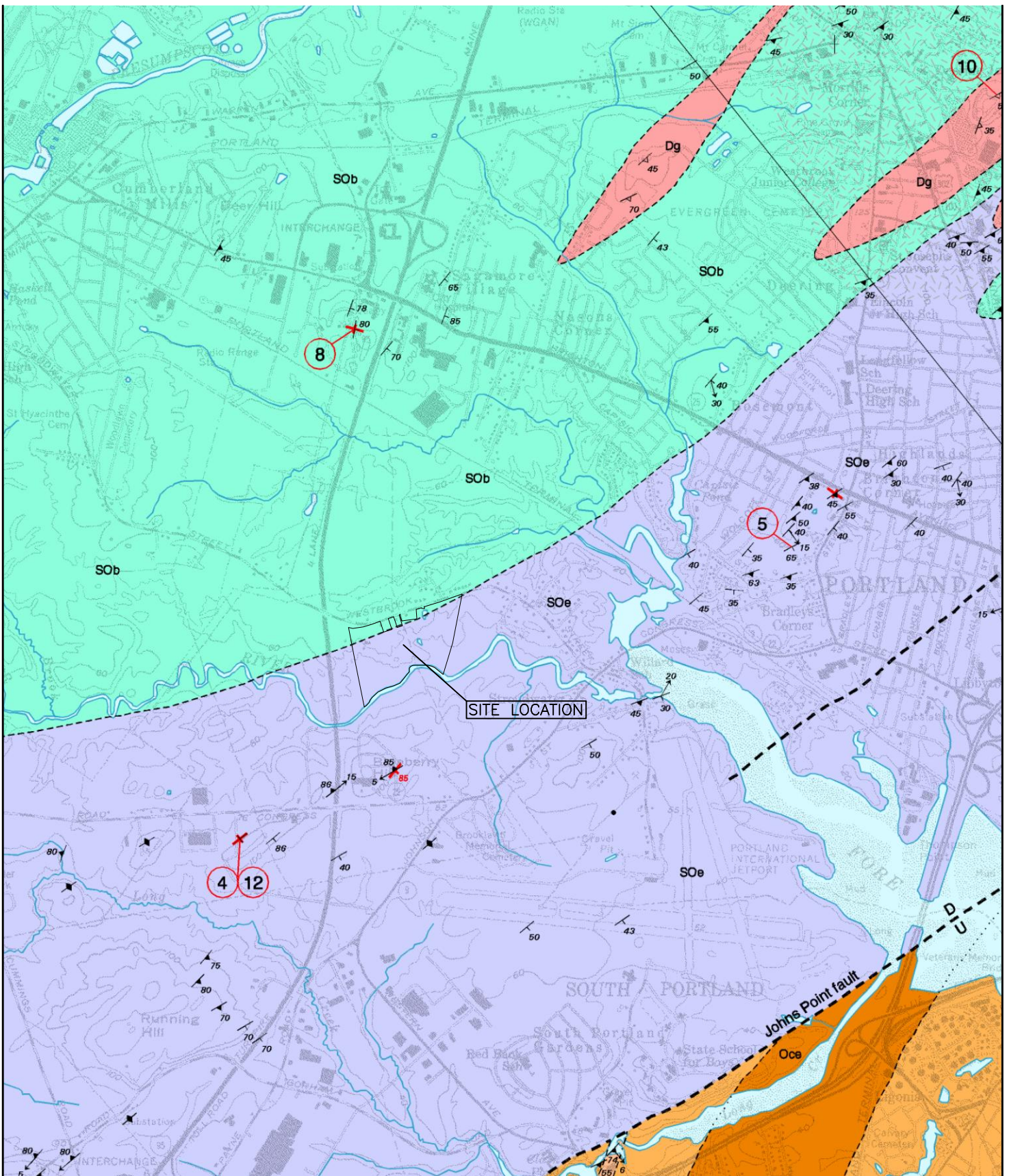
There are no development plans to store or use petroleum products, pesticides, herbicides, road salt, solvents, acids or other materials with the potential to contaminate groundwater.

C. Monitoring Plan

Not applicable

D. Monitoring Well Installation Report

Not applicable



THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

DRAWING NO.
C-01

FILE: CIVIL
DATE: 6/28/17
UN: 1079
SCALE: 1"=2,400'
DESIGN BY: ADG
DRAWN BY: ADG
CHECKED BY: WHS

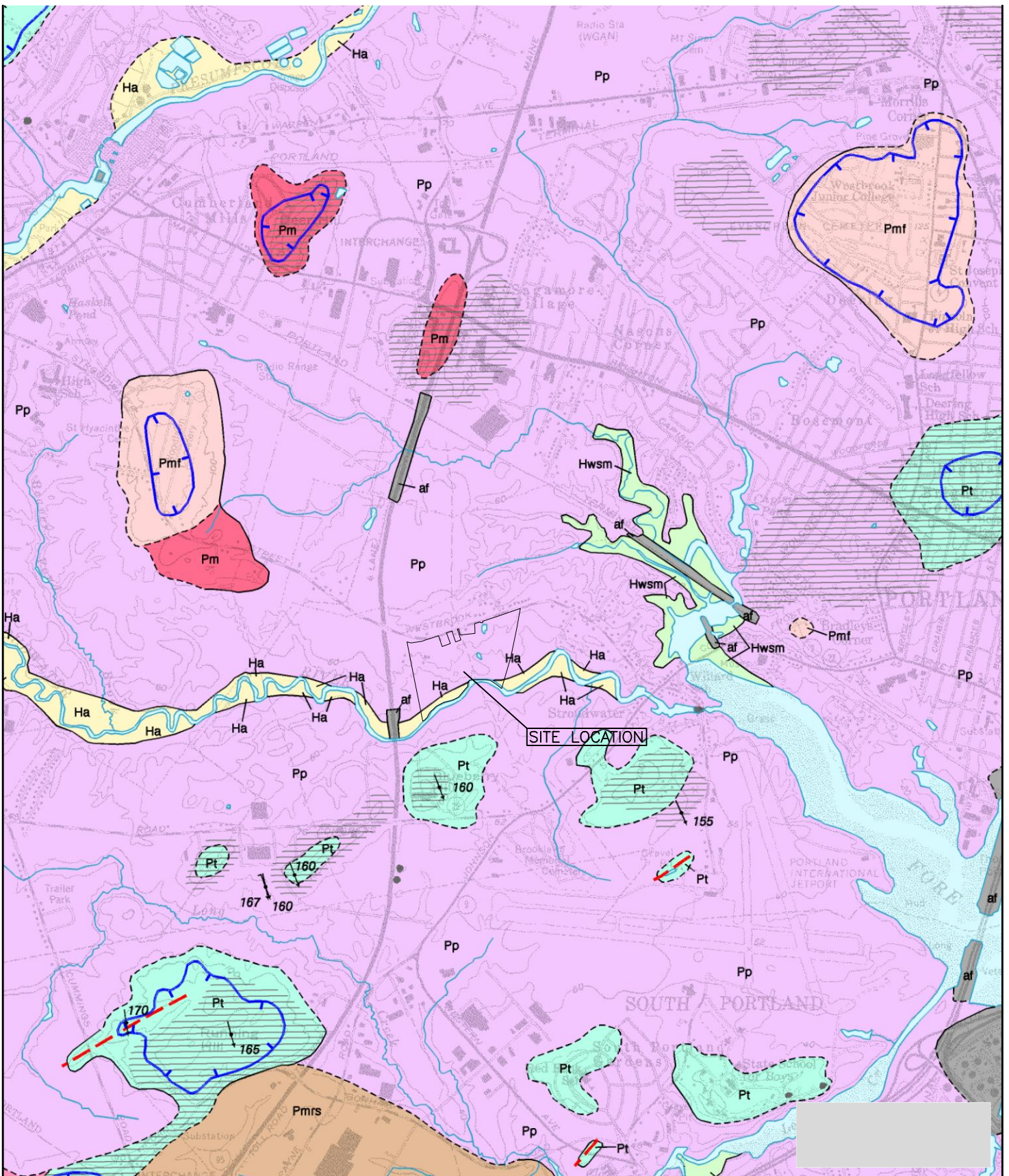


DRAWING NAME:
BEDROCK MAP

PROJECT NAME:
STROUDWATER PRESERVE

CLIENT:
STROUDWATER DEVELOPMENT PARTNERS, LLC

ISSUED FOR	BY DATE
SITE LAW	WHS 8/22/17
SLODA	WHS 8/22/17
	REV DATE



THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.	FILE: CIVIL	 ACORN ENGINEERING, INC. ACORN ENGINEERING, INC. P.O. BOX 3372 PORTLAND, MAINE 04104 (207) 775-2655	DRAWING NAME: SURFICIAL GEOLOGY MAP	ISSUED FOR	BY DATE
	DATE: 6/28/17		SITE LAW	WHS 8/22/17	
	JN: 1079		SLODA	WHS 8/22/17	
	SCALE: 1"=2,400'				
DRAWING NO. C-02	DESIGN BY: ADG DRAWN BY: ADG CHECKED BY: WHS		PROJECT NAME: STROUDWATER PRESERVE		REV DATE
			CLIENT: STROUDWATER DEVELOPMENT PARTNERS, LLC		

Section 16

Water Supply



16. Water Supply

A. Water Supply Method

The development will be serviced by the existing 8" municipal water within Westbrook St supplied by the Portland Water District. An ability to serve letter, from Portland Water District, is forthcoming.

B. Subsurface Wastewater Disposal

Not applicable. The development will be serviced by municipal sanitary sewer.

C. Total Usage

This project requires an estimated water supply of 38,250 gallons per day (gpd).

Section 17

Wastewater Disposal



17. Wastewater Disposal

A. On-Site Subsurface Wastewater Disposal System

The project will not be serviced by individual on-site sewage disposal systems. However, single-unit pumping stations will be included in the design.

B. Nitrate-Nitrogen Impact Assessment

Not applicable.

C. Municipal Facility or Utility Company Letter

An Ability to Serve Letter from the Department of Public Services is forthcoming. The Authorization letter will be issued after the City reviews the preliminary application. This process will occur upon the completion of the Site Law application.

D. Storage or Treatment Lagoons

Not applicable.

Section 18

Solid Waste



18. Solid Waste

A. Commercial Solid Waste Facility

The proposed residential development is expected to generate the following quantities of waste:

Construction Phase: Construction of the proposed development will require some clearing that will generate stumps and grubbing. Stumps and grubbing will be ground on site and the grindings will be incorporated into erosion control mix if possible. Any material not deemed to be inert by the Solid Waste Management Regulations will be source separated and disposed at a local construction material recycling facility.

Municipal Solid Waste: Municipal solid waste will be collected, via curb pick-up, by a private hauler. This company will be determined at a later time.

B. Off-Site Disposal of Construction/Demolition Debris

Any material not suitable for on-site disposal will be source separated and transferred by a licensed non-hazardous waste transporter to a local construction material recycling facility.

C. On-Site Disposal of Woodwaste/Land Clearing Debris

Stumps and grubblings will be chipped or ground on site. The grindings will be used for erosion control mulch whenever possible. Additionally, loam will be stored on site, per MaineDEP regulations.

D. Special or Hazardous Waste

Not applicable.

Section 19

Flooding



19. Flooding

A. Explanation of Flooding Impact

A comparison between the preliminary and post peak runoff flowrates can be found in Section 12.

B. Site Plan Showing 100-Year Flood Elevation

See Site Civil Drawings. Gino Giumarro – Verdanterra, LLC delineated and flagged the Normal High Water Line along the Stroudwater River on June 1st, 2017. The flags were located by the surveyor Titcomb Associates and Normal High Water Line was included within the Existing Conditions Plan.

C. Hydrology Analysis

Not applicable.

D. FEMA Flood Zone Map with Site Boundaries

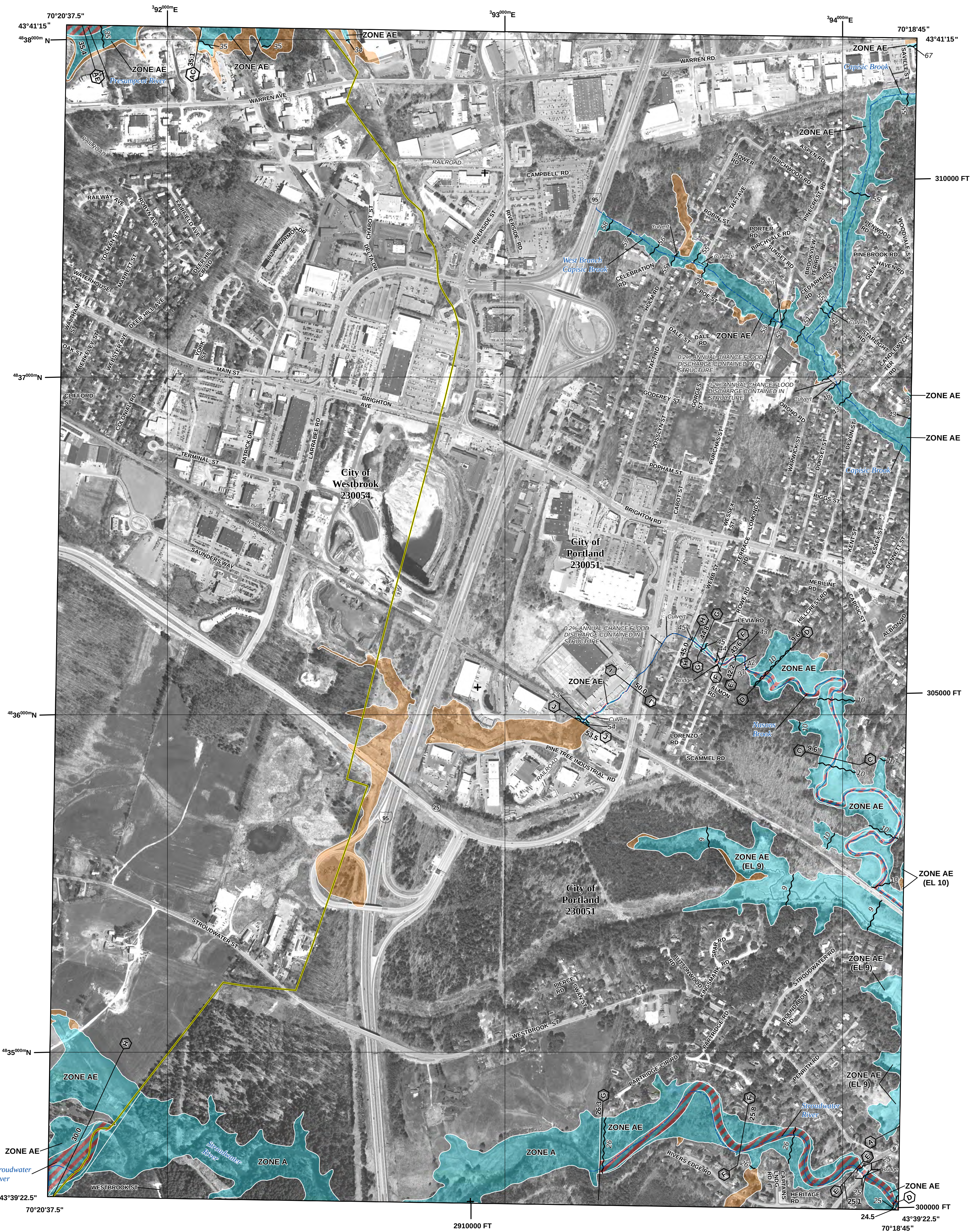
Attached is the FEMA flood map 23005C0687F dated April 14, 2017 which shows the site in Zone A. The map also shows the 100-year flood plain which runs along the Stroudwater River.

The development has been designed to be in accordance with the FEMA manual titled, Managing Floodplain Development in Approximate Zone A Areas a Guide for obtaining and developing base (100-Year) Flood Elevations.

In accordance with the Zone A Manual, the subdivision has been designed so all the lots are outside of the mapped A Zone (from 1998 map) to mitigate the need for a detailed study of the A Zone. The A Zone will reside in the within the open space, please refer to the attached Site Plan.

Additional Supporting information on why a detailed study is not required by FEMA. Utilizing the latest preliminary FIRM, which is scheduled to become effective summer 2018. The flood zone line clearly follows the 27 ft contour on the NAVD88 datum as shown in the Grading Plan. Using another FEMA approved method called the “simplified contour interpolation” utilizes the preliminary data to determine the Base Flood Elevation (BFE) (Refer pages III-7 and V-2 of Zone A Manual). As you can see in the attached Site Plan the house lots will remain outside the latest Flood Plain. The lowest basement level elevation will be at an approximate elevation of 38 ft or greater than 10’ above the BFE.

Given the subdivision is in compliance with the FEMA approved methods for developing base 100-year flood plain elevations and the floodplain will reside within the Open Space lot provides the required documentation that the project meets Section 14 -450.7(c)(1) of Chapter 14.



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://msc.fema.gov)

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A,V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD		Regulatory Floodway
		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS		Area with Flood Risk due to Levee Zone D
		Area of Minimal Flood Hazard Zone X
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

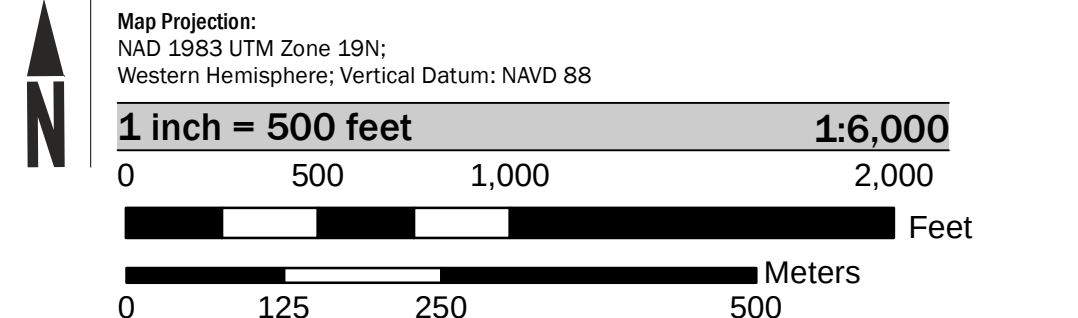
For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

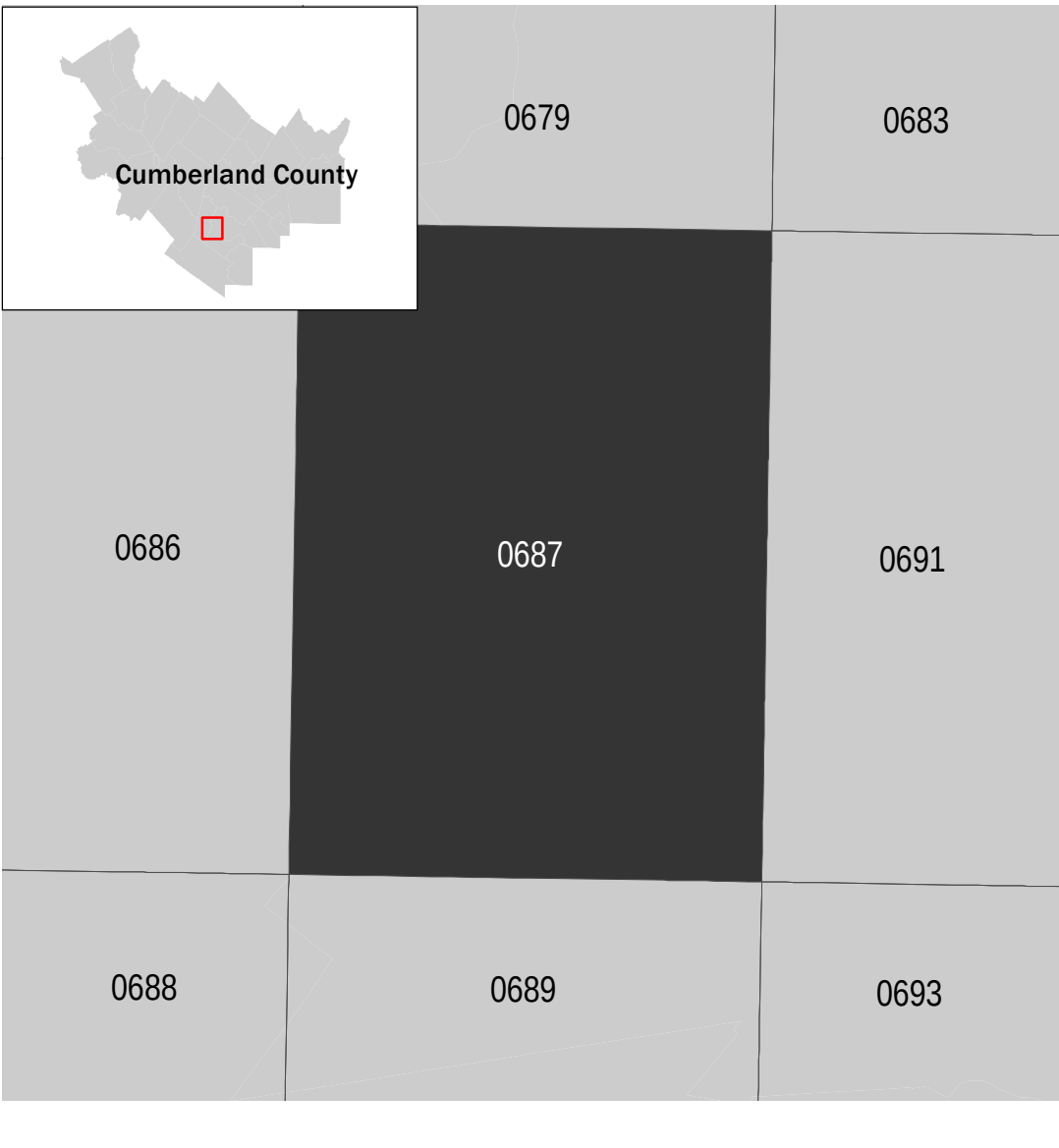
Basemap information shown on this FIRM provided in digital format by State of Maine, Maine office of GIS (MeGIS). This information was derived from MeGIS, dated 2012.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and FDTs may reflect stream channel distances that differ from what is shown on the map.

SCALE



PANEL LOCATOR



National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

CUMBERLAND COUNTY, MAINE
All Jurisdictions

PANEL **0687** of **0837**

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTLAND, CITY OF	230051	0687	F
WESTBROOK, CITY OF	230054	0687	F

REVISED PRELIMINARY
4/14/2017

VERSION NUMBER
2.3.2.1
MAP NUMBER
23005C0687F
EFFECTIVE DATE

Section 20

Blasting



20. Blasting

The project does not anticipate the need for blasting during construction.

Section 21

Air Emissions



21. Air Emissions

The proposed development is not anticipated to generate any point source air emissions other than chimneys serving individual home heating units. The project will also not produce any non-point source air emissions besides vehicular traffic. The estimated peak hour vehicle trips are not expected to be a significant source of air emission. 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 (See Section 14).

Section 22

Odors



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 is short term and expected to be insignificant.

Section 23

Water Vapor



23. Water Vapor

The project is not anticipated to produce significant amounts of water vapor.

Section 24

Sunlight



24. Sunlight

The required building setbacks and restrictions on building height limits the potential to adversely impact sunlight access on abutting properties associated with this development proposal.

Section 25

Notices



25. Notices

A. Neighborhood Meeting

See Forms B and C attached. A neighborhood meeting will be held a minimum of 30 days after the preliminary application has been submitted.

B. List of Abutters

A list of abutters has been included in this Section.

Abutters List

Resident	Address	Map and Lot
Linda E. Paradis & Andrew D. Green	1714 Westbrook Street	246-A-4
Mary Davis & Stuart W. Tisdale Jr.	1666 Westbrook Street	248-A-4
Kevin A. Regan	1646 Westbrook Street	248-A-3
Jacqueline D. Day	1630 Westbrook Street	248-A-6
Bruce Harrington	1618 Westbrook Street	248-A-10
Stroudwater Christian Church	1498 Westbrook Street	256-A-1
Alina & Raymond Waterhouse	105 Patridge Circle	228-A-3
Maria Shabazz & Michael A. Scannell	125 Patridge Circle	228-A-4
William D. Dobrowioski	132 Patridge Circle	228-A-5

FORM B

**PUBLIC NOTICE:
NOTICE OF INTENT TO FILE**

Please take notice that

Stroudwater Development Partners, LLC, 62 Portland Road, Suite 25, Kennebunk ME

(Name, Address and Phone # of Applicant)

207-939-5432

is intending to file a Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. §§ 481 thru 490 on or about

August 22, 2017

(Anticipated Filing Date)

The application is for

The redevelopment of a 55.3 acre lot into a traditional single-family housing development.

(Description of the Project)

at the following location:

1700 Westbrook Street, Portland ME

(Project Location)

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 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 at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

For Federally licensed, permitted, or funded activities in the Coastal Zone, review of this application shall also constitute the State's consistency review in accordance with the Maine Coastal Program pursuant to Section 307 of the federal Coastal Zone Management Act, 16 U.S.C. § 1456. (Delete if not applicable.)

The application will be filed for public inspection at the Department of Environmental Protection's office in *(Portland, Augusta or Bangor)*(circle one) during normal working hours. A copy of the application may also be seen at the municipal offices in Portland, Maine.

(Town)

Written public comments may be sent to the regional office in Portland, Augusta, or Bangor where the application is filed for public inspection:

MDEP, Central Maine Regional Office, 17 State House Station, Augusta, Maine 04333

MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04103

MDEP, Eastern Maine Regional Office, 106 Hogan Road, Bangor, Maine 04401

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 _____.
Date

Approximately _____ members of the public attended the Public Informational Meeting.

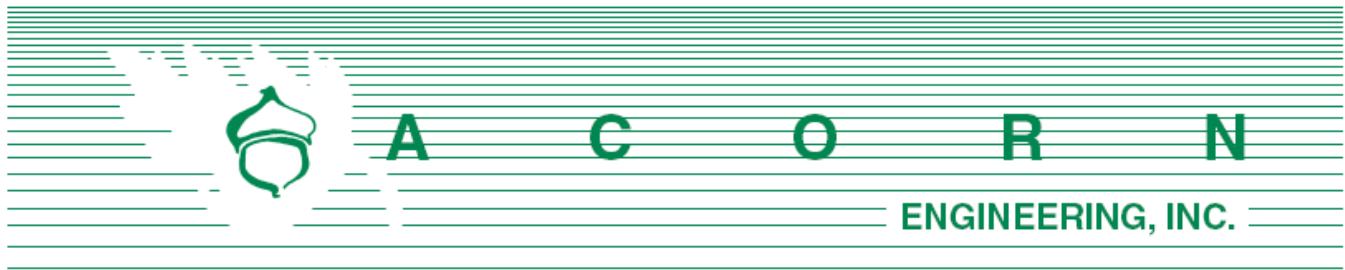
Signature of Applicant or Authorized Agent

Date

Section 26

Fire Department Letter





Assistant Chief Keith Gautreau
City of Portland Fire Department
380 Congress St.
Portland, ME 04101

August 17, 2017

Subject: Stroudwater Preserve – Fire Department Checklist

On behalf of Stroudwater Development Partners, LLC, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of applicant

Stroudwater Development Partners, LLC
62 Portland Road, Suite 25
Kennebunk, ME 04043
(207) 939-5432

2. Name, address, telephone number of architect

Ryan Senatore (PRUD Design)
565 Congress Street #304
(207) 747-5159

Proposed uses of any structures [NFPA and IBC classification]

NFPA: Lodging and Rooming

IBC: R-3

3. Square footage of all structures, including decks [total and per story]

The square footage of the PRUD structures is proposed to be 22,400 square-feet.
The square footage of all other structures is forthcoming.

4. Elevation of all structures

Height of structures. All structures will be within the 35-ft. allowable height, per the City of Portland Zoning Ordinance.

5. Proposed fire protection of all structures

Single Family homes will be sprinkled in compliance with NFPA 13D.

The Planned Unit Residential (PRUD) townhouse units will be sprinkled and in compliance with NFPA 13R.

6. Hydrant locations.

There are two existing hydrants located near the project parcel. The location of these hydrants can be seen on the Utility Plan. All proposed fire hydrants will be spaced every 500 ft in accordance with the City of Portland Technical Manual, Section 3.2, City of Portland Code Chapter 10, Article IV and Portland Water District Standards.

7. Water main size and location

An 8" water main is proposed within the development. The location of the water main can be found on the Utility Plan.

8. Access to all structures [min. 2 side]

Access to the site is provided from Westbrook Street. The locations of these entrances can be seen on the Site Plan. All structures will have access on 2 sides.

9. A code summary referencing NFPA 1 and all fire department technical standards may be submitted with the Final Application, if required by the fire department.

Sincerely,



William H. Savage, P.E.
Principal - Project Manager
Acorn Engineering, Inc.

27. Conformity with Applicable Zoning Standards

The following outline is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Article V Section 14-526 as well as the City of Portland Technical Manual, Chapter 14 Standards for Local Site Location of Development Review.

OVERVIEW

This project conforms with all applicable design standards of Section 14-526 as demonstrated in the following narrative

A. Transportation Standards

1. Impact on Surrounding Streets Systems:

The project is projected to generate 100 or more cars during peak hour which qualifies it for a full review. The Traffic Movement Permit is under separate cover.

2. Access and Circulation

a. Site Access and Circulation:

This Project conforms with all applicable design standards of Section 14-526 as demonstrated in the following narrative.

- (i) All site access and internal circulation will be designed in accordance with the standards set forth in Section 1 of the Technical Manual.
- (ii) The proposed entrances are along Westbrook Street. The exact location of these entrances can be seen on the Site Plan.
- (iii) The site does not feature drive up services as mentioned in this requirement.

b. Loading and Servicing:

- (i) The site has been designed with 14-foot travel lanes, with the exception of 10-foot travel lanes in the PRUD. These dimensions provide plenty of space and adequate turning radii for trucks and vehicles with trailers.

c. Sidewalks:

- (i) The location of the proposed sidewalk along Westbrook Street can be seen on the Site Plan. The sidewalk is in accordance with Sections 14-498 and 14-499 of the City Code.
- (ii) There are currently no sidewalks within or along the project parcel.

- (iii) The location of the proposed sidewalks can be seen on the Site Plan.

3. Public Transit Access:

- a. The proposed development is not allocated along an existing public transit route.
- b. A discussion with the Metro System is ongoing. The project parcel is on a major urban collector roadway.
- c. A discussion with the Metro System is ongoing.

4. Parking:

a. Location and Required Number of Vehicle Parking Spaces:

- (i) There are 40 proposed parking spaces associated with the PRUD. See Site Plan for additional information. The internal roadways will be built to the City standard width of 28 ft. and allow for on street parking on one side of the roadway. Parking for Portland Trails will be provided at the end of Old Westbrook Street.
- (ii) A parking study is not required.
- (iii) A parking analysis is not required.
- (iv) The parking dimensions are such that the plans are in conformance with the City of Portland Technical Manual.
- (v) All materials proposed materials can be found on the Details Sheet.

b. Location and Required Number of Bicycle Parking Spaces:

- (i) Not applicable.

c. Motorcycle and Scooter Parking:

- (i) Not applicable.

d. Snow Storage:

- (i) It is anticipated that snow will be stored along the roadway within the esplanade or 11-foot buffer between the curb face and property lines.
- (ii) Snow storage shall not be located where it interferes with the minimum parking requirements, pedestrian walkways, or stormwater management systems.

5. Transportation Demand Management (TDM):
 - a. A TDM plan is not required for this project.
 - b. A TDM plan is not required for this project
 - c. A TDM plan is not required for this project

B. Environmental Quality Standards

1. Preservation of Significant Natural Features:
 - a. The significant natural features that exist on site include 8 wetlands. The wetland impact is expected to be between 15,000 to 20,000 square-feet.
 - b. The Stroudwater River will be preserved by applying the standards set forth by Chapter 500.
 - c. An average 300-foot buffer will be preserved between the Stroudwater River and residential development.
2. Landscaping and Landscape Preservation:
 - a. Landscape Preservation.
 - (i) The disturbance of trees and vegetation will be limited.
 - (ii) A minimum of 30% of existing trees ten inches DBH or greater within the setback area will be preserved.
 - (iii) Measures will be taken to protect trees in accordance with Section 4 of the Technical Manual.
 - (iv) A waiver is not requested.
 - (v) A portion of the proposed parcel is within the shoreland zone. Measures will be taken to meet the requirements of Division 26, Shoreland Regulations.
 - b. Site Landscaping.
 - (i) Landscaped Buffers:
 - (a) The development will be screened from public sidewalks.
 - (b) The project has 5136 linear feet of frontage along Westbrook Street; per requirement, it is required that a minimum of six shrubs or shrub

alternatives per 45 feet of frontage are planted. The requirement is met through a combination of landscaping within the setbacks and within the site and is described in greater detail on sheet L-1.

Additionally, all proposed parcels will have a minimum street frontage of 50-ft per the City of Portland Zoning Ordinance.

(c) Not applicable.

(d) Per requirement, all evergreen vegetated buffers will be provided and/or preserved where necessary to buffer the development from detrimental impacts of existing surrounding developments.

(ii) Parking Lot Landscaping:

(a) The two trees or one tree and three shrubs per five parking space requirement is to be met within the site.

(b) Not applicable.

(c) Not applicable.

(d) Not applicable

(e) Not applicable

(iii) Street Trees:

(a) Street trees are to be provided every 30 to 45 feet along the street frontage. Street trees will be planted in accordance with Section 4 of the Technical Manual. For more information, refer to the Landscape Plan.

(b) Not applicable

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater

A site specific Stormwater Management Plan has been developed from the project to show compliance with Section 5 of the Technical Manual, including the basic, general, and flooding standards of MEDEP Chapter 500. Please refer to the Stormwater Management Plan for this information.

b. Refer to the Stormwater Management Report (Section 12) for this information.

c. The project is not located in a watershed of an urban impaired stream as listed by the MEDEP.

- d. Not applicable
- e. The development is not anticipated to pose a contamination risk to groundwater during or after construction. The project will be serviced by the public wastewater system.
- f. The development will provide for adequate and sanitary disposal of sewage in accordance with Section 2 of the Technical Manual.

C. Public Infrastructure and Community Safety Standards

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.
- b. Not applicable

2. Public Safety and Fire Prevention:

- a. The site has been designed to promote safe and inviting public access. See Site Plan for more details.
- b. Adequate emergency access will be provided. The turning radii of the driveway are large enough to allow for emergency vehicles to enter and exit.
- c. Two fire hydrants are located along Westbrook Street. See Utility Plan for proposed hydrant locations.

3. Availability and Adequate Capacity of Public Utilities:

- a. An Ability to Serve letter, from the Portland Water District, is forthcoming.
- b. The electrical service will be wired underground.
- c. The new sewer and stormwater infrastructure will meet the provisions of the Technical Manual.
- d. The project will be served by connection to the public sewer system.
- e. The sanitary sewer collection system meets all applicable sections of the Technical Manual. The stormwater management system is designed to meet the standards of Chapter 500.
- f. Solid waste will be picked up via curb pick-up.

D. Site Design Standards

1. Massing, Ventilation and Wind Impact:

- a. The bulk, location and height of the proposed structures will not result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate.
- b. The bulk, location and height of the proposed structures shall minimize, to the extent feasible, any substantial diminution in the value or utility to neighboring structures under different ownership and not subject to a legal servitude in favor of the site being developed.
- c. All HVAC venting mechanisms will be directed away from public spaces and residential properties directly adjacent to the site.

2. Shadows:

- a. Not applicable

3. Snow and Ice Loading

- a. The structures will not distribute snow and ice onto adjacent properties.

4. View Corridors:

- a. The project site is located outside the Downtown Vision View Corridor Protection Plan.

5. Historic Resources:

- a. A response letter from the Maine Historic Preservation Commission is forthcoming.

6. Exterior Lighting:

- a. Site Lighting.
 - (i) Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual. Refer to C-10 Site Plan and the project's photometric plan for additional information on lighting type and location.
 - (ii) Any lighting that may adversely impact the abutting residential properties will feature house-side shielding.

- b. Architectural and Specialty Lighting
 - (i) No architectural or specialty lighting is proposed.
 - (ii) No up-lighting is proposed.
 - c. Street Lighting.
 - (i) Street lighting will be designed to meet the requirements of Section 10 of the Technical Manual.
7. Noise and Vibration:
- a. All HVAC systems will be designed to meet the requirements in of Section 14-526 of the Technical Manual.
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) Not applicable.
 - (ii) Not applicable.
 - (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.
9. Zoning Related Design Standards:
- a. The project will be designed to meet the design standards within the R-3 Residential Zone.

SPACE AND BULK STANDARDS

A summary of the required and proposed dimensional standards for the R-3 Residential Zone as described in Section 14-90 of the Land Use Ordinance:

	<i>R-3 Zone</i>	<i>Proposed</i>
Single Family House Lots		
Minimum Lot Size	6,500 SF	Min 6,500 SF
Minimum Street Frontage	50'	Min 50'
Front Yard	25'	25'
Rear Yard – Principal	25'	25'
Rear Yard – Accessory	5'	5'
Side Yard – 2 ½ Stories	16'	16' ¹
Side Yard – 2 Stories	14'	14'
Side Yard – 1 & 1 ½ Stories	8'	8'
Maximum Lot Coverage	35%	Max 35%
Minimum Lot Width ²	65'	Min 65'
Maximum Building Height	35'	< 35'
Maximum Accessory Height	18'	< 18'
Planned Residential Unit Development (PRUD)		
Minimum Lot Area Per Dwelling Unit	6,500 SF	Min 6,500 SF
Maximum Number of Units Per Building (> 5 ac.)	6	6
Maximum Number of Units Per Building (< 2 ac.)	2	N/A
Maximum Length of Building without Garages	100'	100'
Maximum Length of Building with Integral Garages	140'	140'
Minimum Building Setback from External Property Lines (> 4 Units Per Building)	35'	36.59'
Minimum Distance Between Buildings	16'	16'
Minimum Recreational Open Space Per Dwelling Unit	300 SF	Min 300 SF
Minimum Contiguous Area of Recreational Use ³	6,000 SF	Min 6,000 SF
Minimum Recreational Use Setback from Buildings	25'	25'
¹ Side Yard as depicted on C-10, Site Plan. ² Distance parallel to the front of the building measured between side lot lines through that part of the principal building where the lot is narrowest. ³ Area must be at least 50-feet wide and shall include one or more of the uses set forth in section 14-526		

PRUD Lot Unit Calculations:

A summary of the unit area calculations for the PRUD lot per the definitions for gross and net land area provided in Section 14-47 of the Land Use Ordinance is included below. Note that because a portion of the PRUD lot is included within the 1700 Westbrook Street lot (in which PRUD lots are not allowed), this area was not included in the gross and net land areas.

	SF	AC
PRUD Lot Size	310,193	7.12
Lot Area within 1700 Westbrook Street	276,133	6.34
Areas of Special Flood Hazard	0	0
<i>Gross Land Area</i>	276,133	6.34
Existing Watercourses	0	0
Wetlands	20,073	0.46
Slopes of 25% or greater	0	0
<i>Net Land Area</i>	256,060	5.88

Total Allowable Dwelling Units (DU):

$$Total\ DU = \frac{(Net\ Land\ Area - Contiguous\ Open\ Space)}{(Lot\ Area\ per\ Unit + Open\ Space\ Area\ per\ Unit)} = \frac{(256,060 - 6,000)}{(6,500 + 300)} sf = 36\ units$$

Therefore, a total of thirty-six (36) units are allowable under the zoning ordinance. At this time, the project proposes twenty-five (25) PRUD units that are to be accessed from the 1700 Westbrook Street parcel but will not be within the lot lines.

Section 28

Utilities



28. Utilities

The Existing Conditions Survey developed by Titcomb Associates dated June 16, 2017 identified the following existing utilities within Westbrook Street and services within the property:

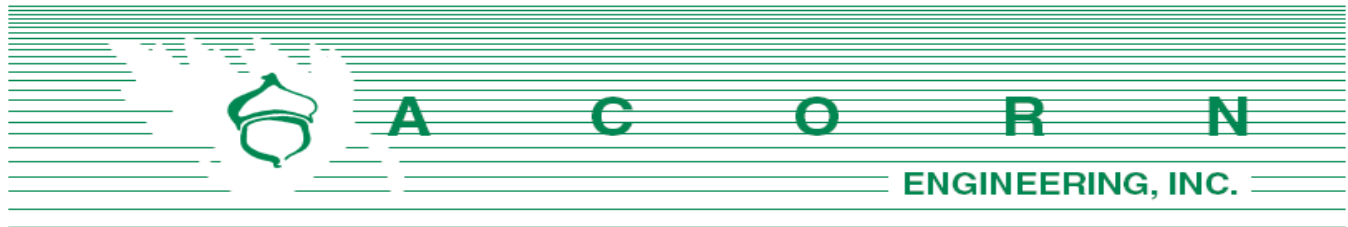
- Existing gas main located along Westbrook Street with no service to the existing household
- A series of existing overhead electrical, telephone, and cable services within the Westbrook Street right-of-way and an underground service to the existing household
- A cast iron watermain extending along Westbrook Street before terminating at the bridge over the Maine Turnpike; there is also a service to the existing household
- A 12" sewer main within Westbrook Street with no service to the site identified

The plan also identifies an existing utility easement granted to Portland Pipeline and two utility easements to Portland Water District that bisect the property. The existing utility easements are to remain and coordination will continue with both Portland Pipeline and Portland Water District to avoid conflict with the existing underground utilities.

The Department of Public Works has identified that there is an existing septic field within the site. The system is to be located and removed during construction as noted within the Construction Management Plan.

The house lots and PRUD lot are proposed to be serviced by a new water main, gas main, and underground electrical/telephone/cable primary within the road right-of-way. Each unit will be serviced by a low pressure sewer forcemain as well.

Ability to serve requests were sent out to Central Maine Power, Fairpoint Communications, Spectrum Cable, and Unitil on June 8, 2017. The letters are as attached. Final responses, including future coordination with the Portland Water District, and Portland Pipeline will be submitted once received. A coordination meeting was also held on August 17, 2017 between the project team and the Department of Public Works to review the design of the proposed sewer infrastructure within the site.



Central Maine Power Company
Attn: Paul Duperre
162 Canco Road
Portland, Maine 04103

June 8th, 2017

Subject: Camelot Farms Development – 1700 Westbrook Street
Re: Existing and Potential Utility Services

Dear Paul,

On behalf of Camelot Holdings, LLC, we are inquiring on CMP's existing services and service potential for the proposed subdivision development project at 1700 – 1714 Westbrook Street (Map, Book, Lot: 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3, 246-A-6, 247-A-2, 245-B-5) currently zoned as R-1 Residential in Portland, Maine; the property is under City Council review for a zone change from R-1 Residential to a hybrid R-3 Residential and ROS, Recreation and Open Space zone. Based on preliminary concept design, it is anticipated that the site will be subdivided into upwards of 105 single-family housing lots with additional potential for Planned Residential Unit Development (PRUD) which would add to the overall dwelling unit count.

A preliminary boundary survey completed by Titcomb Associates in November 2016 located a series of overhead electrical services within the Westbrook right of way and an underground electrical service to the existing single-family household.

Pending a successful zone change approval, we will be moving forward with the site utility layout design. In the interest of coordinating with CMP prior to starting the design process, we are requesting the following information on behalf of the client:

1. Any additional information, such as utility mapping within Westbrook Street and to the existing household.
2. Any easements for overhead services currently crossing the proposed development.
3. CMP's proposed infrastructure improvements within the project vicinity.
4. CMP's anticipated ability to serve the project given the existing infrastructure in Westbrook Street.

I have attached the preliminary existing conditions plan by Titcomb Associates dated 11/23/16 and the latest site concept plan assuming a successful R-3/ROS zone change; please note that these plans are preliminary and conceptual and do not necessarily represent the final subdivision layout.

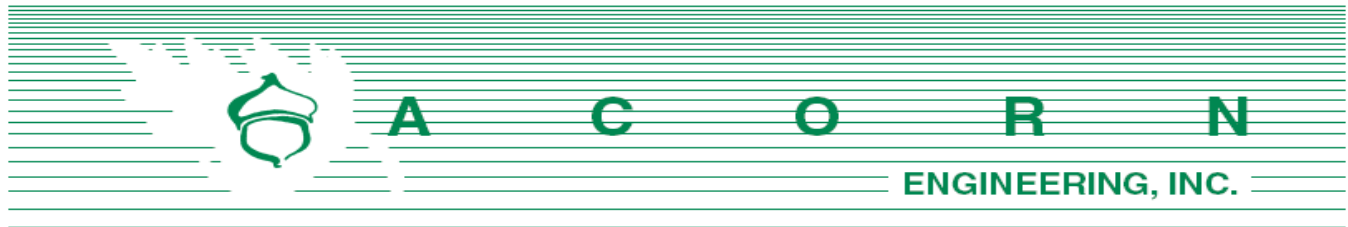
Please do not hesitate to contact me or the office for questions or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Olivia Dawson". The signature is fluid and cursive, with the first name "Olivia" being more prominent than the last name "Dawson".

Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.





Fairpoint Communications
Attn: Brian Bouchard
5 Davis Farm Road
Portland, Maine 04103

June 8th, 2017

Subject: Camelot Farms Development – 1700 Westbrook Street
Re: Existing and Potential Utility Services

Dear Brian:

On behalf of Camelot Holdings, LLC, we are inquiring on Fairpoint's existing services and service potential for the proposed subdivision development project at 1700 – 1714 Westbrook Street (Map, Book, Lot: 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3, 246-A-6, 247-A-2, 245-B-5) currently zoned as R-1 Residential in Portland, Maine; the property is under City Council review for a zone change from R-1 Residential to a hybrid R-3 Residential and ROS, Recreation and Open Space zone. Based on preliminary concept design, it is anticipated that the site will be subdivided into upwards of 105 single-family housing lots with additional potential for Planned Residential Unit Development (PRUD) which would add to the overall dwelling unit count.

A preliminary boundary survey completed by Titcomb Associates in November 2016 located a series of overhead electrical services within the Westbrook right of way and an underground cable service to the existing single-family household.

Pending a successful zone change approval, we will be moving forward with the site utility layout design. In the interest of coordinating with Fairpoint prior to starting the design process, we are requesting the following information on behalf of the client:

1. Any additional information, such as utility mapping within Westbrook Street and to the existing household.
2. Any easements for overhead services currently crossing the proposed development.
3. Fairpoint's proposed infrastructure improvements within the project vicinity.
4. Fairpoint's anticipated ability to serve the project given the existing infrastructure in Westbrook Street.

I have attached the preliminary existing conditions survey by Titcomb Associates dated 11/23/16 and the latest site concept plan assuming a successful R-3/ROS zone change; please note that the site plan is preliminary and conceptual and do not necessarily represent the final subdivision layout.

Please do not hesitate to contact me or the office for questions or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Olivia Dawson". The signature is fluid and cursive, with the first name "Olivia" being more prominent than the last name "Dawson".

Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.





5 Davis Farm Rd
Portland, ME 04103
207- 712-1063 Cell
207- 797-1098 Fax

June 12, 2017

To Whom It May Concern:

This letter is to inform that FairPoint Communications has the capacity and willingness to serve the proposed sub-division to be located at 1700 Westbrook St in Portland. FairPoint currently has aerial facilities along Westbrook St and has the ability to increase our facilities available at this location. Please do not hesitate to contact me with any questions.

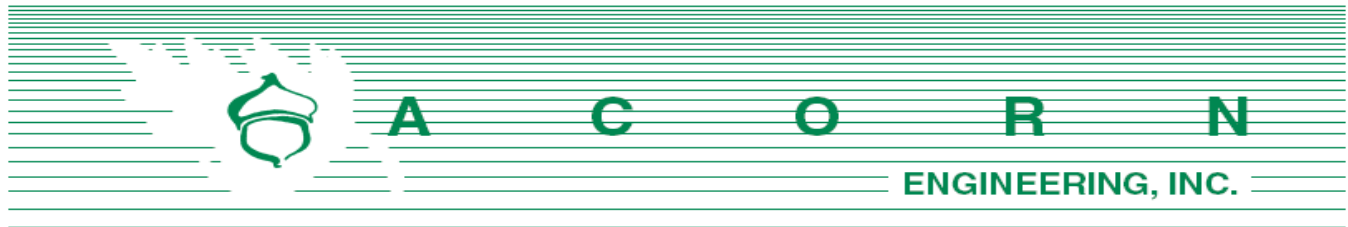
Sincerely,

Brian M. Bouchard

FairPoint Outside Plant Engineer

Email: bbouchard1@fairpoint.com

Phone: 207-712-1063



Spectrum Cable
Attn: Mark Pelletier
118 Johnson Road
Portland, Maine 04102

June 8th, 2017

Subject: Camelot Farms Development – 1700 Westbrook Street
Re: Existing and Potential Utility Services

Dear Mark:

On behalf of Camelot Holdings, LLC, we are inquiring on Spectrum's existing services and service potential for the proposed subdivision development project at 1700 – 1714 Westbrook Street (Map, Book, Lot: 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3, 246-A-6, 247-A-2, 245-B-5) currently zoned as R-1 Residential in Portland, Maine; the property is under City Council review for a zone change from R-1 Residential to a hybrid R-3 Residential and ROS, Recreation and Open Space zone. Based on preliminary concept design, it is anticipated that the site will be subdivided into upwards of 105 single-family housing lots with additional potential for Planned Residential Unit Development (PRUD) which would add to the overall dwelling unit count.

A preliminary boundary survey completed by Titcomb Associates in November 2016 located a series of overhead electrical services within the Westbrook right of way and an underground cable service to the existing single-family household.

Pending a successful zone change approval, we will be moving forward with the site utility layout design. In the interest of coordinating with Spectrum prior to starting the design process, we are requesting the following information on behalf of the client:

1. Any additional information, such as utility mapping within Westbrook Street and to the existing household.
2. Any easements for overhead services currently crossing the proposed development.
3. Spectrum's proposed infrastructure improvements within the project vicinity.
4. Spectrum's anticipated ability to serve the project given the existing infrastructure in Westbrook Street.

I have attached the preliminary existing conditions plan by Titcomb Associates dated 11/23/16 and the latest site concept plan assuming a successful R-3/ROS zone change; please note that the site plan is preliminary and conceptual and do not necessarily represent the final subdivision layout.

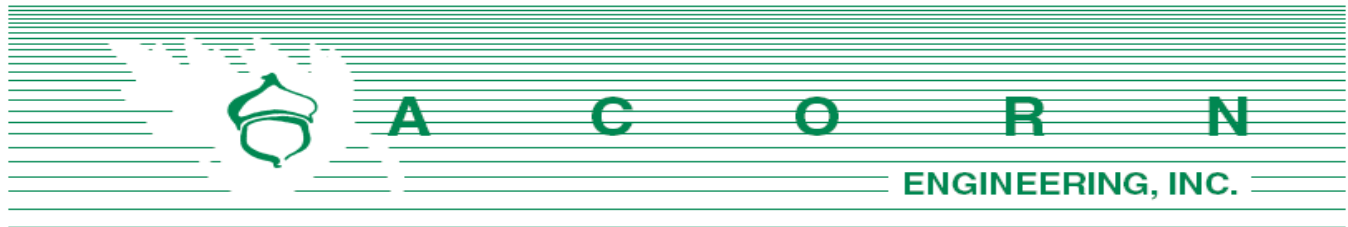
Please do not hesitate to contact me or the office for questions or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Olivia Dawson". The signature is fluid and cursive, with the first name "Olivia" being more prominent than the last name "Dawson".

Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.





Unitil Service Corp.
Attn: Bridget Mathers
376 Riverside Industrial Parkway
Portland, Maine 04103

June 8th, 2017

Subject: Camelot Farms Development – 1700 Westbrook Street
Re: Existing and Potential Utility Services

Dear Bridget,

On behalf of Camelot Holdings, LLC, we are inquiring on Unitil's existing services and service potential for the proposed subdivision development project at 1700 – 1714 Westbrook Street (Map, Book, Lot: 229-A-2, 246-A-3, 247-A-3, 248-A-9, 256-A-3, 246-A-6, 247-A-2, 245-B-5) currently zoned as R-1 Residential in Portland, Maine; the property is under City Council review for a zone change from R-1 Residential to a hybrid R-3 Residential and ROS, Recreation and Open Space zone. Based on preliminary concept design, it is anticipated that the site will be subdivided into upwards of 105 single-family housing lots with additional potential for a Planned Residential Unit Development (PRUD) which would add to the overall dwelling unit count.

A preliminary boundary survey completed by Titcomb Associates in November 2016 located a gas main within the Westbrook right of way but no existing service to the single-family household. There is also a 50-foot easement owned by Portland Pipeline that bisects the property before crossing the Stroudwater River.

Pending a successful zone change approval, we will be moving forward with the site utility layout design. Although it is possible that natural gas will not be proposed in the final project design we are interested in exploring all service possibilities. Therefore, we are requesting the following information on behalf of the client:

1. Any additional information, such as utility mapping within Westbrook Street and to the existing household.
2. Any easements for underground services currently crossing the proposed development.
3. Unitil's proposed infrastructure improvements within the project vicinity.
4. Unitil's anticipated ability to serve the project given the existing infrastructure in Westbrook Street.

I have attached the preliminary existing conditions plan by Titcomb Associates dated 11/23/16 and the latest site concept plan assuming a successful R-3/ROS zone change; please note that the site plan is preliminary and conceptual and do not necessarily represent the final subdivision layout.

Please do not hesitate to contact me or the office for questions or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Olivia Dawson'.

Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.





June 9, 2017

Olivia Dawson
Design Engineer
Acorn Engineer, Inc.

Re: 1700 Westbrook Street, Portland Maine

Dear Olivia Dawson:

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.

All work necessary to provide service will be performed in accordance with the Maine Public Utilities Commission requirements.

If you have any further questions or require additional information, please contact me directly at (207) 541-2536 or at harmon@unitil.com.

Sincerely,
Bridget Harmon
Business Development Representative
Unitil Corporation
(o) 207-541-2536 (f) 207-541-2586

ME GAS CUSTOMER ENERGY SOLUTIONS
376 Riverside Industrial Parkway
Portland, ME 04103

T 207-541-2508 www.unitil.com

Section 29

Written Request for Waivers



29. Waivers

The following is a list of known project related waivers:

Sidewalks – Per City of Portland Land Use Code Section 14-498.8.a. – sidewalks are required on both sides of the street. A waiver is requested for this standard to minimize impervious surfaces. The proposed plan includes bituminous sidewalks on one side of the street throughout the subdivision with sidewalks on both sides of the street at the two main entrances. Esplanades are proposed to be constructed in lieu of the second sidewalk to better manage stormwater runoff. Pedestrians will have adequate transportation routes through the use of the singular sidewalk, crosswalks, and the Portland Trails connection.

In a meeting with planning staff members Jeff Levine, Tuck O'Brien, and Barbara Barhydt on October 20, 2016, this discussion was raised in which requesting a waiver was suggested. Therefore, dual sidewalks have been provided at the entrances and singular sidewalks have been provided throughout the development.

Section 30

Construction Management Narrative



30. Construction Management Plan

Project Address:

1700 Westbrook Street, Portland, Maine

Project Description:

The proposed project is the development of a conservation subdivision. 98 single-family house lots and a planned residential unit development (PRUD) with 25 dwelling units will be constructed with associated access roads and landscaping. Recreation trails will be incorporated into the project in conjunction with the Portland Trails. Additionally, an open space lot is to be created along the Stroudwater River to be conserved for public use. Stormwater management will be handled by a combination of tree box and detention pond BMP's as seen on the Grading & Drainage Plan, Sheet C-30. Utilities will be installed per the Utility Plan, Sheet C-20 including a sewer force main, underground electric and communication conduits, water supply lines, and natural gas. Portions of the existing wetlands are proposed to be filled in to facilitate the development per the associated NRPA permit. Owner/GC to review all reports and permits. Subcontractors to review all pertinent reports and permits prior to bidding or construction.

The project is proposed to be completed in three phases. The first phase will include the single-family development of the westerly section of the subdivision excluding the PRUD. The second phase will include the development of the PRUD. The third phase will include the development of the single-family development of the easterly section of the subdivision.

Project Team Summary:

Owner:	Stroudwater Development Partners, LLC
General Contractor (GC):	Stroudwater Development Partners, LLC
Subcontractors:	TBD
Civil/Site Engineer:	Acorn Engineering, Inc.

The Owner/GC and all subcontractors will work with the City of Portland and adjacent landowners to minimize any project impacts.

The Owner/GC will remain responsible for enforcement of and compliance with 1) all contract plans and specifications in their scope of work and 2) all site working conditions and safety requirements, day and night, for both persons and property, in each case for the duration of their work. These include all OSHA, NIOSH, U.S. EPA, local ordinance and any other applicable governmental regulations. Both the Owner/GC and any subcontractors will remain responsible for safeguarding the general public.

The Owner/GC shall review all permits and conditions associated with the project. Refer to the Civil/Site Plan Set, Sheet C-03 Construction Management & Erosion Control Plan for visual representation of the measures be taken during construction.

The following outline has been developed in accordance with the City of Portland Construction Management Plan General Template and shall be referenced by the Owner/GC during construction.

A. Construction Management Principles

The control of noise, vibrations, ground movement, truck traffic, and other construction related factors will be of utmost importance. Care shall be taken to minimize these effects in the best interest of neighbors and the general public. Owner/GC to ensure that work hours conform to the City of Portland's Ordinance.

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 Owner/GC 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

Guarantees and fees will be paid at the time of the respective application. Sections 14-530 and 13-532 will be complied with and all necessary permits will be obtained prior to work.

1. Street Opening and Street Occupancy Permits:

Required permits regarding street opening and occupancy will be obtained from the Department of Public Works. The requests shall conform to the approved Construction Management Plan.

2. Blasting:

Although not anticipated, if blasting occurs, it shall conform to Article VIII. In Chapter 14 of the City Code and Section 3.7 in the City's Technical Manual.

3. Building Code:

Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

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. Communication in order to comply with all agreements, ordinances, and special permits will be of the utmost importance. Contractor contact information shall be posted on a sign on the construction fence along the Westbrook Street frontage. Additional signage necessary for communication shall be provided, but will be temporary and removed upon completion of the project. The contact information for the project personnel (Owner/GC) is:

Mike Barton, LEED AP
Stroudwater Development Partners, LLC
(207) 939-5432

Subcontractor information will be posted along the Westbrook Street frontage once contracted.

E. Construction Schedule

The Owner/GC shall submit a construction timeline at or prior to the preconstruction meeting with Phil DiPierro, City of Portland's Development Review Coordinator/Site Inspector. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit and City Code Section 25-129. Noise, dust and debris. Between September 1 and May 31 the following year, construction activities generating noise exceeding 50 decibels between the hours of 7 pm and 7 am of the following day within 500 feet of any buildings. From June 1 to August 31 construction activity may continue until 8 pm. No construction activity shall begin before 8 am on a Saturday, Sunday, or legal holiday. Extended hours or night work may be requested for special circumstances and street utility work due to the high traffic volume on Westbrook Street during the day. These requests will be subject to approval by the Public Works Authority.

The 55.3-acre site will be able to accommodate storing of construction items as well as space for delivery vehicles. Deliveries will be scheduled between the hours of 7 am to 5 pm.

The estimated timeframe of the proposed project is outlined below:

<u>Projected Phase I Start Date:</u>	Fall 2017
<u>Projected Phase II Start Date:</u>	Spring 2019
<u>Projected Phase III Start Date:</u>	Summer 2020
<u>Projected Completion:</u>	Spring 2022

F. Security

1. The Construction Management & Erosion Control Plan, Sheet C-03, depicts all proposed fencing, other barriers, and access gates (with knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site. Construction entrances per detail shall be installed.
2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations*.
3. Fire Safety Program: Prior to construction, an overall construction and demolition fire safety program shall be developed. Essential items to be emphasized include the following:
 - o Good Housekeeping
 - o On-site security
 - o Installation of new fire protection systems as construction progresses
 - o Preservation of existing systems during demolition
 - o Organization and training of an on-site fire brigade
 - o Development of a pre-fire plan with the local fire department
 - o Rapid communication
 - o Consideration of special hazards resulting from previous occupancies
 - o Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations
4. 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.

5. Temporary security lighting shall be shown on the Construction Management and Erosion Control Plan and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity In Public Streets

Construction activity in the public right-of-way shall be compliant with Chapter 25 Article VII of the City Code. At no time will it be permissible for construction activity including delivery vehicles to 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 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. This will apply to the new connections within Westbrook Street.

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.

The MOT will address the work required for utility connections in Westbrook Street. Traffic will be channelized utilizing drums and cones. Proper signage will be installed prior to and through the work zone. Alternating traffic will be controlled with flaggers. Trenches will be patched with pavement daily.

The MOT plan shall provide for the safe passage of the public through or along the construction work zone. It may be permissible to close Westbrook Street during utility connections and/or detour a mode of traffic when absolutely necessary for safety. All requests shall be subject to City approval. MOT plans shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic.
- Traffic Control signs shall not be placed where they would create any obstructions to bicycles or pedestrians.
- Flaggers will be utilized when necessary.

All existing modes of travel in the 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 and laying out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control, 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 vehicle 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 in all capacities 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.

H. Site Management and Controls

1. Regular trash and debris shall be managed appropriately and its removal shall comply with all local, state, and federal regulations.
2. 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 shall be controlled and shall comply with Section 25-129 and the erosion and sedimentation control notes, plan, and details.
4. Noise shall be controlled and shall comply with Section 17-18 and Section 25-129.
5. Rodent control shall be provided, if applicable, by a professional exterminator and shall be consistent with Chapter 22 of the City Code.
6. Snow and Ice Removal shall be provided. Pursuant to Section 25-173, the Contractor shall ensure a safe means of travel within the work zone by the following steps:
 - a. Snow/ice removal shall commence automatically from 1" or greater of snow or ice.
 - b. Remove snow as needed within the work zone, including parking spaces. Driveways and site lines shall not be blocked by piles of snow.
 - c. Clear all walks and ramps within the work zone.
 - d. Sand or salt as needed.
 - e. Clear all basin or drainage to help snow melt.
 - f. The above steps shall be carried out Sunday–Saturday including holidays.

I. Erosion & Sedimentation Control

1. The Contractor shall install all erosion and sedimentation controls as depicted on the

approved Construction Management & Erosion Control Plan, C-03, and the approved erosion and sedimentation control report 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 storm events (0.5" or more in 24 hours). Additionally, temporary and permanent stormwater management systems shall be inspected and maintained to ensure working order. The Contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspections by the City, Maine Department of Environmental Protection (MDEP) or the U.S. Environmental Protection Agency (EPA) upon request.

2. The permanent detention ponds per Sheet C-30 will function as temporary sedimentation basins during construction. Refer to the details as well as the Maine DEP Erosion and Sedimentation Control Field Guide for Contractors for more information.
3. Special attention shall be paid to the protection of the Stroudwater River and the wetlands on site. Two sediment barriers are proposed along the development limit and/or the undeveloped wetlands per Sheet C-03: a silt fence as well as an erosion control mix berm, both per detail, shall be installed to prevent sediment transport. At all other down-gradient limits of development, erosion control mix berm shall be installed as depicted on C-03.
4. Flagging of the wetlands to be undisturbed shall take place prior to construction and shall not be removed until all construction is complete.
5. The Contractor shall maintain all tree and landscaping preservation measures as depicted on the landscaping and construction management plans – Sheets L-1 and C-03, respectively.
6. Stored materials shall be identified and avoid being located under/near trees.

J. 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, masonry mixing stations, the general location of the construction security fence 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: Holding areas, if necessary, will have ample area to stand-by until needed. The majority of materials delivered to the site will be scheduled such that they are able to be off-loaded immediately. 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 fence line and will make every attempt to avoid queuing on public streets. If, for any reason, on-site holding of the trucks is not feasible, an off-site location must be designated and shown on the submitted plan referenced above in J.1.

3. All deliveries for materials shall comply with the City's noise requirements.

K. Parking During Construction

1. Adequate parking for construction workers shall be provided on the site or arrangements for off-street parking at an off-site location shall be provided. The parking arrangements are included on C-03. On-site parking for the contractor and subcontractors will occur within the vicinity of the current phase. Parking on either Westbrook Street or Old Westbrook Street will not be allowed.
2. Truck Routes and Volumes: The following quantities are estimated as part of all three phases:
 - Common Fill – TBD upon final surface analysis. Earthwork subcontractor(s) pit to project site.
 - Gravel & Stone – Approx. 8,250 CY. Earthwork subcontractor(s) pit to project site.
 - Hot Mix Asphalt – Approx. 3,500 Tons. Paving subcontractor(s) pit to project site.
 - Excess Site Soils (located in earthen sound berm) – TBD upon final surface analysis. Earthwork subcontractor(s) pit to project site.

The above quantities were developed excluding any pavement or structure development on the single-family lots.

L. Special Measures as Necessary

A pre-construction survey of adjacent properties interior subgrade and above grade accessible walls, ceilings, floors, and visible exterior as viewed from the grade level shall be conducted at a minimum for the abutting properties. Contractor shall coordinate and obtain permission from the owners for this survey. Photographs shall be taken at a minimum to assess any potential damage that may occur as a result of construction activities.

Section 31

**Conformity with Applicable Shoreland Overlay
Standards**



31. Conformity with Applicable Shoreland Overlay Standards

The southernmost edge of the property resides along the Stroudwater River and is located within the Shoreland Overlay Zone; the Shoreland Overlay Zone applies to areas within 250 feet (horizontal distance) of the normal high-water line of any river. The normal high-water line was delineated by Gino Giumarro - Verdanterra, LLC on June 1, 2017 and then located by Titcomb Associates as noted in the Existing Conditions Plan dated June 16, 2017.

No residential development or roadways are proposed within 250 feet of the highwater mark including both the single-family and planned residential unit development (PRUD) units. Proposed structures will have a basement level elevation that is at least ten feet above 27 feet, the extent of the 100-year FEMA floodplain per the National Flood Insurance program, Preliminary Flood Insurance Rate Map (dated 4/14/2017), well above the required 1-foot minimum.

There are earthworking activities proposed between 75 – 250 feet of the river for construction of the site stormwater detention ponds. These activities are to comply with the City Zoning Ordinance standards.

General Site Plan Features: The Planning Board or planning authority will approve a site plan located within a shoreland zone if it finds that the following standards, in addition to the standards set forth in section 14-526, are met:

1. The proposal will maintain safe and healthful conditions;

The proposed project will maintain and improve upon the existing conditions for the following reasons:

- The elimination of untreated agricultural stormwater runoff into the Stroudwater River
- Preservation of an undeveloped buffer between 250 – 500 feet of the river highwater mark (average 300 feet)

2. The proposal will not result in water pollution, erosion, or sedimentation to surface waters;

The proposed project will not negatively impact the existing conditions for the following reasons:

- Conformance with the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management standards.
- All construction shall be in accordance the Maine DEP's Erosion & Sediment Control BMPs Manual, revised 2014 with the temporary and permanent erosion control measures outlined in the Erosion and Sedimentation Control Plan submitted by Acorn Engineering, Inc. for this project. Refer to Section 14, Basic Standards Submissions.

3. *The proposal will adequately provide for the disposal of all wastewater;*

The proposed project will provide new sewer infrastructure to collect and convey domestic sewage to the existing municipal system within Westbrook Street.

4. *The proposal will not have an adverse impact on spawning grounds, fish, aquatic life, bird or other wildlife habitat;*

The proposed project will not adversely affect the existing conditions for the following reasons:

- Conformance with the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management standards.
- All construction shall be in accordance with the temporary and permanent erosion control measures outlined in the Erosion and Sedimentation Control Plan submitted by Acorn Engineering, Inc. for this project. Refer to Section 14, Basic Standards Submissions.
- Refer to the Ecological Habitat Assessment Report within Section 7 for additional information regarding the existing site habitats

5. *The proposal will conserve shore cover and visual, as well as actual, points of access to inland and coastal waters;*

The proposed development will preserve an average 300-foot wide natural buffer along the Stroudwater River as accessed and protected via Public Access and Open Space Easements. Limited vegetation clearing activities for stormwater detention basins and low-impact neighborhood trail development will conform with the disturbance standards as noted in the Division 26, Shoreland Regulations (section 14-449).

6. *The proposal will protect archaeological and historic resources;*

- The proposed project will not affect a designated landmark. The proposed project is not within a historic district or historic landscape district.
- There are no known designated landmarks within 100 ft. The proposed project is not adjacent to or within 100 feet of a historic district or historic landscape district.
- Per the Prehistoric Phase I Archeological Survey completed for portions of the project area below the 40-foot contour or within 100 yards of the Stroudwater River, all artifacts were recovered within the designated open space area to the south of the limit of development; this area is to remain undisturbed. A copy of the survey has been included in Section 8.

Acorn Engineering, Inc. has also contacted the Maine Historic Preservation Commission to determine if there are any areas of historical, architectural, or archeological significance. A copy of the correspondence is located within Section 8.

7. *The proposal will not adversely affect existing commercial fishing or maritime activities;*

The proposed project will maintain the existing pre-development flow conditions; therefore, the proposed project does not anticipate a greater adverse impact.

8. *The proposal will avoid problems associated with flood plain development and use; and*

The project is not located within a special flood hazard area.

9. *The proposal is in conformance with the standards set forth in this section.*

It is our understanding that the proposed project meets and exceeds the standards set forth within Division 26. Shoreland Regulations.

Stroudwater Development Partners, LLC

62 Portland Rd, Suite 25
Kennebunk, ME 04043
(207) 939-5432
michael.corbett.barton@gmail.com

September 7, 2017

Dear Neighbor,

On behalf of Stroudwater Development Partners, LLC we are pleased to invite you to a neighborhood meeting to discuss our plans for the proposed project at 1700 Westbrook Street within the Residential, ROS, Zone in Portland. The project includes the development of a traditional single-family neighborhood with a townhouse development adjacent to the Maine Turnpike. Stroudwater Preserve includes ninety-eight single family house lots, one planned unit residential development (PRUD) lot that will include twenty-five townhomes, and twenty-four-acres of open space. The single-family house lots will range in size between 6,500 sf to 20,000 sf. The development will be accessed via two entrances from Westbrook Street.

The proposed project meets the development requirements as set by the City of Portland Land Use Ordinance.

Meeting Location:	Stroudwater Baptist Church, 1737 Congress St.
Meeting Date:	September 19 th , 2017
Meeting Time:	6:00 PM

The City code requires that property owners within 500 feet 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 regarding the neighborhood meeting, please don’t hesitate to call me at (207) 939-5432. We look forward to seeing you at the meeting.

Sincerely,



Michael Barton

Stroudwater Preserve (1700 Westbrook Street)

Level III Site Plan & Subdivision Application

Neighborhood Meeting Certification

I, (Applicant/Consultant) hereby certify that a neighborhood meeting was held on **September 19th, 2017** at the **Stroudwater Baptist Church** at **6:00pm**.

I also certify that on **September 7th, 2017**, 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.
2. Residents on the "interested parties" list.
3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,

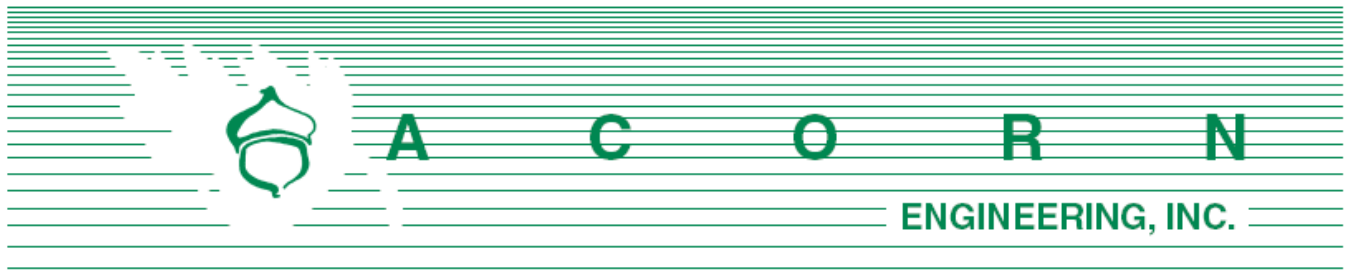


09/19/2017

(date)

Attached to this certification are:

1. Copy of the invitation sent
2. Neighborhood Meeting Sign-In Sheet
3. Neighborhood Meeting Minutes



**Stroudwater Preserve - 1700 Westbrook Street
Level III Site Plan and Subdivision Application**

Neighborhood Meeting Minutes

September 19th, 2017 6:00pm

Stroudwater Baptist Church

Design Team Attendees:

Mike Barton	Developer/Presenter
Will Savage	Civil Engineer/Presenter
Olivia Dawson	Civil Engineer/Note Taker

Approximate Start Time: 6:05pm

Presentation:

Mike Barton:

- Introduced the design team in attendance and reiterated how each of the members and companies are based in Portland
- Briefly reviewed the timeline of the project and the zone change that was passed on July 24th, 2017
 - o Since the zone change, the design team has been working through the more technical aspects of the development
- Stated that the proposed plan that is to be presented tonight reflects a year of working with the neighborhood and City to find a collaborative solution
 - o Emphasized that the goal of tonight was to receive feedback from the neighbors and address any concerns to the best of our ability
 - o Encouraged neighbors to attend the upcoming Planning Board Workshop scheduled for October 4th
- Introduced Will Savage, the project civil engineer to address the site changes

At this time, a couple of questions were stated from the crowd. These questions/answers are included within the Q/A portion of the meeting minutes.

Will Savage:

- First emphasized that holding a neighborhood meeting was required by the City as part of the site plan approval process and that all the meeting minutes recorded by Olivia will be submitted to the City per requirement. Emphasized that a sign-in sheet was circulating around the room and urged that everyone should sign-in for the record.
- Discussed the existing conditions and uses of the site
 - o Total of 55.3 acres which includes the acquisition of an approximately 10-acre lot adjacent to the site that is commonly known as the 'Turnpike Parcel'
 - o Most of site consists of cleared, open fields used historically as a single-family homestead with pastureland
 - o In recent years the pastureland has been used for cattle grazing up to the river's edge
- Reviewed natural resource and historical resource outreach to both state and federal entities completed to date
 - o Maine Natural Areas Program did not find any rare botanical features within the project area.
 - o Inland Fish & Wildlife did not map any Essential or Significant Wildlife Habitats that would be directly affected by the proposed project.
 - o US Fish & Wildlife Service did not map any species would be directly affected by the proposed project.
 - o An Ecological Habitat Assessment was conducted by Gino Giumarro (Verdanterra, LLC) on March 13, 2017; results of the report determined that there were no rare or unique botanical features, nor essential or significant wildlife habitat.
 - o A Phase I Prehistoric Archaeological Survey Report, by Sarah Haugh – Tetra Tech dated, August 2017 was completed for the project area. The results of the Phase I Prehistoric Archaeological Investigation, determined there are no prehistoric archeological sites recorded within the project area.
 - o Highlighted that the environmental/archaeological due diligence demonstrates how the entire 55.3 acres is prime land for development.
- Discussed the proposed changes to the site and how the project is anticipated to be phased
 - o Traditional single-family neighborhood with a townhouse development adjacent to the Maine Turnpike for a total of ninety-eight (98) single family house lots, a PRUD lot, planned residential unit development, with five (5) buildings and twenty-five (25) units within the Turnpike Parcel, and one open space lot
 - o Single-family house lots will remain sized between 6,500 sf, the minimum allowed in an R-3 Residential zone, and 20,000 sf
 - o The zone change from R-1 to a combined R-3 and ROS, recreational open space zone, allows for smaller lots and greater flexibility to avoid wetland impacts and keep the development closer to Westbrook St and away from the river
- Reviewed the proposed utility layout and emphasized that all utilities within the development would be underground: power, telecommunications, gas, etc.
 - o Ability to serve letters have been sent out to the respective utility companies
 - o Noted that there will no longer be a pump station per loop but individual pump stations per house lot
 - Maintained by the homeowner's association
 - Allows for incremental pump stations that can be phased with the development



- Reviewed the proposed site grading
 - o The proposed roadways are to start at the existing elevation on Westbrook St and then gradually slopes down to a low point, one per loop
 - o The lots closest to Westbrook St will reflect the existing shallow grades towards Westbrook St
 - o The first row of inner loop house lots is to be regraded to allow for a daylight basement on three lots and then gradually sloping to the site low point
 - o A similar daylight cut is anticipated for the rear house lots that back to the new open space
- Discussed the proposed stormwater system that meets and exceeds the required levels of treatment and flood control for the City and MaineDEP.
 - o Stormwater is proposed to be treated via proprietary stormwater planter boxes stationed throughout the site; similar to that of the Filterra system
 - o Planter boxes will outlet to a detention basin, one detention basin per loop
 - o The larger detention basin will double as a community skating rink in the winter; the proposed size at around 14,000 sf is comparable to a typical ice skating rink.
- Reviewed the new public open space that encompasses over 40% of the entire property to be used for passive recreational use and shared waterfront access
 - o Compared the size of the new open space to existing City parks (noting that Greater than 100% represents how much greater the projects open space area):

Baxter Woods	75%
Deering Oaks Park	42%
Eastern Prom	34%
Stroudwater River Trails (directly across the river)	287%
Western Prom	125%

- Emphasized that there is a ten-foot berm along the Turnpike property line with trees proposed across the top to mitigate traffic noise
 - o Noted that the position of the PRUD buildings further mitigates the sound travel into the site
- Stated that there are landscaped buffers proposed along the Westbrook St frontage as well within the inner loops; buffers are to be deed protected
- Reviewed the project development to date and upcoming meetings
 - o Preliminary site plan and subdivision application submitted to the City on 8/25/17
 - o A Traffic Movement Permit has been submitted the Maine DOT and will require additional coordination and meetings with the City.
 - o Planning Board Workshop is scheduled for 4:30pm on 10/4/17 but the time might be subject to change
- Reviewed the proposed landscape plan and renderings including the architectural PRUD layout and a section view of the site outlining the daylight basement house lots

Questions & Answers:

Please note that the following questions and answers were not recorded verbatim and aim to represent and summarize the actual questions, answers, and discussion that took place at the meeting.



Q: What is the proposed density of the landscaped buffers along Westbrook St? Will the landscaping screen the development? Can the developer increase the density of the buffer to screen the proposed back yards of the development?

A (Will): We can look into increasing the density of the plantings along Westbrook St so that the new homes are not visible from the street.

At this time Will suggested that the neighbors vote on if increased density was preferred: majority of attendees indicated that more plantings were preferred.

Q: Can you elaborate on the price of the house lots; will lots still start at \$350,000?

A (Mike): Yes, we are anticipating a market rate base price of \$350,000 with lots ranging between \$350,000 - \$450,000. Final prices will be dictated by the market.

Q: Has any thought gone or consideration gone into trailhead parking and where access to the public space is to be provided?

A (Will): The new internal development roadways are to be twenty-eight (28) feet wide per City standard which allows for parking on one side of the road. Access is provided anywhere in which the open space lot fronts the new roadway, which occurs in two locations, and along Westbrook St, another two locations for a total of four (4) public access points. There is also space at the end of Old Westbrook St for parking.

Q: Is there a crosswalk proposed across Westbrook St?

A (Will): We are proposing a new crosswalk across Westbrook St where the Fore River Sanctuary trail system dead ends; the crosswalk will connect the existing system with the new trails within the development. We are working with the project traffic engineer on if any other signaling components need to be implemented for this crossing from a safety perspective.

Q: It appears that the one entrance to the development has been moved; why was this new location being proposed?

A (Will): The intersection across from Swan St has remained as submitted during the zone change process but the second intersection, closer to the Turnpike, has been shifted to be further from the bridge and closer to the first intersection. Moving the intersection increases the sight distance from the Turnpike bridge while maintaining the required spacing between the new intersections.

Q: Where will school busses be picking up children within the development? It's possible that if busses stop within Westbrook St, it will contribute to the existing traffic congestion.

A (Mike): The exact location has not been finalized but we will consider traffic patterns during discussions with the City and school districts. It will be up to the school district whether or not the bus enters into the proposed public road network or picks up kids at Westbrook St.

Q: Can you elaborate on the buffer and screening provided along the Turnpike?



A (Will): We are proposing an 8 to 10-foot berm that will then be topped by additional trees. There is existing mature vegetation along the Turnpike and the berm would start where the vegetation ends and act to continue the natural barrier.

Q: Will the existing mature white pine trees along the property line abutting the Partridge St houses be cut down?

A (Will): The existing trees along the property line fence to the east of the property are proposed to remain.

Q: Can you elaborate further on the Westbrook St buffer: is the buffer only along those three lots?

A (Will): Yes, we are proposing a deed protected buffer between the back yards of three lots within the development and Westbrook Street (*referring to the Westbrook St buffer closest to the Old Westbrook St entrance*).

Q: Have you looked into using the existing single-family driveway as an entrance to the development?

A (Will): Proposing the intersection further down Westbrook St increases the sight distance between the entrance and Westbrook St traffic.

Q: Who will be responsible for the new stormwater infrastructure outside the proposed streets right of way?

A (Will): The new stormwater features outside the proposed streets right of way, including the detention basins, will be maintained under the homeowner's association.

Q: Who owns or who will own the new public green space?

A (Mike): The ownership and maintenance of this area is still on ongoing conversation between Portland Trails and the City of Portland Parks and Recreation Department.

Q: Are you proposing any sidewalks along Westbrook St?

A (Will): Yes, there is a proposed five-foot sidewalk proposed along the site frontage from Old Westbrook St to the proposed intersection with Swan St that will be built to City standard. There is an existing sidewalk on the opposite side of the street.

Q: Will the crosswalks have flashing lights or other safety features?

A (Will): The final location and structure of the new crosswalks will be determined during the traffic review of the project. Additional protection measures, such as lighting or signage, will be provided if required as a safety measure.



Q: Where is the existing single-family house within the abutting property?

A (Will): The house is visible in the aerial image along the west property line.

Q: Is there any way that a fence can be provided along the westernmost property line to screen the proposed development from the existing property? If not, the homeowner requested one.

A (Mike): We can definitely look into a solution and continue the conversation on providing screening.

Q: Will the PRUD have its own owner's association?

A (Will): Yes, the PRUD units will be subject to separate association documents which at this time is structured as a condo association.

Q: Can you clarify further on the site easements: who will manage this space?

A (Mike): As we mentioned before the ownership of the open space is still in discussion but the public access and open space easements have already been provided as a good faith effort during the zone change process with the City.

Q: Are you interested in and would support a bridge over the Stroudwater River?

A (Mike & Will): We are very much in support of a bridge and have been working with Portland Trails on the feasibility and construction of the structure. They currently have a design in the planning and permitting stage for a crossing closer to the Westbrook school further upstream. We are looking to continue the conversation on which crossing location makes most sense from dependents served and feasibility perspective.

Q: Are you proposing any additional pedestrian safety components along Westbrook St? Because it is such a high traffic area, I would be in support of seeing a barrier between the new sidewalk and the roadway.

A (Mike): We will look into providing additional safety elements within this section of Westbrook St.

Q: Where will the forty (40) parking spaces as indicated within the application be provided?

A (Will): Within the on-street parking within the new roadway network.

Q: Who will be responsible for trash pick-up: the city or the association?

A (Will): It is our understanding that the streets will be accepted by the City and the City will provide curb side pick-up services.

Q: Why are you proposing a low traffic bituminous surface for the new roadways within the site?

A (Will): The proposed surface and thickness is a City standard for local roads.



Q: Can you clarify on where you came up with the existing impervious surface as submitted on the application?

A (Will): Determining this area included intensive research of the site and is composed of gravel surfaces, pavement, rooftop, and foundation areas as identified from the existing conditions survey.

Q: There are overflow spillways and outlet control structures proposed within the stormwater detention basins. Will these be screened from view with landscaping?

A (Will): Due to the basin design and intention of the basin, no landscaping can be provided within the basin. Adding any of these features would decrease the effectiveness of the system.

Q: What are you proposing as a safety feature along the berm of the basins? Is there any chance of people or animals falling in?

A (Will): The proposed basins are designed to be what is known in the industry as ‘dry ponds’ versus the more commonly identified ‘wet ponds’. Therefore, the basins will not be filled with water unless there is a larger stormwater event and will be dry in all other instances. For the detention basin that is proposed to double as an ice rink in the winter, boards are to be placed at the bottom of the basin to allow for upwards of six (6) inches of ice to accumulate for skating use. The skating pond detention basin was oversized to account for any loss of storage volume in the winter.

Q: Why have you selected the proposed orientation of the PRUD buildings? Is there any possibility of moving the buildings to other side of the driveway with the rear of the buildings to the open space?

A (Will & Mike): The proposed layout was selected based on the existing topography of the site but we can review the alternate location of the roadway and buildings to the opposite side with the Client.

Q: Are you proposing to cut down the existing stand of white pines along the Westbrook St frontage? Is there a concern on removing possible bat habitat? (*indicated to the trees located to the northeast corner of the property*)

A (Will): The existing trees will be removed during the allowed cutting season as defined by the regulatory agencies.

Q: How much right of way space will be affected by the new sidewalk? Will the existing house lots fronting Westbrook St be affected?

A (Will): The proposed sidewalks are to be five (5) feet wide per City standard and extend from the existing curb face. The new sidewalk is anticipated be built entirely within the existing City right of way property in addition to any roadway improvements. Roadway improvements and any associated widening will be subject to the consulting traffic engineer’s discussions with the City.



Q: What would happen if the referendum is passed? Would you still build if the site changes back to R-1? Can you build all the way up to the river?

A (Mike & Will): The exclusionary zoning referendum is up for vote in November, if passed, would retroactively rezone the site back to the R-1 Residential Zone; this would take away the ROS designation adjacent to the Stroudwater River and allow for the entirety of the site to once again be developed. The FH Flexible Housing zone that was removed as part of the July 24th rezone would also be reintroduced allowing for manufactured housing to be built north of Westbrook Street, directly abutting the Fore River Sanctuary.

The subdivision development project would still move forward with a plan similar to the concept developed for the rezone application proposing around 84 single-family house lots. The proximity to the river limits how close the structures can be to the high-water level, at least 75 feet away, but the property lines can extend down to the river's edge, maintaining private access to the waterfront. No townhouses would be proposed but the two intersections as shown for this layout would remain in the same location.

Q: Are there any bus stops proposed for the site and will they be covered?

A (Mike): The development team had a meeting with Metro two weeks ago and are making efforts to plan for a new bus shelter location along our project frontage. Whether a new Metro route is extended down Westbrook St is at the discretion of Metro.

At this time, a board member of the Stroudwater Village Association made an announcement to the neighbors that were leaving prematurely that there was a meeting to be held that Thursday, September 21st (7pm) at the church to discuss a neighborhood plan with City Planning Staff.

Q: Are the existing landscaped islands within Westbrook St going to be removed? Will this project propose any additional speed protection improvements to Westbrook St?

A (Will): It is not proposed to remove the islands at this time. We will continue to work with the project traffic engineer, the City, and the Maine DOT to provide any traffic improvements that will contribute to the safety of Westbrook St.

Q: Can you walk me through how stormwater is being handled on site? What happened during larger storm events? Will the stormwater runoff still be treated during such events?

A (Will): The stormwater runoff from smaller rainfall events such as a one-inch, 24-hour storm will be directed along the curb face into a stormwater planter. The runoff then percolates through the soil and sand media of the planter box and oil/grease and other particulate matter is filtered through or absorbed by the planting. During larger storm events, the stormwater planter box will overflow and runoff will bypass the system to a catch basin structure that is directly down gradient of the planter box. However, this overflow runoff, essentially the runoff beyond the first initial inch, is much clearer than the stormwater first entering the planter box; the first inch of rainfall, in any storm, is the dirtiest and will be treated regardless of the final rainfall event size. Any overflow thus after requires less, if any, treatment. The runoff water is then conveyed via stormdrains to the detention ponds.



Q: Is there an example of this system being successfully designed next to a river?

A (Will): We have designed a number of stormwater treatment and detention systems similar to that of this site across Portland and a number of locations around the state. For this property, we are significantly treating above and beyond what is required by the City and the state.

Q: Is the abutting 1714 Westbrook St parcel zoned as R-3? So, the referendum would affect greater than 45-acres?

A (Will): The zone change passed in July, included the site with the Turnpike Parcel, the five properties along Westbrook St (including 1714 Westbrook St) as well as the portion of land zoned under the Flexible Housing Overlay zone across the street along the north side of Westbrook St.

Q: If the referendum passes, and the site returns to the R-1 zone, will you still move forward with the project?

A (Mike): Yes.

Q: Has there been any thought into designating a specific area for public parking such as along the PRUD driveway?

A (Will): There is no designated parking area besides the potential at the end of Old Westbrook St but we can look into providing a specific lot within or abutting the site.

Q: Do any of the new single-family house lots face Westbrook St.

A (Will): Yes, five (5) lots will face and be accessed via Westbrook St.

Q: Will the new lawns be treated with pesticides?

A (Mike): The City is currently working on outlining restrictions on pesticide use within the entire city as part of the Pesticide Task Force. As a development team, we are proposing to eliminate phosphorous-based pesticide use from within the site.

Q: How will the pesticide ban within the site be enforced? Will that ban be able to be changed?

A (Mike): It was our intention to include the pesticide ban language within the homeowners docs but we will continue to research and look into how the language is recorded and written so that the ban cannot be changed as easily.

Q: Will there be a reduction in lawn areas when comparing an R-1 vs. R-3 layout?

A (Will): One of the driving forces of the zone change, as emphasized during the application process was the fact that smaller, more compact house lots within the R-3 zone will have less impervious surface, due to less roadway infrastructure, and less total developed land and lawn area than an R-1 layout.



Q: Who is providing site landscaping for each house lot? Are there any protections proposed so that some groundcover and not only lawn space is incorporated into each property?

A (Mike): We will be incorporating site landscaping throughout the property and each house lot will need to meet the tree requirements. In addition, there is a proposed buffer within the center of each of the loop roads.

Q: Will you be building model homes? If so where will they be located?

A (Mike): We are anticipating having four to five different house kit options for each of the single-family house lots that range from single to two story units and different facade options available. A model home is planned to be built at the intersection closest to the Turnpike at one of the front most lots.

Q: It's my understanding that each PRUD unit will have a single-car garage but what about the single-family house lots?

A (Mike): There will be a mix of both single- and double-car garages that can be internal, split level, attached or detached depending on the lot configuration and grades.

Q: Will the new utilities for the Westbrook St house lots also be built underground? Will any existing poles and overhead lines such as the ones that connect to my house at 1714 Westbrook St be affected?

A (Will): All new services to the Westbrook St lots, including underground electrical, will be routed underground; no new overhead services are proposed. No overhead services and utility poles are anticipated to be removed at this time as well.

Q: How will the added traffic from the development, including introducing new busses to Westbrook St, be addressed?

A (Will): The traffic implications of the development are being reviewed by the project traffic engineer within the project's Traffic Movement Permit which is required by and will be reviewed by the City. The team traffic engineer will be at the Planning Board Workshop meeting to speak to the preliminary efforts and conversations regarding traffic. Additional efforts will be researched to help mitigate speeding concerns within Westbrook St as well.

Q: There is currently limited clearing of sidewalks during the winter and it appears that the City only clears the sidewalks up to a certain point from Congress St. How will you address the sidewalk clearing issue on the new site sidewalks? Will you be a voice of support on urging the City to ramp up their sidewalk clearing efforts in the Stroudwater Neighborhood?

A (Mike & Will): Per city ordinance, the sidewalks within the City right of way along the frontage of a lot are to be cleared by the owners of that property. However, this ordinance is not necessity effective and is currently being discussed with various advocacy groups within the City including PBPAC (Portland Bike and Pedestrian Advisory Committee). We can work on continuing the conversation with the City on making sure that additional efforts are made to keep the sidewalks clear during the winter.



Meeting concluded at approximately 7:45pm. The meeting started with approximately 33 participants and ended with 8-10 members of the public.

The abovementioned material was as interpreted and recorded from handwritten notes. Please note and relay any discrepancies or disputed information in the recorded minutes to the below address so that they can be reviewed, revised, and resubmitted as necessary.

Recorded by,



Olivia Dawson, E.I.
Design Engineer
Acorn Engineering, Inc.

odawson@acorn-engineering.com



Stroudwater PreserveNeighborhood Meeting Sign-In Sheet – September 19th, 2017

Please Print your Name and Address

1. Julie Kilbride 1543 Westbrook St Portland
2. Andy Green 1714 Westbrook St
3. Linda P. Green 1714 Westbrook St.
4. John Haslam 1729 Congress St.
5. Bruce Savage 42 Pierce Ave
6. Anne Savage 42 Pierce Ave.
7. Diane DiConzo 54 Penwith Rd
8. Michael Archibald 126 Stroudwater Rd.
9. Holly Hoffman 1619 Westbrook St
10. Gloria Holsen 1629 Westbrook St
11. Lisa McLaughlin 30 Partridge Rd.
12. Angela Wheaton 30 Partridge Rd
13. GENIE D'BRIEN 1376 Westbrook St.
14. Bill Dobrowski 6 Partridge
15. ERIC GRIFFIN 42 PENWITH
16. Anita Jones 33 Old Mast Rd.
17. MARY MOORHEAD 1653 Westbrook St
18. WARREN MOORHEAD 1653 WESTBROOK ST
19. JACQUELINE ROBINOV 1655 WESTBROOK ST.
20. Joan Beal 37 Old Mast Rd.
21. Sandy Beal 37 Old Mast Rd.
22. Elwood Howard 28 Roundabout Lane



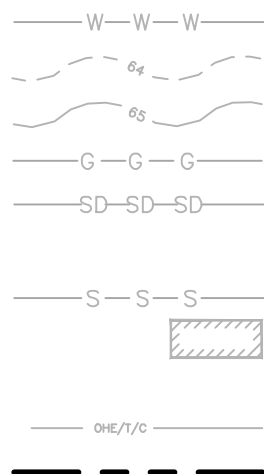
23. Emily Green 1533 Westbrook St.
24. ~~Gerard's~~ Anne Khadjian 42 River's Edge Dr.
25. Pamela Cormier 399 Old Brunswick Rd
26. Kathleen Stokes 15 Old Mast Rd 04102 Bala
27. Wendy + Michael Taylor 35 Buttonwood Rd. 04102
28. Chadilton Smith 85 River's Edge Dr. 04102
29. Ian Jacob 59 State St 04101
30. Kelly McDonald 45 Penrith Rd 04102
31. Mihku Anderson 1603 Westbrook St. 04102
32. Bob Chesebro 1353 Westbrook St
33. Jane Chesebro 1353 Westbrook St.
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STROUDWATER PRESERVE
STROUDWATER DEVELOPMENT PARTNERS, LLC
PORTLAND, MAINE

LEGEND

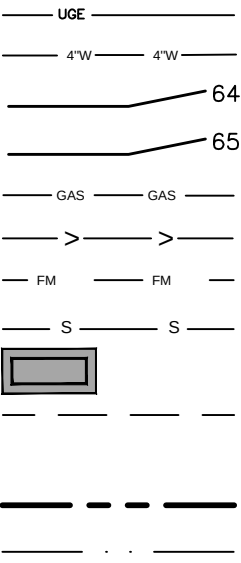
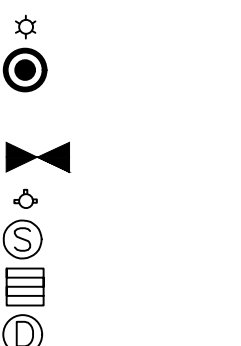
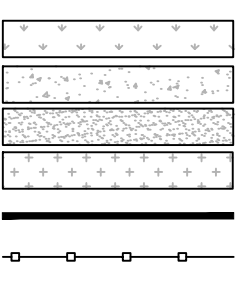
EXISTING

REFER TO THE
EXISTING
CONDITIONS PLAN
FOR ADDITIONAL
INFORMATION



UNDERDRAIN
GREEN SPACE
CONCRETE
PAVEMENT
UTILITY PAVEMENT CUTS
STRIPING
SEDIMENTATION BARRIER
EDGE OF EX. PAVEMENT
CURB
SIGN
LAMP OR LIGHT POLE
UTILITY POLE
GUY WIRE
WATER VALVE
FIRE HYDRANT
SEWER MANHOLE
CATCH BASIN
DRAIN MANHOLE
DRAIN INLET
UNDERGROUND ELECTRIC LINE
UNDERGROUND WATER LINE
MINOR CONTOURS (1 FT)
MAJOR CONTOURS (5 FT)
GAS LINE
STORM DRAIN LINE
SEWER FORCE MAIN
GRAVITY SEWER LINE
EXISTING/PROPOSED BUILDING
FOUNDATION DRAIN
OVERHEAD ELECTRICAL/TELEPHONE/CABLE
PROPERTY LINE
SETBACKS

PROPOSED



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UTILITIES

SEWER:

DEPARTMENT OF PUBLIC WORKS (DPW)
55 PORTLAND STREET
PORTLAND, MAINE 04101
CONTACT: KEITH GRAY, P.E.
(207) 874-8834

WATER:

PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
ATTN: MEANS DIVISION
(207) 774-5961

ELECTRIC:

CENTRAL MAINE POWER COMPANY (CMP)
162 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: PAUL DUPERRE
(207) 828-2882

TELEPHONE:

FAIRPOINT COMMUNICATIONS
45 FOREST AVENUE
PORTLAND MAINE 04101
CONTACT: BRIAN BOUCHARD
(207) 712-1063

CABLE:

SPECTRUM CABLE
118 JOHNSON ROAD
PORTLAND, MAINE, 04102
CONTACT: MARK PELLETIER
(877) 546-0962

NATURAL GAS:

UNITIL SERVICE CORP.
1075 FOREST AVENUE
PORTLAND, ME 04103
CONTACT: BRIDGET HARMON
(207) 541-2536

PROJECT TEAM

DEVELOPER:

STROUDWATER DEVELOPMENT PARTNERS, LLC
KENNEBUNK, MAINE
CONTACT: MIKE BARTON, LEED AP
(207) 939-5432

ARCHITECT:

RYAN SENATORE ARCHITECTURE
PORTLAND, MAINE
CONTACT: RYAN SENATORE, R.A.
(207) 650-6414

SURVEYOR:

TITCOMB ASSOCIATES
FALMOUTH, MAINE
CONTACT: NICK ELLISTON P.L.S.
(207) 797-9199

WETLAND SCIENTIST:

MARK HAMPTON ASSOCIATES, INC.
PORTLAND, MAINE
CONTACT: MARK HAMPTON, C.S.S.
(207) 756-2900

TRAFFIC ENGINEER:

TRAFFIC SOLUTIONS
PORTLAND, MAINE
CONTACT: BILL BRAY, P.E.
(207) 400-6890

APPLICABLE PERMITS

- LEVEL III SITE/SUBDIVISION PLAN PERMIT – CITY OF PORTLAND
- SITE LOCATION OF DEVELOPMENT PERMIT – CITY OF PORTLAND UNDER DELEGATED REVIEW
- MAINE CONSTRUCTION GENERAL PERMIT – MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
- NRPA PERMIT – MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

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1-888-344-7233

ABBREVIATIONS

PARTIAL LIST OF ABBREVIATIONS AND THEIR CORRESPONDING MEANING. PLEASE CONTACT THE ENGINEER FOR ANY CLARIFICATION	
ABS	ACRYLONITRILE-BUTADIENE-STYRENE
APPROX.	APPROXIMATE
BC	BOTTOM OF CURB
BMP	BEST MANAGEMENT PRACTICE
BOT.	BOTTOM
CB	CATCH BASIN
CF	CUBIC FOOT
CI	CAST IRON
CIP	CAST IN PLACE
CM	CONSTRUCTION MANAGER
CMP	CENTRAL MAINE POWER
CONC.	CONCRETE
CY	CUBIC YARD
DIP	DUCTILE IRON PIPE
DIA.	DIAMETER
DIM.	DIMENSION
EA.	EACH
ELEC.	ELECTRICAL
ELEV.	ELEVATION
EQUIV.	EQUIVALENT
EST.	ESTIMATE
EX.	EXISTING
FFE	FINISH FLOOR ELEVATION
FT.	FEET
GAL.	GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE
ID	INNER DIAMETER
IN.	INCH
INV.	INVERT
L	LENGTH
MAX.	MAXIMUM
MDOT	MAINE DEPARTMENT OF TRANSPORTATION
MFG.	MANUFACTURED
MH	MANHOLE
MIN.	MINIMUM
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OHE/T/C	OVERHEAD ELECTRIC/TELEPHONE/CABLE
PC	PRECAST
PE	PROFESSIONAL ENGINEER
PL	PROPERTY LINE
PLS	PROFESSIONAL LAND SURVEYOR
PP	POLYPROPYLENE
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
RD	ROOF DRAIN
RET.	RETAINING
ROW	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FEET
SMH	SEWER MANHOLE
SPEC.	SPECIFICATION
SS	STAINLESS STEEL
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
UD	UNDERDRAIN
UGE	UNDERGROUND ELECTRIC

PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR
PRELIM. APP.

BY
DATE
WHS
8/22/17

COVER SHEET & LEGEND

STROUDWATER PRESERVE

DRAWING NAME:
PROJECT NAME:
CLIENT:

STROUDWATER DEVELOPMENT PARTNERS, LLC
KENNEBUNK, MAINE 04043

ACORN ENGINEERS, INC.
158 DANFORTH ST. PORTLAND, MAINE 04102
(207) 775-2655

EN NEER N INC.
FOR ANY CIVIL WORK BEING DONE UNDER ANY STATE LICENSED FROM ACORN ENGINEERS, INC. ANY ALTERATIONS, AUTHORIZED WITHOUT WRITTEN PERMISSION OF ACORN ENGINEERS, INC.

FILE: JN_CIVIL

JN: 1000

SCALE: NTS

DESIGNED BY: WHS

DRAWN BY: SJL

CHECKED BY: WHS

STATE OF MAINE
Professional Engineer
No. 13417
8-25-17

DRAWING NO.
C-01

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE, ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DEPTHS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN AUTOCAD FORMAT AND PAPER, STAMPED "AS-BUILT". IF AUTOCAD NOT AVAILABLE EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED EXISTING CONDITIONS SURVEY BY TITCOMB ASSOCIATES FOR DIVERSACORP LLC, DATED JUNE 6, 2017
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY MARK HAMPTON ASSOCIATES, INC. AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AND ALL ADJACENT PROPERTIES AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THROUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONSTRUCTION MANAGEMENT PLAN NARRATIVE BY ACORN ENGINEERING, INC. AND STROUDWATER DEVELOPMENT PARTNERS, LLC SHALL BE REFERRED TO FOR ANTICIPATED PROJECT SCHEDULE AND CLOSURES. TRAFFIC CONTROL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
12. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. THIS SHALL BE COMPLETED AT A MINIMUM FOR ABUTTING PROPERTIES. AT A MINIMUM, DOCUMENTATION SHALL INCLUDE PHOTOGRAPHS.
13. THE CONTRACTOR SHALL PROVIDE A GPS MODEL OF THE PROPERTY TO PROVIDE TO ACORN ENGINEERING.
14. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH ACORN, IF ANY.

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP AND ERECTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION FOR ENGINEER'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE.
12. THE ENGINEER BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND OBSERVATION VISITS TO THE SITE DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS, AS WELL AS SITE DRAINAGE, SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT.
3. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
6. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
7. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.
8. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.
9. SPECIAL INSPECTION FIRM SHALL BE EMPLOYED BY OWNER.

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A REGISTERED LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD. CONDITION SHALL BE IMMEDIATELY REPORTED TO THE CIVIL ENGINEER FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED FOUNDATION CORNERS.
6. CONTRACTOR TO ENSURE THAT DRIVEWAYS AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND IN USE AT ALL TIMES.

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE FOLLOWING PERMITS: SITE PLAN - LEVEL III AND SUBDIVISION PERMIT FROM THE CITY OF PORTLAND, MAINE CONSTRUCTION GENERAL PERMIT FROM THE MAINE DEP, SITE LAW PERMIT FROM THE MAINE DEP, AND NRPA PERMIT FROM THE MAINE DEP.
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.

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. ANY EXCESS LOAM SHALL REMAIN PROPERTY OF THE OWNER.
2. 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.
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE OWNER. PRIOR TO THE CONTRACTOR PRICING THE WORK THE CONTRACTOR SHALL REQUEST PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. NO ADDITIONAL PAYMENT FOR UNSUITABLE MATERIALS.
6. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF $N=0.012$ OR LESS.
7. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
8. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER.

1. ALL ROUTINE MAINTENANCE ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
2. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
3. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
4. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
5. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
6. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE CIVIL ENGINEER FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED BEFORE BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16); GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN ON SHEET C-54.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT "WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE", MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH CITY OF PORTLAND, STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.

9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY SERVICE WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN ENGINEERING WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH THE CITY OF PORTLAND TECHNICAL MANUAL PRIOR TO ANY WORK.
15. 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.

[illegible]

DRAWING NAME: **GENERAL NOTES**

PROJECT NAME: **STROUDWATER PRESERVE**

CLIENT: **STROUDWATER DEVELOPMENT PARTNERS, LLC**
KENNEBUNK, MAINE 04043

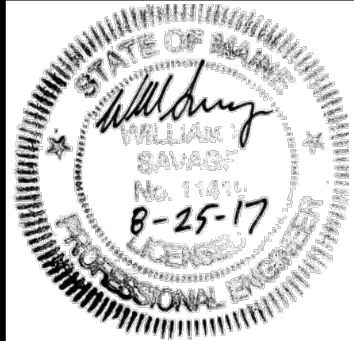
ACORN ENGINEERING, INC.
158 DANFORTH ST., PORTLAND, MAINE 04102
(207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED BY THE ARCHITECT, SHALL BE MADE BY THE ENGINEER, WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

EN NEERN INC.

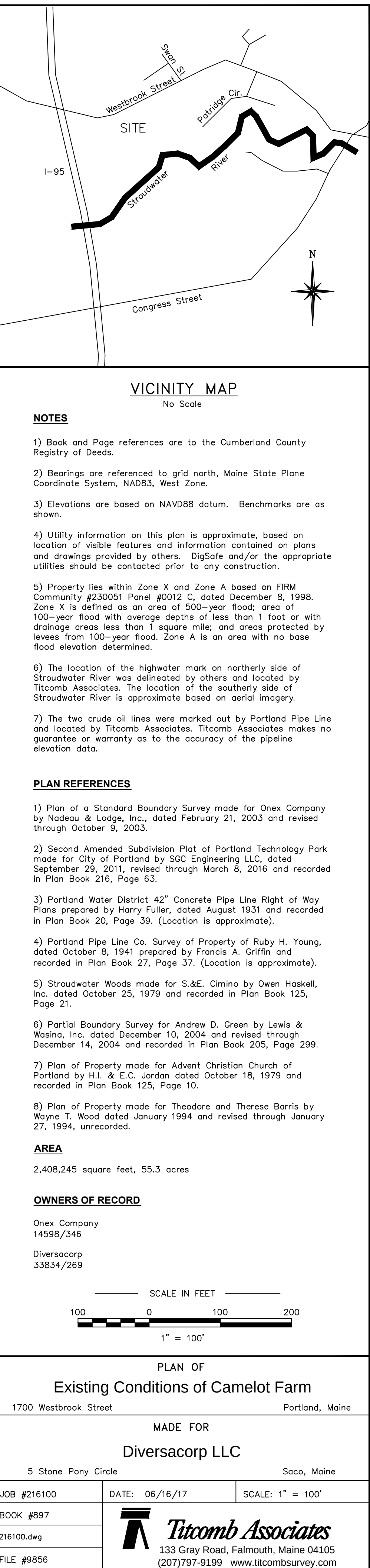
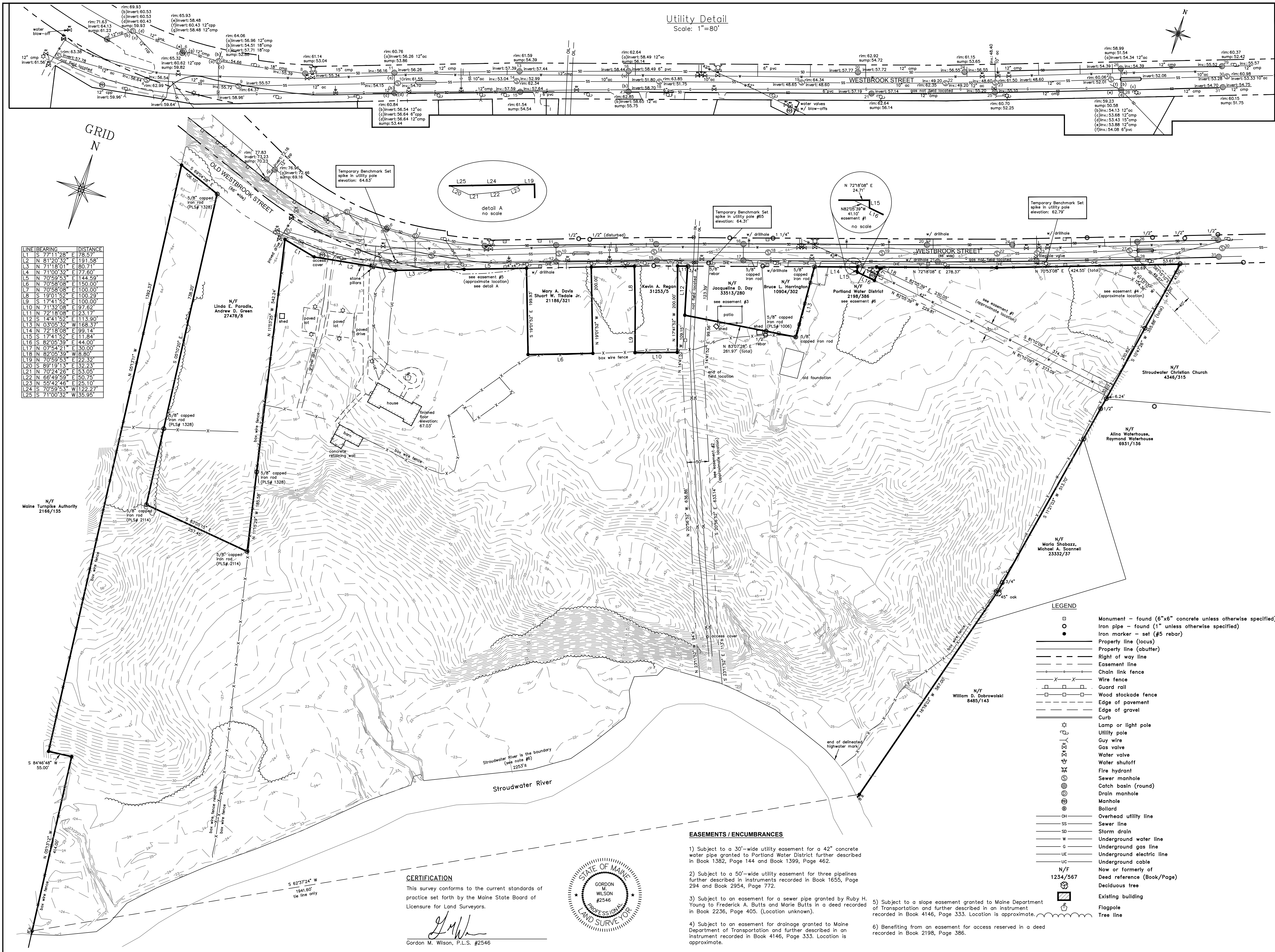
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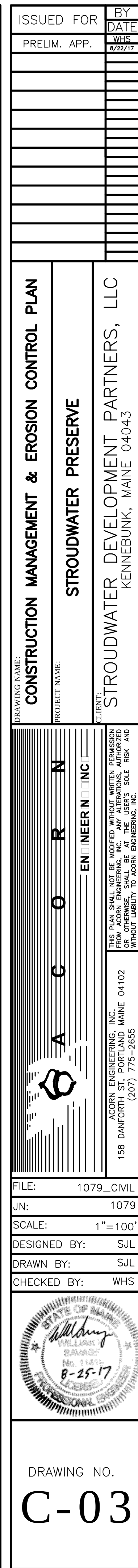


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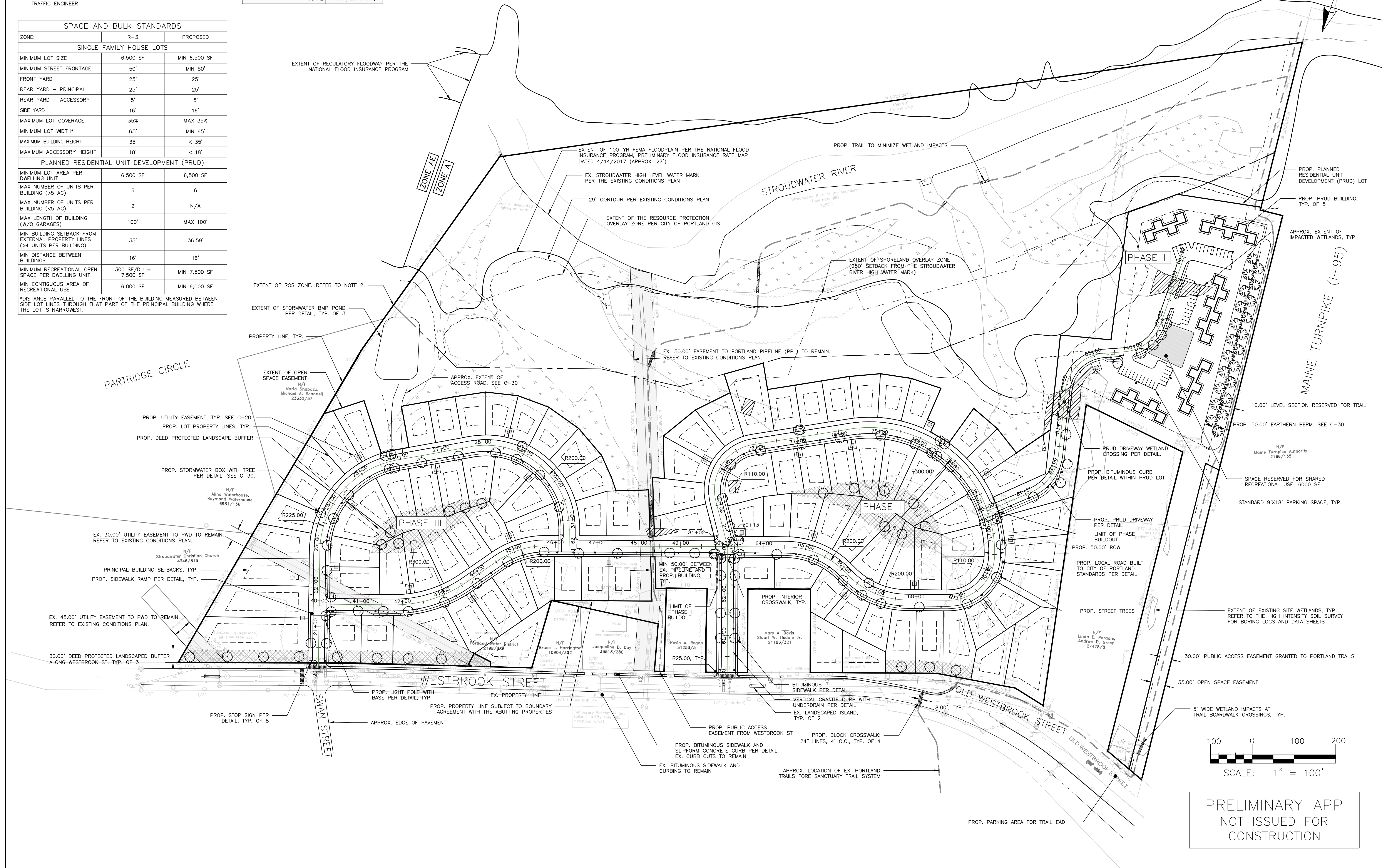
2. ANY EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
3. GRANITE CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE CITY OF PORTLAND, STATE & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
5. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED.
6. ABATEMENT IF NECESSARY SHALL BE COMPLETED BY THE CONTRACTOR.
7. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
8. CONTRACTOR TO COORDINATE SITE DEMOLITION WITH STROUDWATER DEVELOPMENT PARTNERS, LLC.
9. NOTE THAT ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION.
10. SEDIMENT BARRIERS TO BE INSTALLED ALONG ALL DOWN-GRADIENT LIMITS OF WORK AS DEPICTED.
11. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS AT THE START OF EACH SECTION OF CONSTRUCTION.
12. CONTRACTOR SHALL INSTALL CONSTRUCTION ENTRANCE AT ALL LOCATIONS OF INGRESS AND EGRESS DURING CONSTRUCTION TO THE SITE. SEE DETAIL.
13. MATERIALS IS NOT TO BE REMOVED. ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
14. CONTRACTOR TO REFER TO AND FOLLOW THE DOCUMENTS ENTITLED "CONSTRUCTION MANAGEMENT PLAN" & "EROSION CONTROL PLAN" WHICH CAN BE FOUND AT THE END OF THE PROJECT.
15. PORTLAND PIPELINE TO BE CONSTRUCTED BEFORE CONSTRUCTION. REFER TO "DESIGN OF PROJECT" DOCUMENT.
16. WETLANDS NOT TO BE DISTURBED DURING THE LIFE OF THE PROJECT SHALL BE FLAGGED PRIOR TO THE START OF CONSTRUCTION.
17. PRIVATE SEPTIC SYSTEM EXISTS ON SITE PER DEPARTMENT OF PUBLIC WORKS RECORDS.



- GENERAL NOTES:
1. THE PROJECT IS ANTICIPATED TO BE BUILT IN THREE PHASES. INFRASTRUCTURE FOR EACH PHASE WILL BE BUILT TO MEET CITY OF PORTLAND FIRE DEPARTMENT STANDARDS.
 2. ROS ZONE BOUNDARY AS DEFINED BY THE ZONING MAP AMENDMENT PASSED BY THE CITY COUNCIL ON 7/24/17.
 3. INTERIOR PARKING STALL STRIPING SHALL BE 4" THICK AND CROSSWALKS SHALL BE 8" WIDE. STRIPING SHALL BE WHITE UNLESS OTHERWISE NOTED.
 4. FINAL SITE SIGNAGE TO BE REVIEWED AND ACCEPTED BY THE CITY'S TRAFFIC ENGINEER.

LOT SUMMARY		
SINGLE-FAMILY HOUSE LOTS	98	
PLANNED RESIDENTIAL UNIT DEVELOPMENT (PRUD)	1 (25 UNITS)	
OPEN SPACE LOTS	1	
TOTAL	100 (123 UNITS)	

SPACE AND BULK STANDARDS		
ZONE:	R-3	PROPOSED
SINGLE FAMILY HOUSE LOTS		
MINIMUM LOT SIZE	6,500 SF	MIN 6,500 SF
MINIMUM STREET FRONTAGE	50'	MIN 50'
FRONT YARD	25'	25'
REAR YARD - PRINCIPAL	25'	25'
REAR YARD - ACCESSORY	5'	5'
SIDE YARD	16'	16'
MAXIMUM LOT COVERAGE	35%	MAX 35%
MINIMUM LOT WIDTH*	65'	MIN 65'
MAXIMUM BUILDING HEIGHT	35'	< 35'
MAXIMUM ACCESSORY HEIGHT	18'	< 18'
PLANNED RESIDENTIAL UNIT DEVELOPMENT (PRUD)		
MINIMUM LOT AREA PER DWELLING UNIT	6,500 SF	6,500 SF
MAX NUMBER OF UNITS PER BUILDING (>5 AC)	6	6
MAX NUMBER OF UNITS PER BUILDING (<5 AC)	2	N/A
MAX LENGTH OF BUILDING (W/O GARAGES)	100'	MAX 100'
MIN BUILDING SETBACK FROM EXTERNAL PROPERTY LINES (>4 UNITS PER BUILDING)	35'	36.59'
MIN DISTANCE BETWEEN BUILDINGS	16'	16'
MINIMUM RECREATIONAL OPEN SPACE PER DWELLING UNIT	300 SF/DU = 7,500 SF	MIN 7,500 SF
MIN CONTIGUOUS AREA OF RECREATIONAL USE	6,000 SF	MIN 6,000 SF
*DISTANCE PARALLEL TO THE FRONT OF THE BUILDING MEASURED BETWEEN SIDE LOT LINES THROUGH THAT PART OF THE PRINCIPAL BUILDING WHERE THE LOT IS NARROWEST.		



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SITE PLAN

STROUDWATER PRESERVE

STROUDWATER DEVELOPMENT PARTNERS, LLC

KENNEBUNK, MAINE 04043

DRAWING NAME:

PROJECT NAME:

CLIENT:

EN NEER INC.

FOR THIS PLAN, THE USER HAS REVIEWED THE DESIGN AND CONSTRUCTION OF THE PROJECT AND HAS DETERMINED THAT THE PROJECT IS IN ACCORDANCE WITH THE CITY OF PORTLAND ZONING MAP AMENDMENT PASSED BY THE CITY COUNCIL ON 7/24/17. THE USER HAS REVIEWED THE DESIGN AND CONSTRUCTION OF THE PROJECT AND HAS DETERMINED THAT THE PROJECT IS IN ACCORDANCE WITH THE CITY OF PORTLAND ZONING MAP AMENDMENT PASSED BY THE CITY COUNCIL ON 7/24/17.

158 DANFORTH ST. PORTLAND, MAINE 04102

775-2655

FILE:

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JN:

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SCALE:

1"=100'

DESIGNED BY:

WHS

DRAWN BY:

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CHECKED BY:

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STATE OF MAINE

Professional Engineer

WHS

8-25-17

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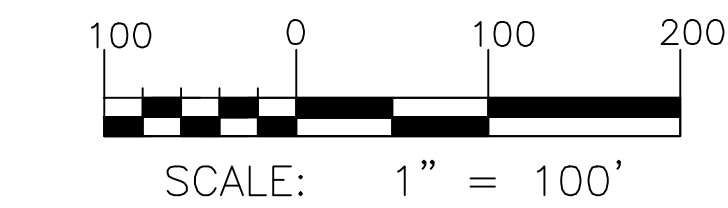
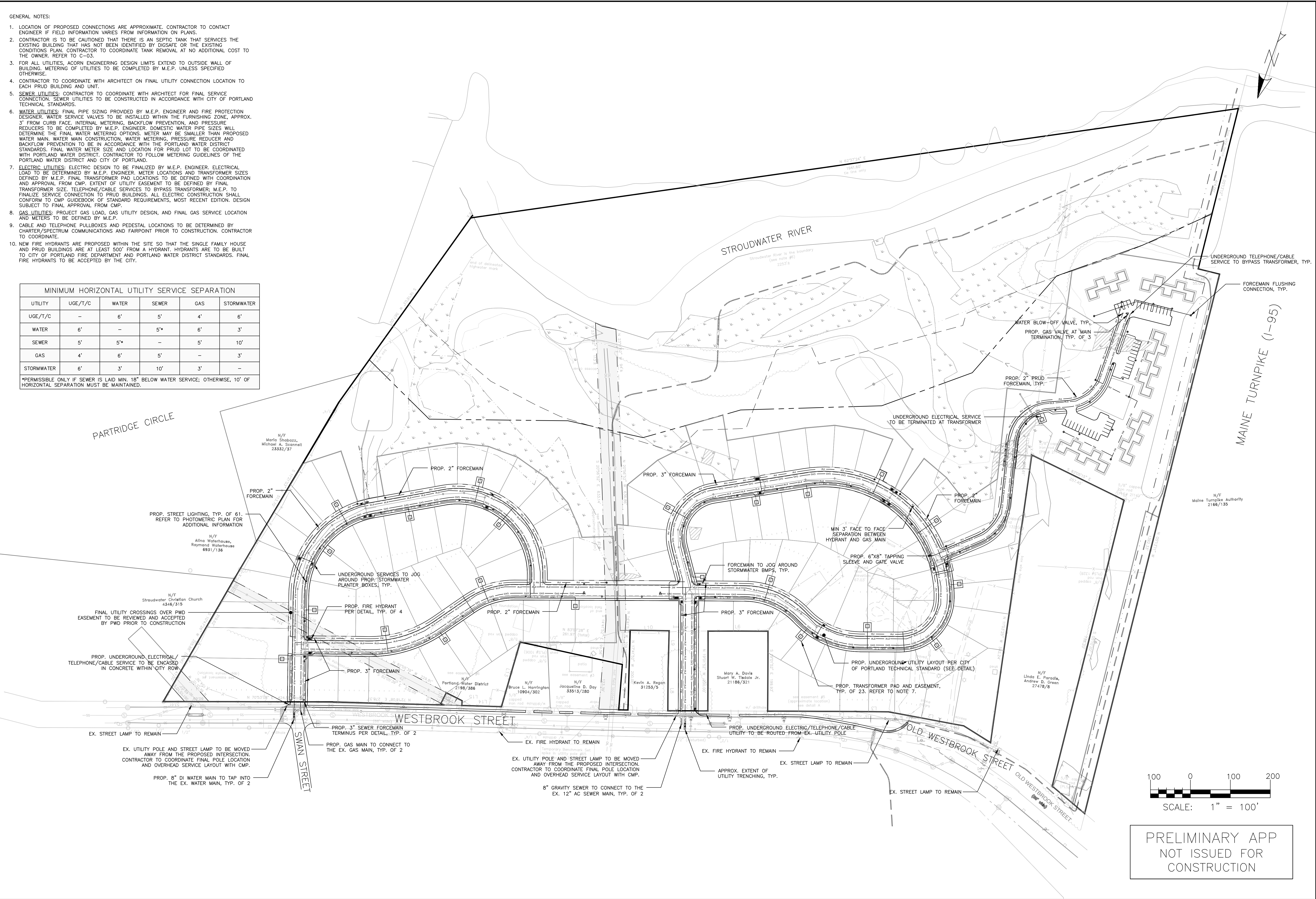
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C-10

- GENERAL NOTES:
1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
 2. CONTRACTOR IS TO BE CAUTIONED THAT THERE IS AN SEPTIC TANK THAT SERVICES THE EXISTING BUILDING THAT HAS NOT BEEN IDENTIFIED BY DIGSAFE OR THE EXISTING CONDITIONS PLAN. CONTRACTOR TO COORDINATE TANK REMOVAL AT NO ADDITIONAL COST TO THE OWNER. REFER TO C-03.
 3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS EXTEND TO OUTSIDE WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
 4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTION LOCATION TO EACH PRUD BUILDING AND UNIT.
 5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS.
 6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. WATER SERVICE VALVES TO BE INSTALLED WITHIN THE FURNISHING ZONE, APPROX. 3' FROM CURB FACE. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN PROPOSED WATER MAIN. WATER MAIN CONSTRUCTION, WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARDS. FINAL WATER METER SIZE AND LOCATION FOR PRUD LOT TO BE COORDINATED WITH PORTLAND WATER DISTRICT. CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE PORTLAND WATER DISTRICT AND CITY OF PORTLAND.
 7. ELECTRIC UTILITIES: ELECTRIC DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATIONS AND TRANSFORMER SIZES DEFINED BY M.E.P. FINAL TRANSFORMER PAD LOCATIONS TO BE DEFINED WITH COORDINATION AND APPROVAL FROM CMP. EXTENT OF UTILITY EASEMENT TO BE DEFINED BY FINAL TRANSFORMER SIZE. TELEPHONE/CABLE SERVICES TO BYPASS TRANSFORMER. M.E.P. TO FINALIZE SERVICE CONNECTION TO PRUD BUILDINGS. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. DESIGN SUBJECT TO FINAL APPROVAL FROM CMP.
 8. GAS UTILITIES: PROJECT GAS LOAD, GAS UTILITY DESIGN, AND FINAL GAS SERVICE LOCATION AND METERS TO BE DEFINED BY M.E.P.
 9. CABLE AND TELEPHONE PULLBOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY CHARTER/SPECTRUM COMMUNICATIONS AND FAIRPOINT PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE.
 10. NEW FIRE HYDRANTS ARE PROPOSED WITHIN THE SITE SO THAT THE SINGLE FAMILY HOUSE AND PRUD BUILDINGS ARE AT LEAST 500' FROM A HYDRANT. HYDRANTS ARE TO BE BUILT TO CITY OF PORTLAND FIRE DEPARTMENT AND PORTLAND WATER DISTRICT STANDARDS. FINAL FIRE HYDRANTS TO BE ACCEPTED BY THE CITY.

MINIMUM HORIZONTAL UTILITY SERVICE SEPARATION					
UTILITY	UGE/T/C	WATER	SEWER	GAS	STORMWATER
UGE/T/C	—	6'	5'	4'	6'
WATER	6'	—	5*	6'	3'
SEWER	5'	5*	—	5'	10'
GAS	4'	6'	5'	—	3'
STORMWATER	6'	3'	10'	3'	—

*PERMISSIBLE ONLY IF SEWER IS LAID MIN. 18" BELOW WATER SERVICE; OTHERWISE, 10' OF HORIZONTAL SEPARATION MUST BE MAINTAINED.



PRELIMINARY APP
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY
PRELIM APP	WHS
	8/25/17

UTILITY PLAN	STROUDWATER PRESERVE
PROJECT NAME:	
STROUDWATER DEVELOPMENT PARTNERS, LLC	
KENNEBUNK, MAINE 04043	

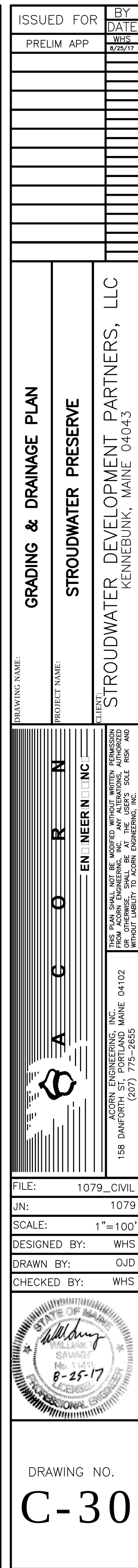
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CHECKED BY:	WHS

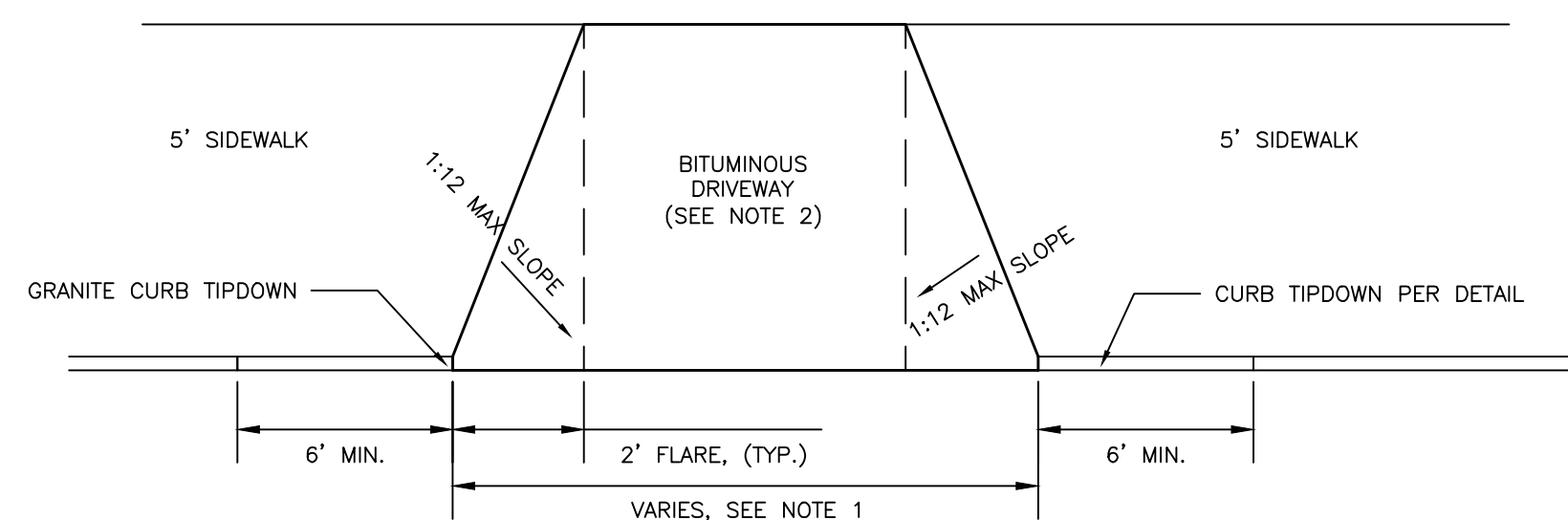
ACORN ENGINEERING, INC. 158 DANFORTH ST. PORTLAND, MAINE 04102 (207) 775-2655	EN NEER INC. 158 DANFORTH ST. PORTLAND, MAINE 04102 (207) 775-2655
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STATE OF MAINE Professional Seal WHS No. 11411 8-25-17 Professional Engineer

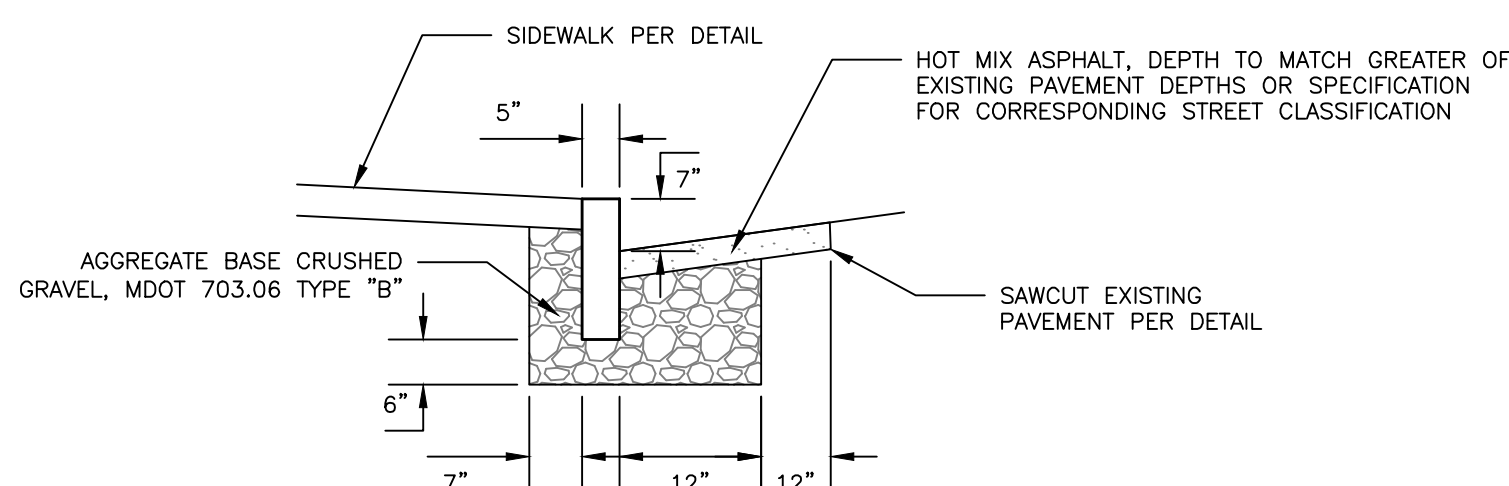
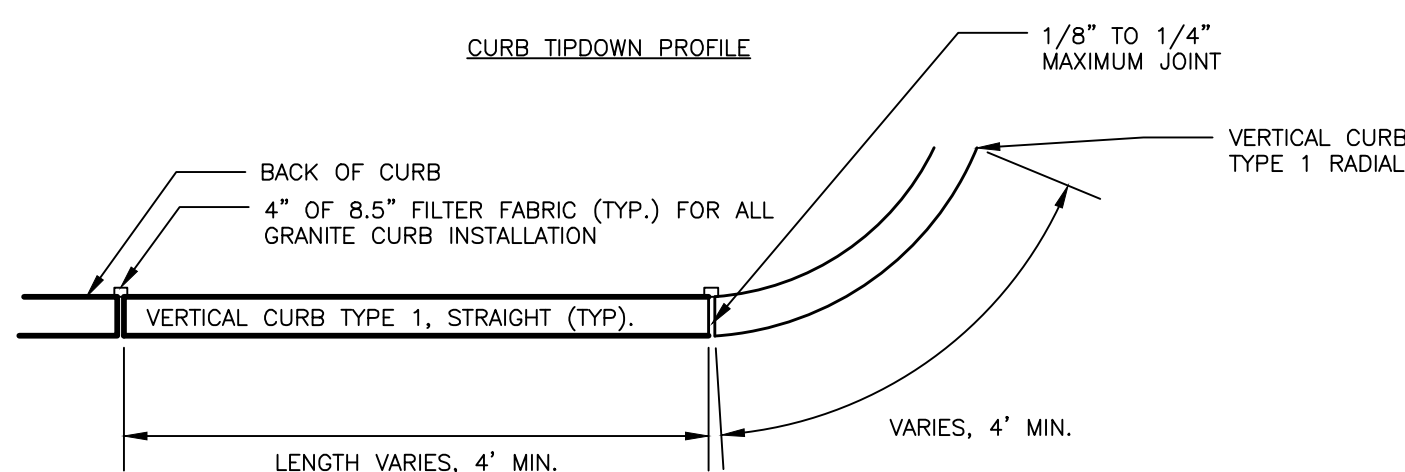
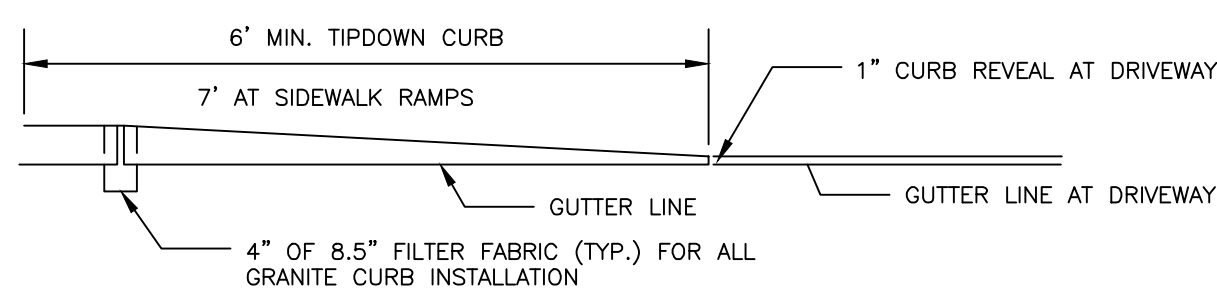
1. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.
2. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET REFER TO THE STORMWATER REPORT FOR STORMWATER ANALYSIS.
3. REFER TO SHEETS C-56 AND C-57 FOR ADDITIONAL INVERT INFORMATION AND STRUCTURE SCHEDULES.

[illegible]

1. REFER TO C-10 FOR DIMENSIONS AND C-30 FOR GRADES.
2. REFER TO BITUMINOUS DRIVEWAY APRON DETAIL FOR APRON CROSS-SECTION

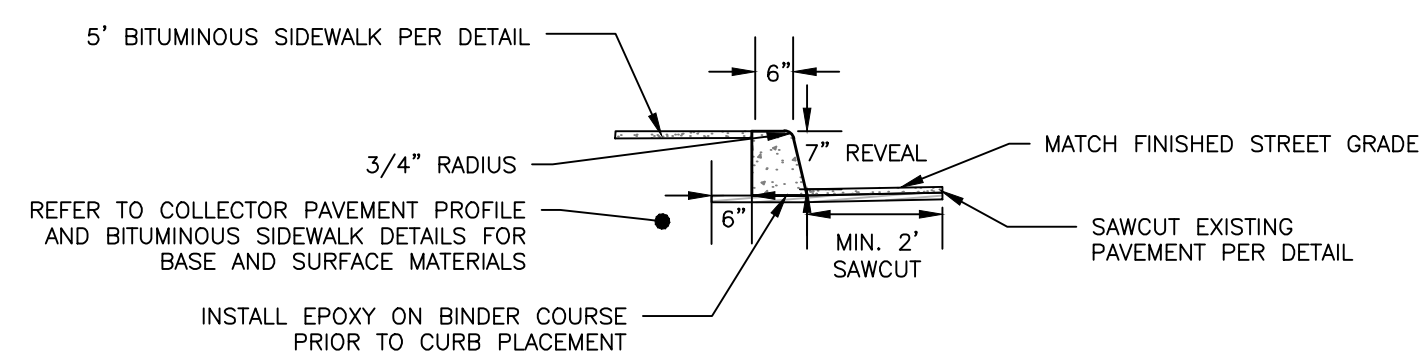


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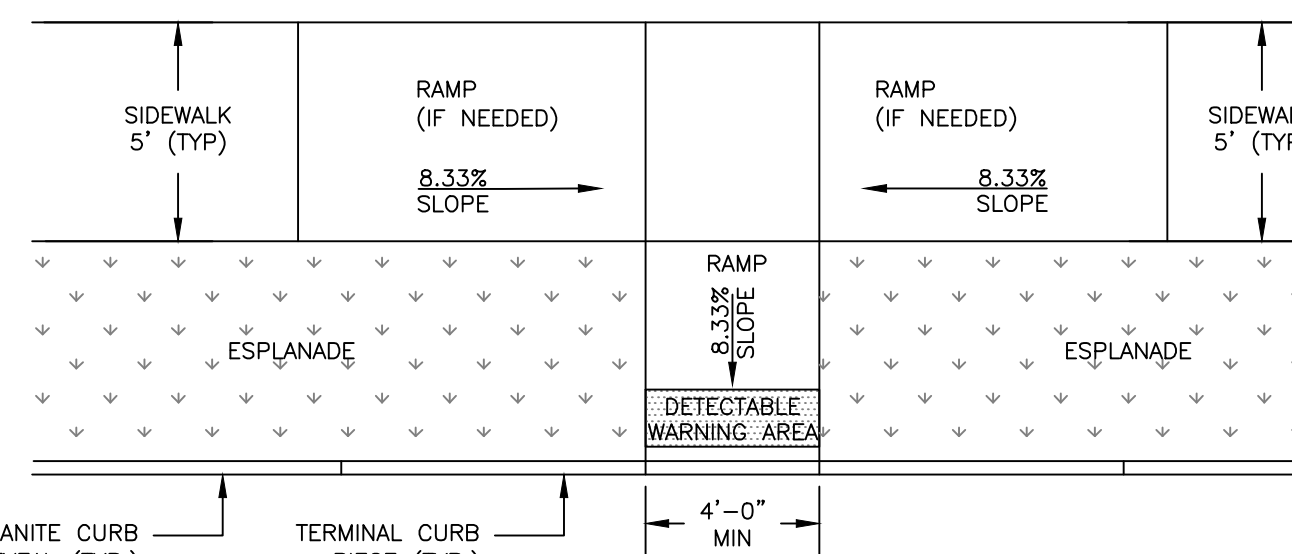
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1. TIPDOWNS 7' IN LENGTH SHALL BE PROVIDED AS SEEN ON PLANS



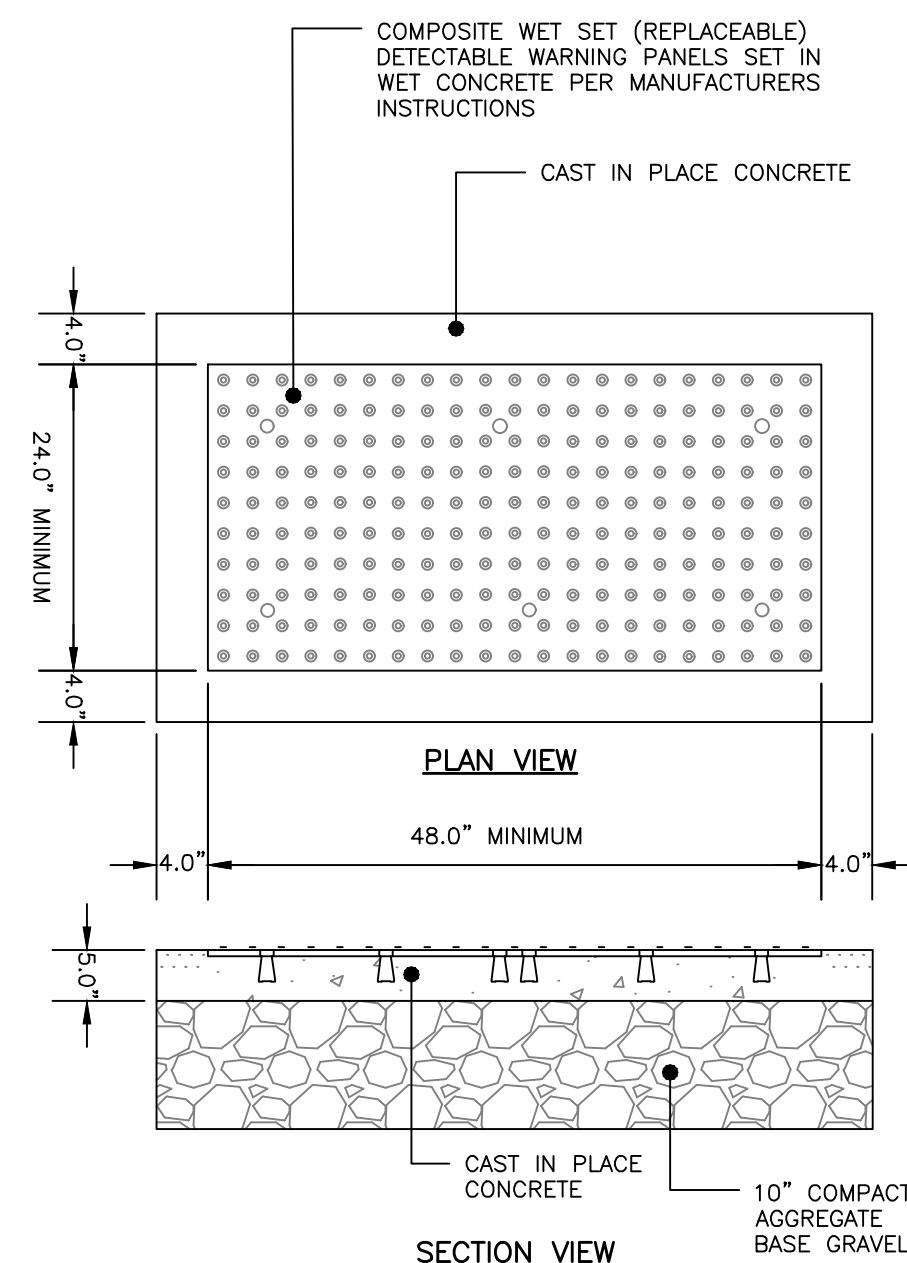
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1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS TO THE GREATEST EXTENT PRACTICAL.
2. GRANITE CURB ADJACENT TO LANDING SHALL BE FLUSH WITH STREET.
3. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.



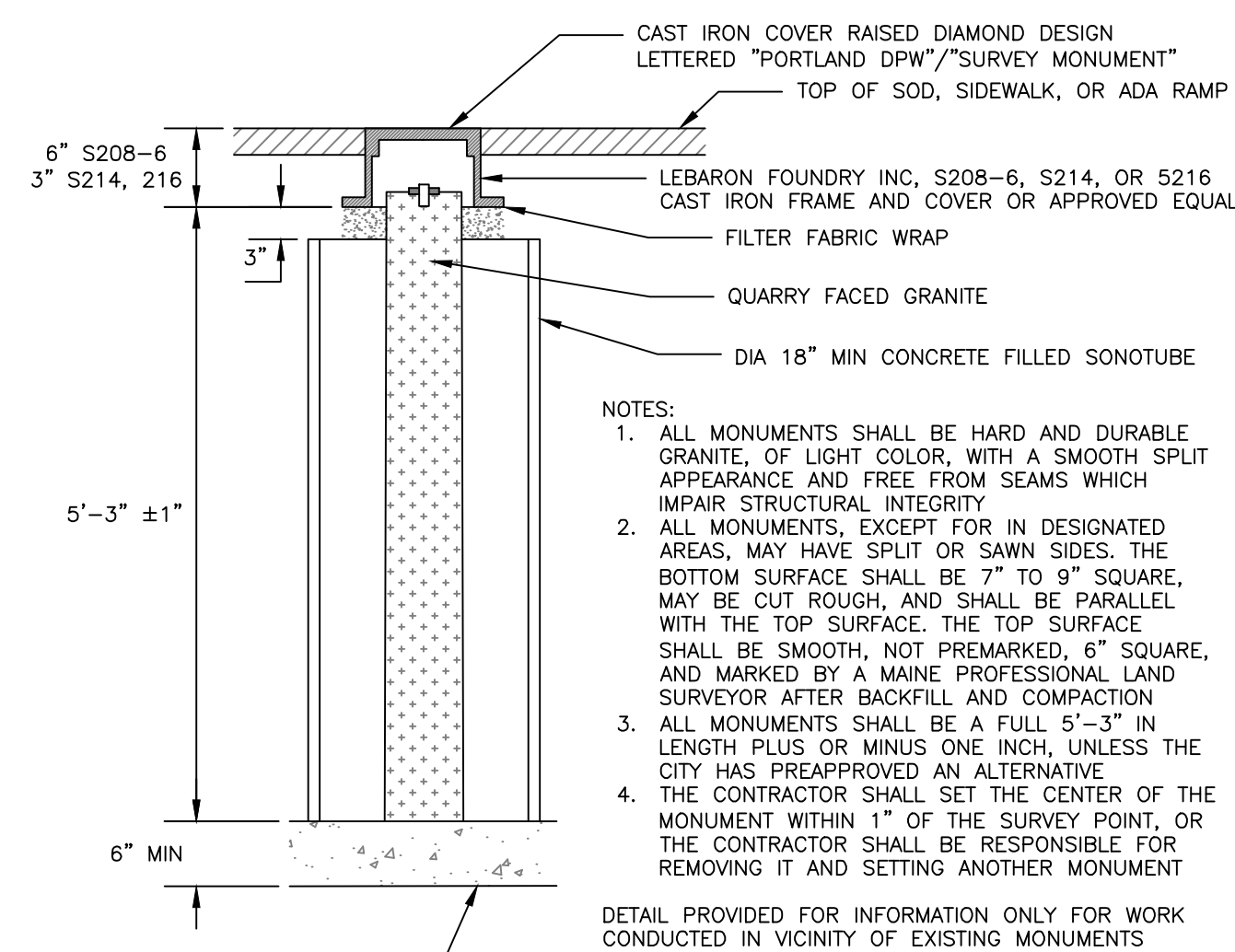
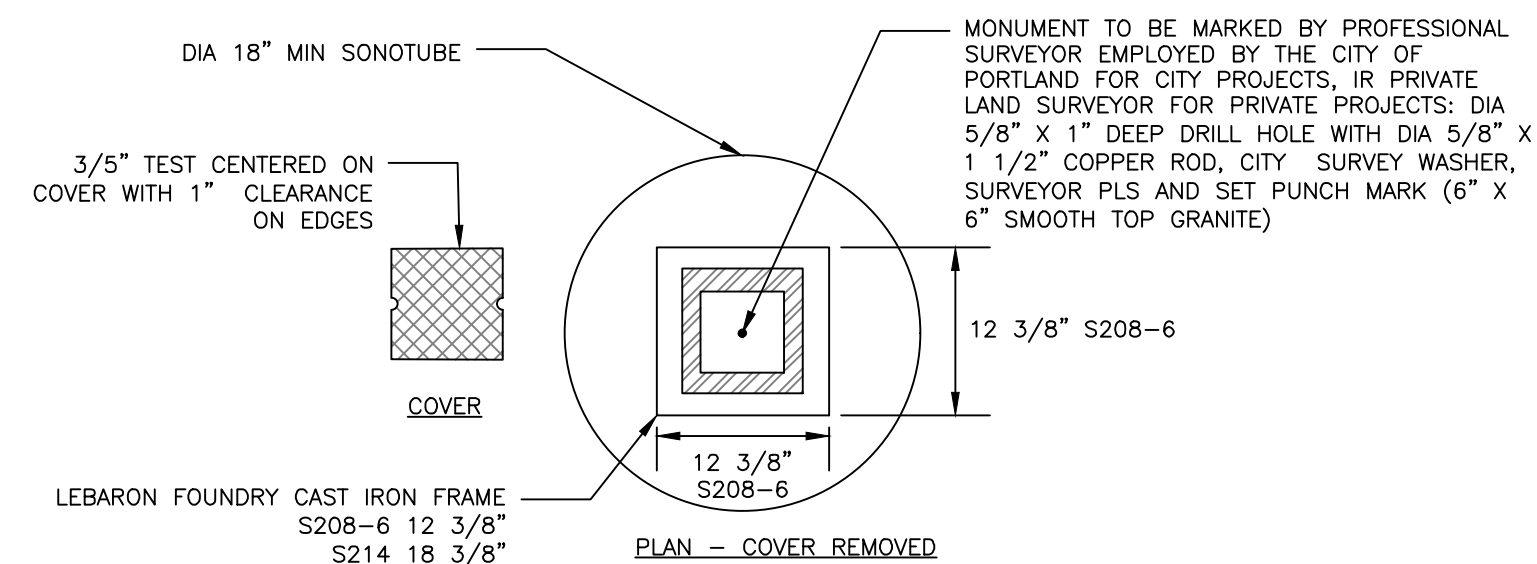
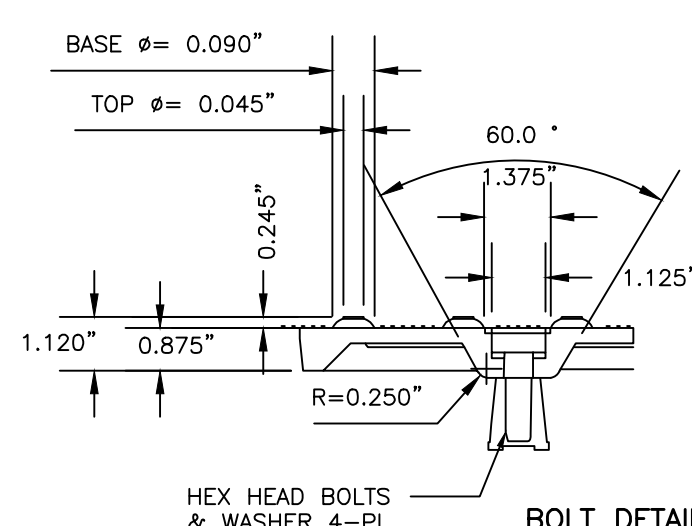
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1. COMPOSITE WET SET (REPLACEABLE) DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. (WWW.ADATILE.COM) OR APPROVED EQUAL.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS A STRUCTURAL CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE CONCRETE SHALL BE SEALED PRIOR TO SETTING PANELS.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. NO OTHER DETECTABLE WARNING DESIGN OR CONFIGURATION IS ALLOWED.
4. FOR ALL DETECTABLE WARNING PANELS, WITHIN OR ABUTTING HISTORIC DISTRICTS AND HISTORIC LANDSCAPES, "DARK GRAY" COLORED (#36118) PANELS SHALL BE USED. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
5. SIZE: THE DETECTABLE WARNING PANEL(S) SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
6. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST TO 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 FRESS.



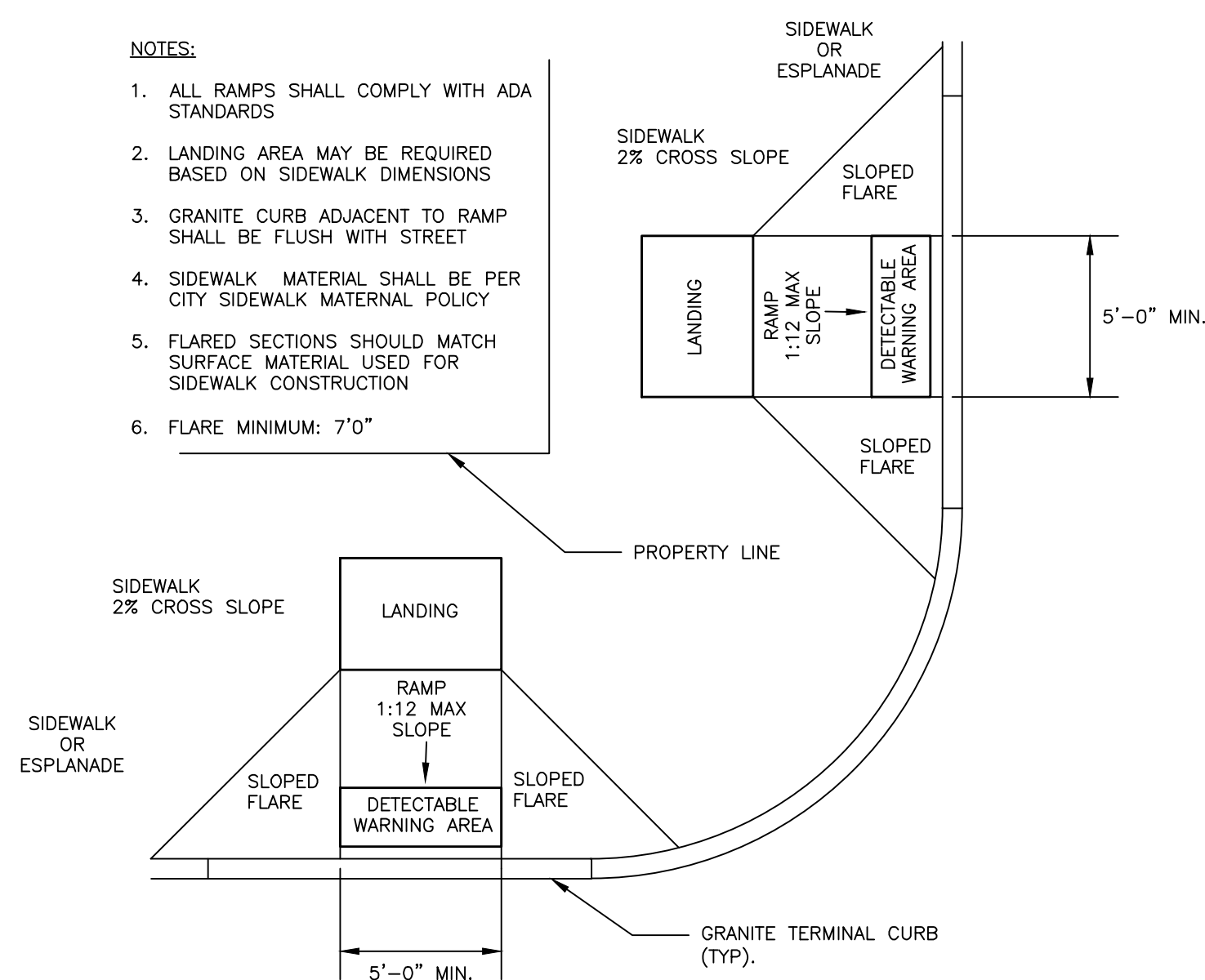
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1. ALL MONUMENTS SHALL BE HARD AND DURABLE
2. ALL MONUMENTS SHALL BE PLACED ON A SPLIT APPEARANCE AND FREE FROM SEAMS WHICH IMPAIR STRUCTURAL INTEGRITY
3. ALL MONUMENTS, EXCEPT FOR IN DESIGNATED AREAS, MAY HAVE FLAT OR SAWN SIDES. THE BOTTOM SURFACE SHALL BE 7" TO 9" SQUARE, MAY BE CUT ROUGH, AND SHALL BE PARALLEL WITH THE TOP SURFACE. THE TOP SURFACE SHALL BE SMOOTH AND FINISHED. MONUMENTS, AND MARKED BY A MAINE PROFESSIONAL LAND SURVEYOR AFTER BACKFILL AND COMPACTION
4. ALL MONUMENTS SHALL BE A FULL 5'-3" IN DIAMETER PLUS OR MINUS ONE INCH. IF THE CITY HAS PREAPPROVED AN ALTERNATIVE
5. THE CONTRACTOR SHALL SET THE CENTER OF THE MONUMENT WITHIN 1" OF THE SURVEY POINT, OR THE CONTRACTOR SHALL SET THE MONUMENT BY REMOVING IT AND SETTING ANOTHER MONUMENT

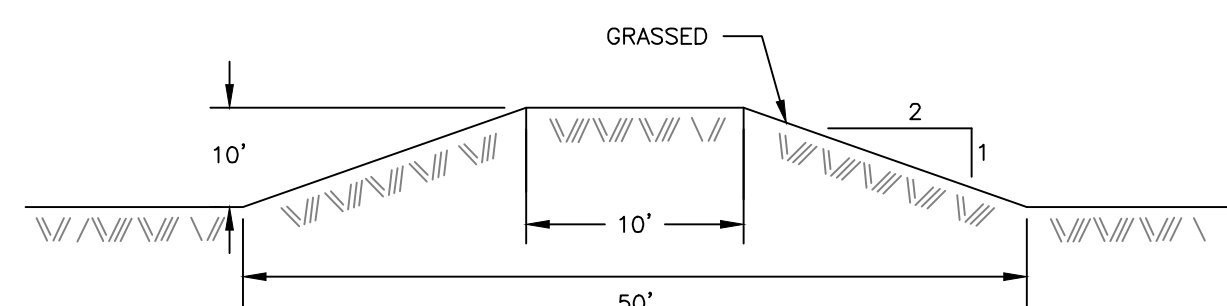
DETAIL PROVIDED FOR INFORMATION ONLY FOR WORK CONDUCTED IN VICINITY OF EXISTING MONUMENTS

DETAIL PROVIDED FOR INFORMATION ONLY FOR WORK
CONDUCTED IN VICINITY OF EXISTING MONUMENTS

1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS
2. LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS
3. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET
4. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY
5. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION
6. FLARE MINIMUM: 7'0"



NOT TO SCALE



NOT TO SCALE

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CONSTRUCTION

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THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM THE COMPANY. THE COMPANY SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PLAN. THE COMPANY SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PLAN. THE COMPANY SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PLAN.

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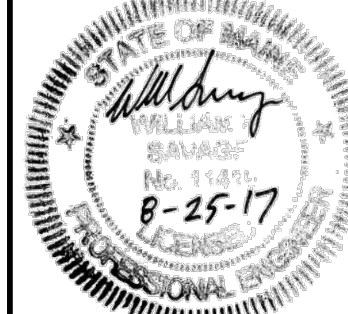
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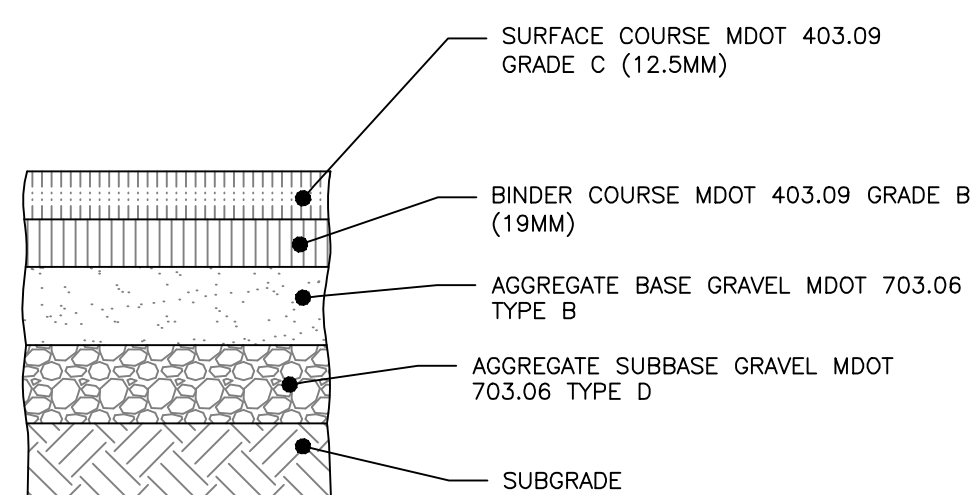
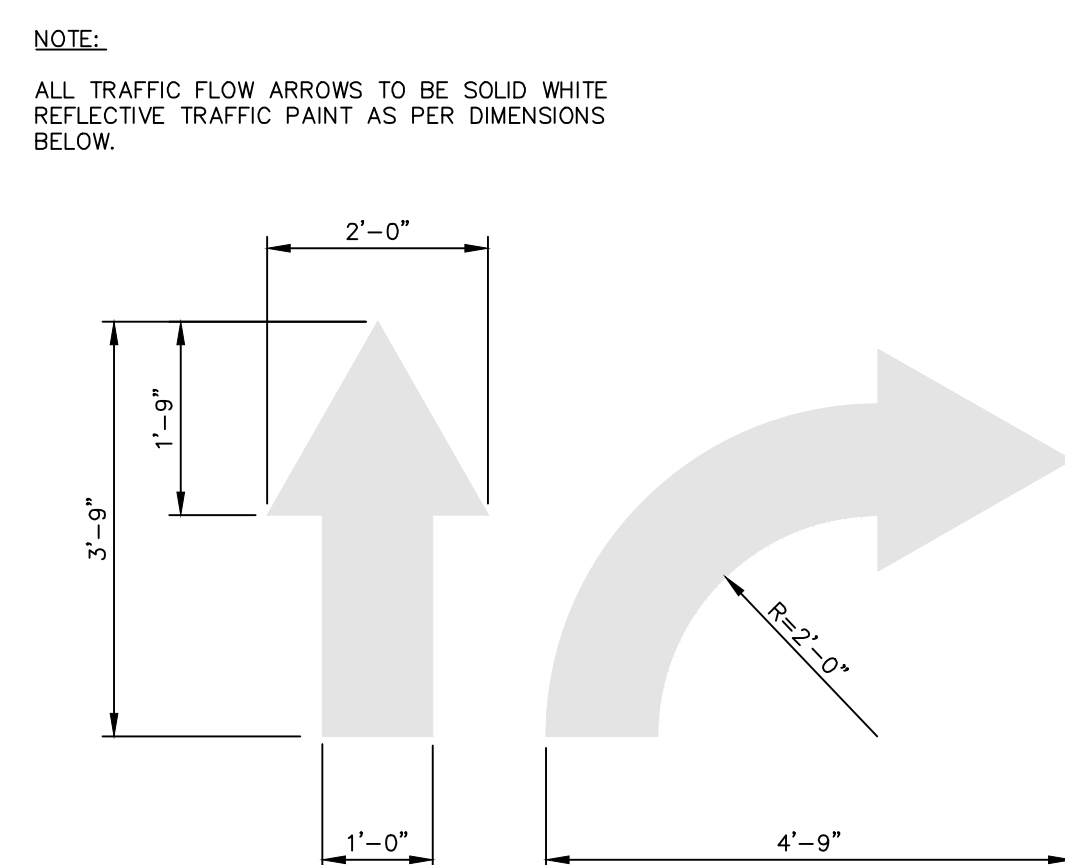
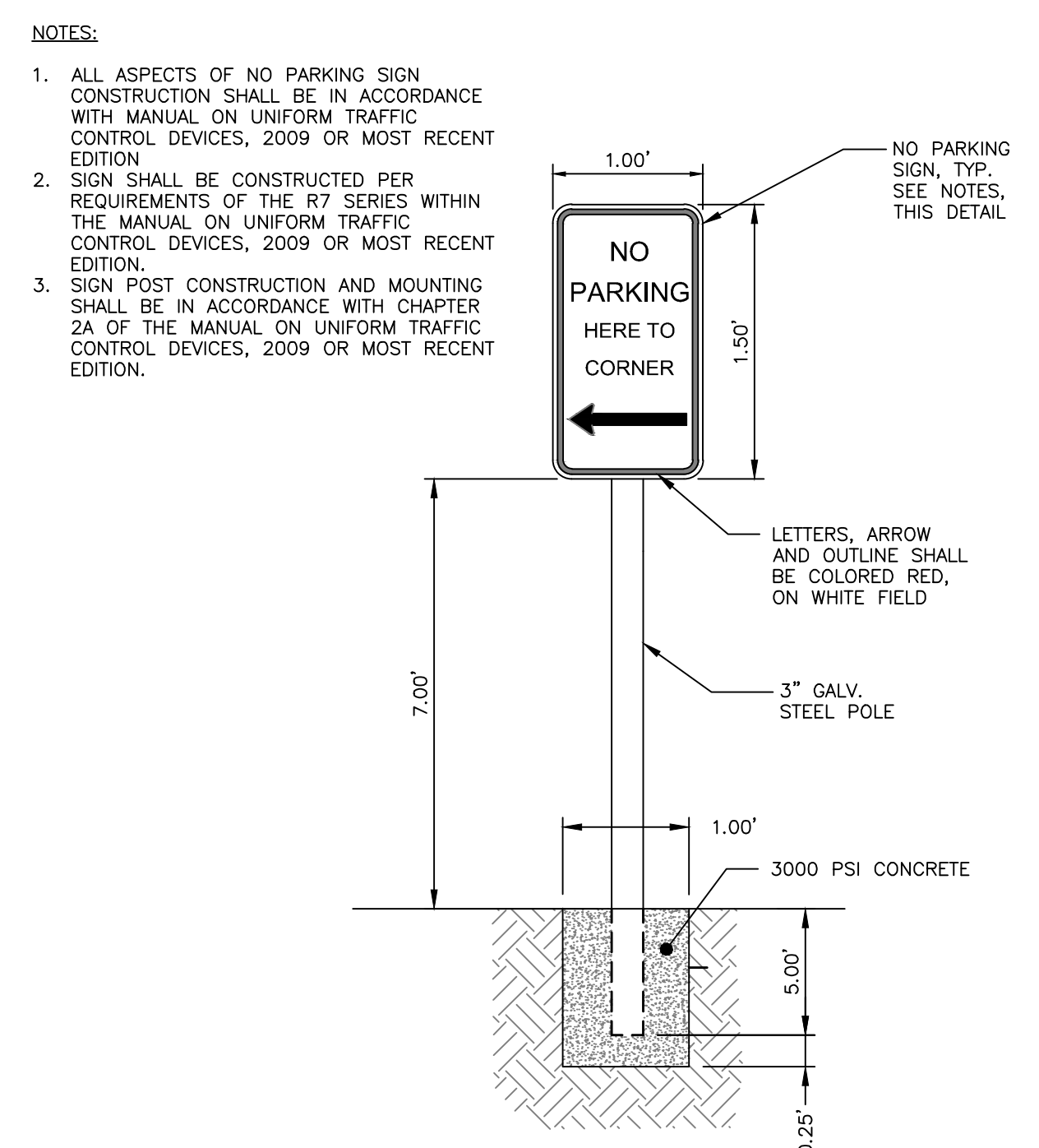
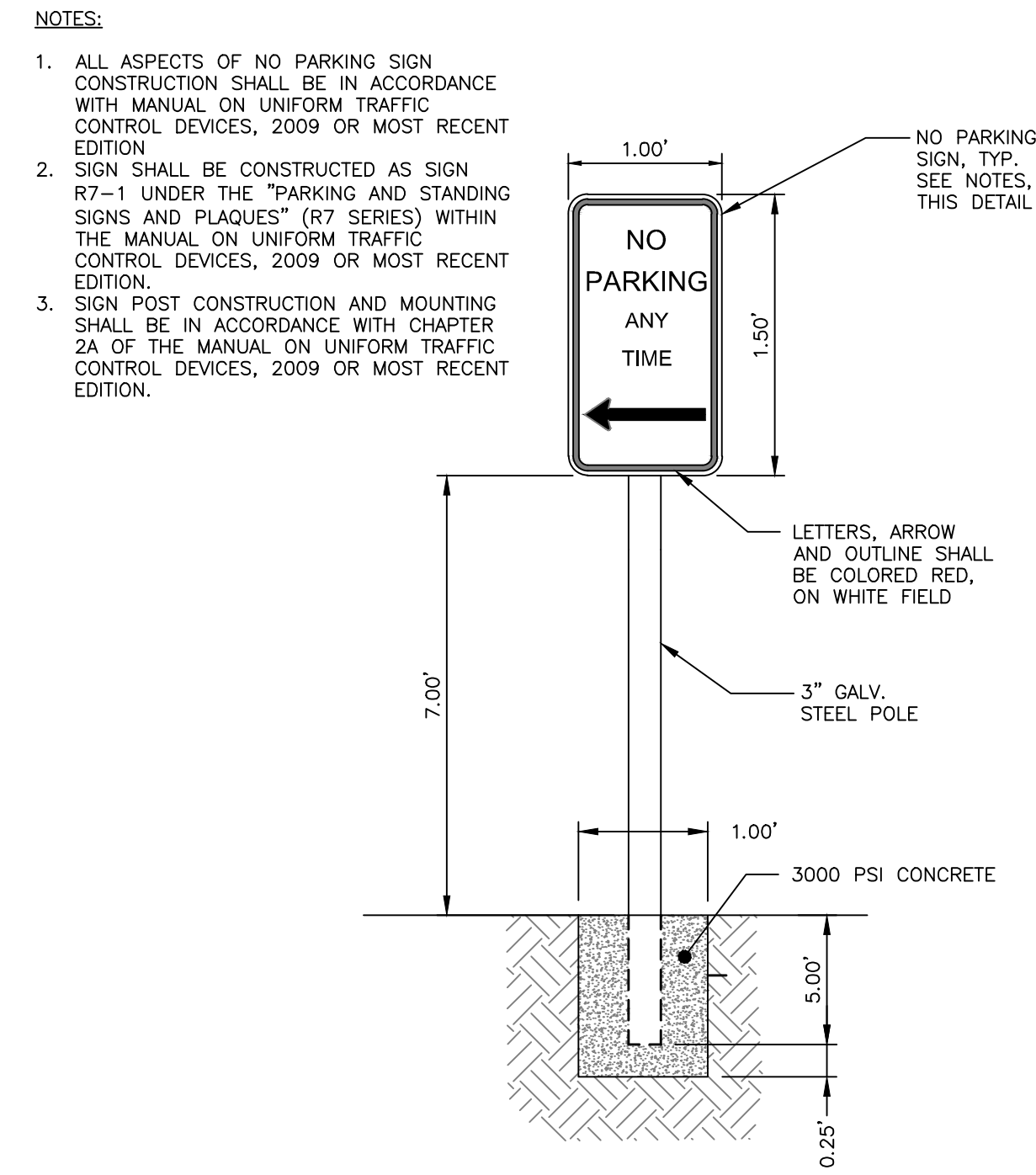
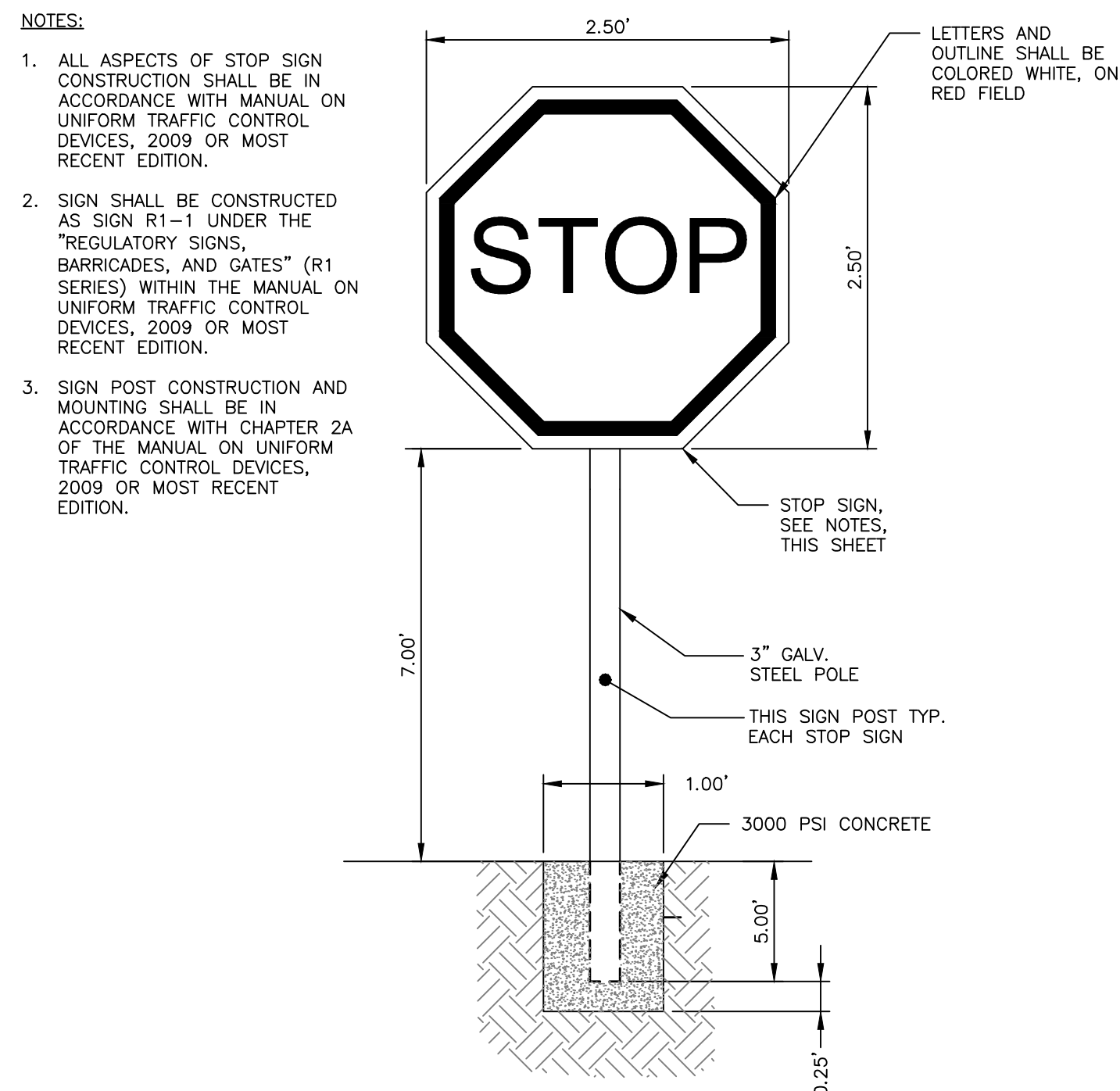
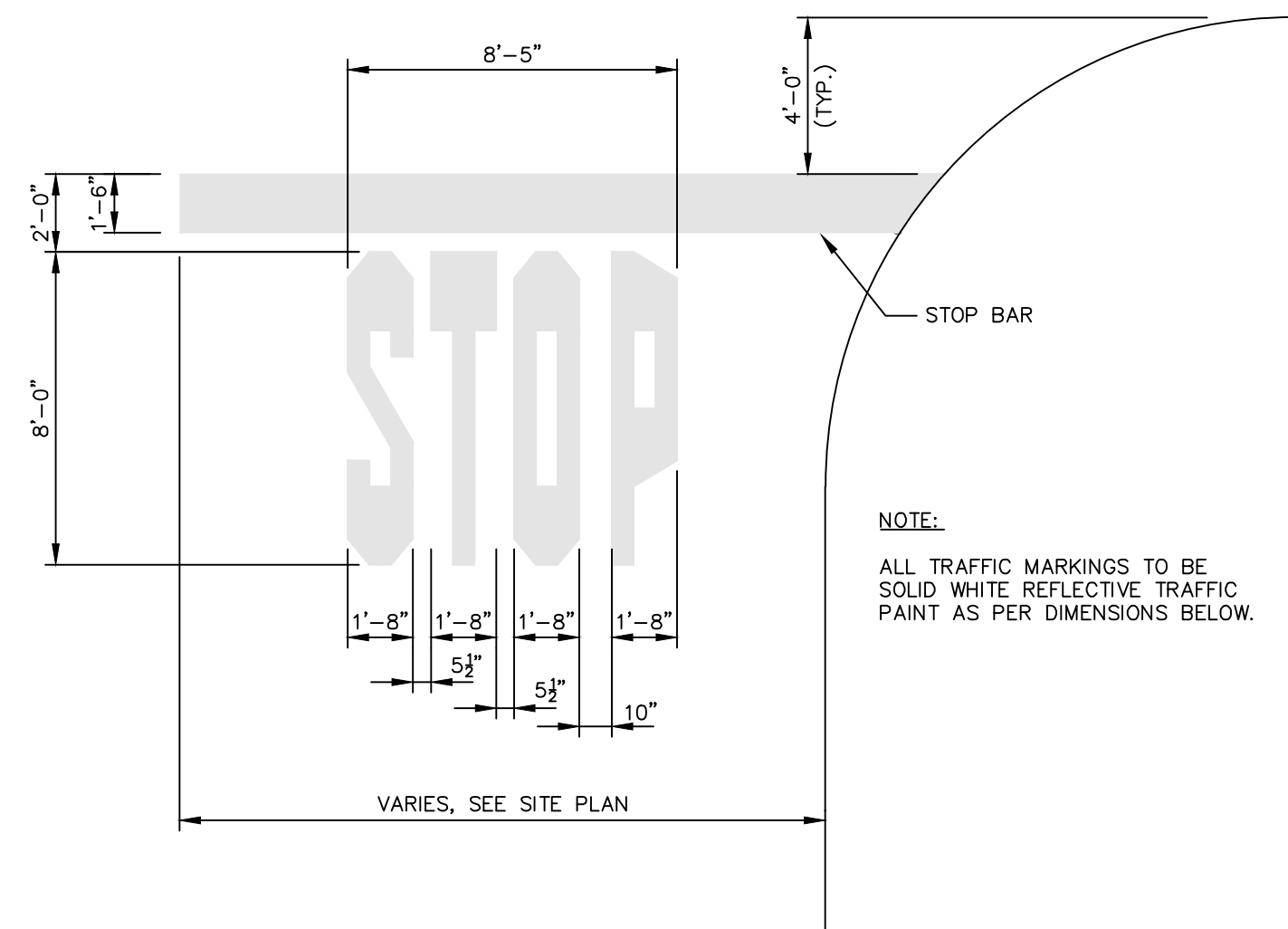
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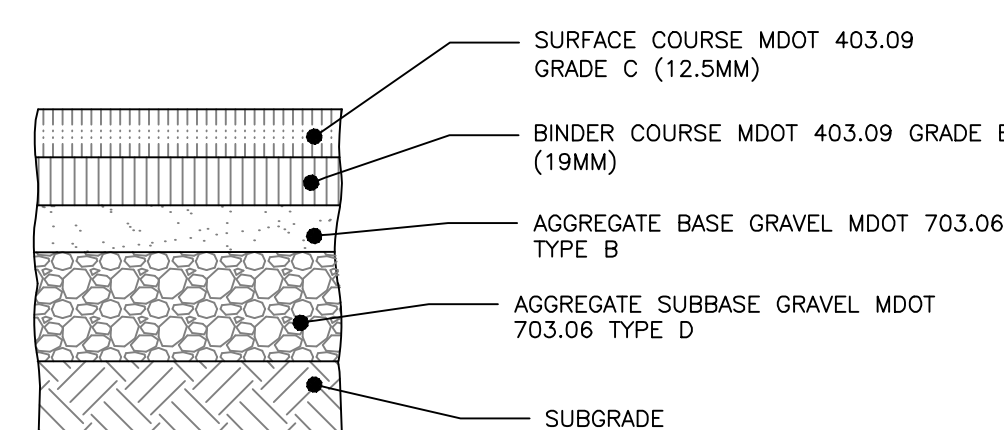


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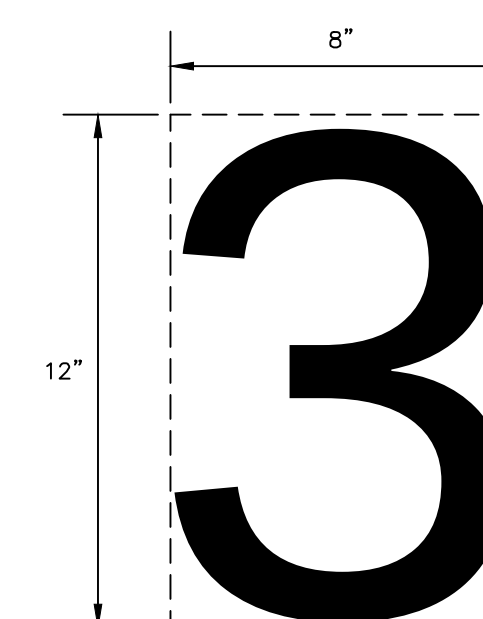
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THICKNESS OF LAYERS	
STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2-1/2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B
18"	AGGREGATE SURFACE GRAVEL MDOT 703.06 TYPE D



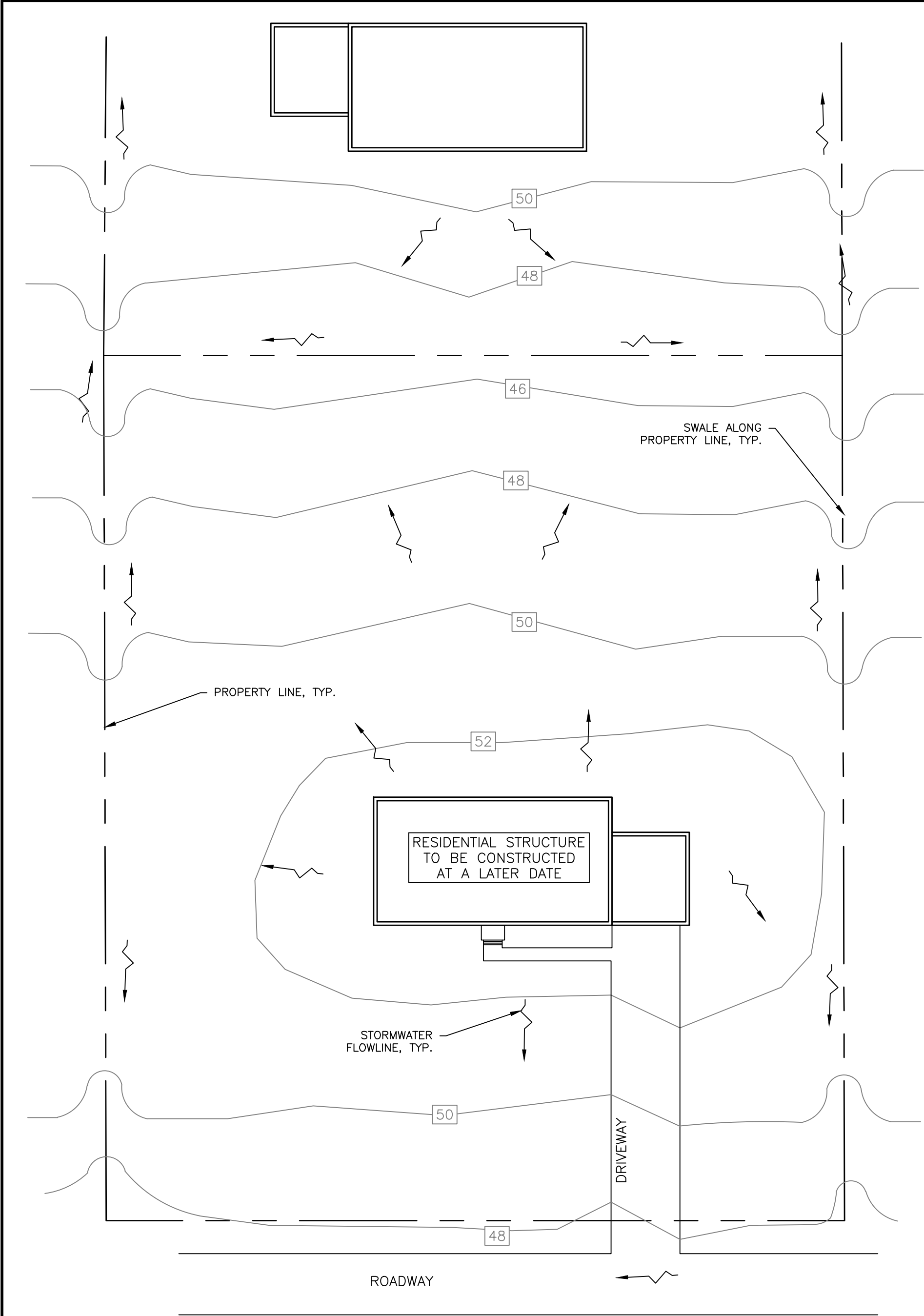
THICKNESS OF LAYERS	
STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B
15"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D



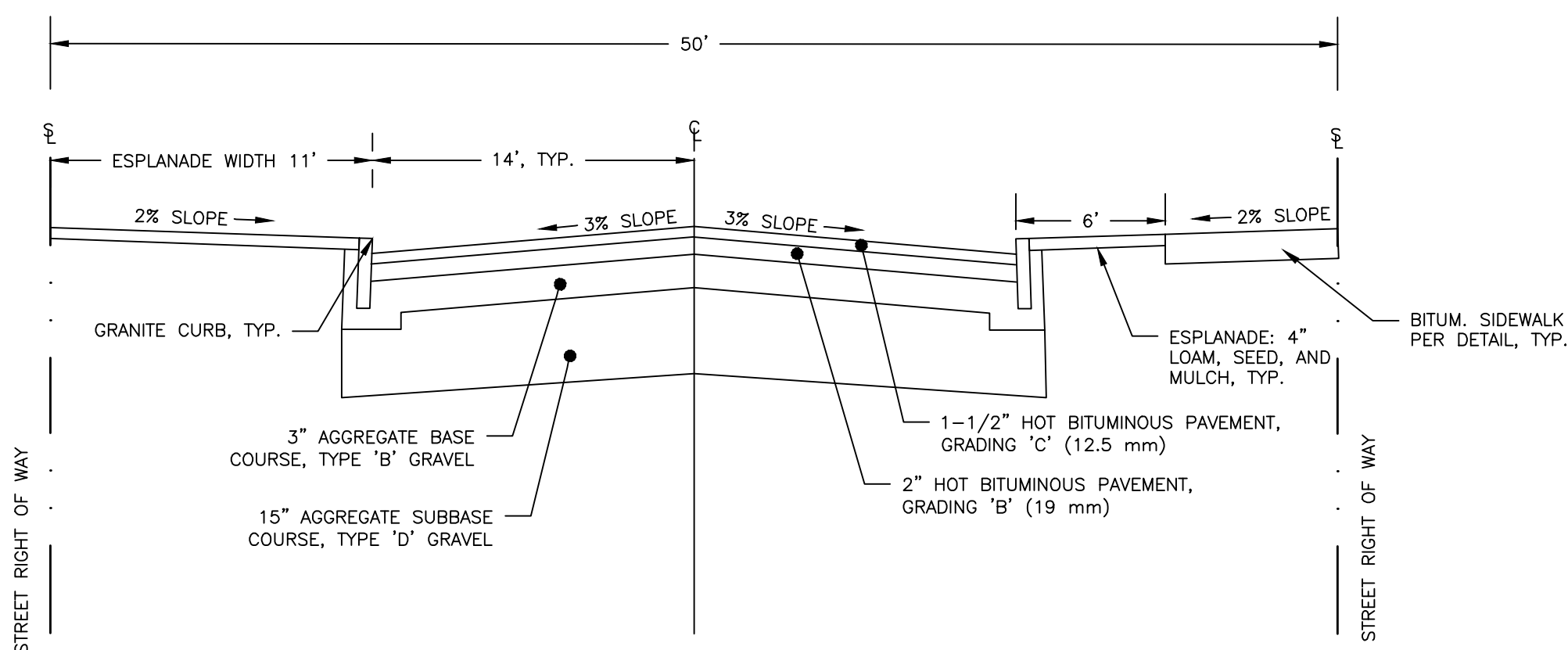
NOTES:

1. NUMBERS TO BE PAINTED AS THE SAME COLOR AS THE CORRESPONDING PARKING SPACE.
2. BOTTOM OF NUMBER TO BE FLUSH WITH THE FRONT OF THE PARKING SPACE.
3. THIS DETAIL APPLIES TO THE PRUD PARKING AREA

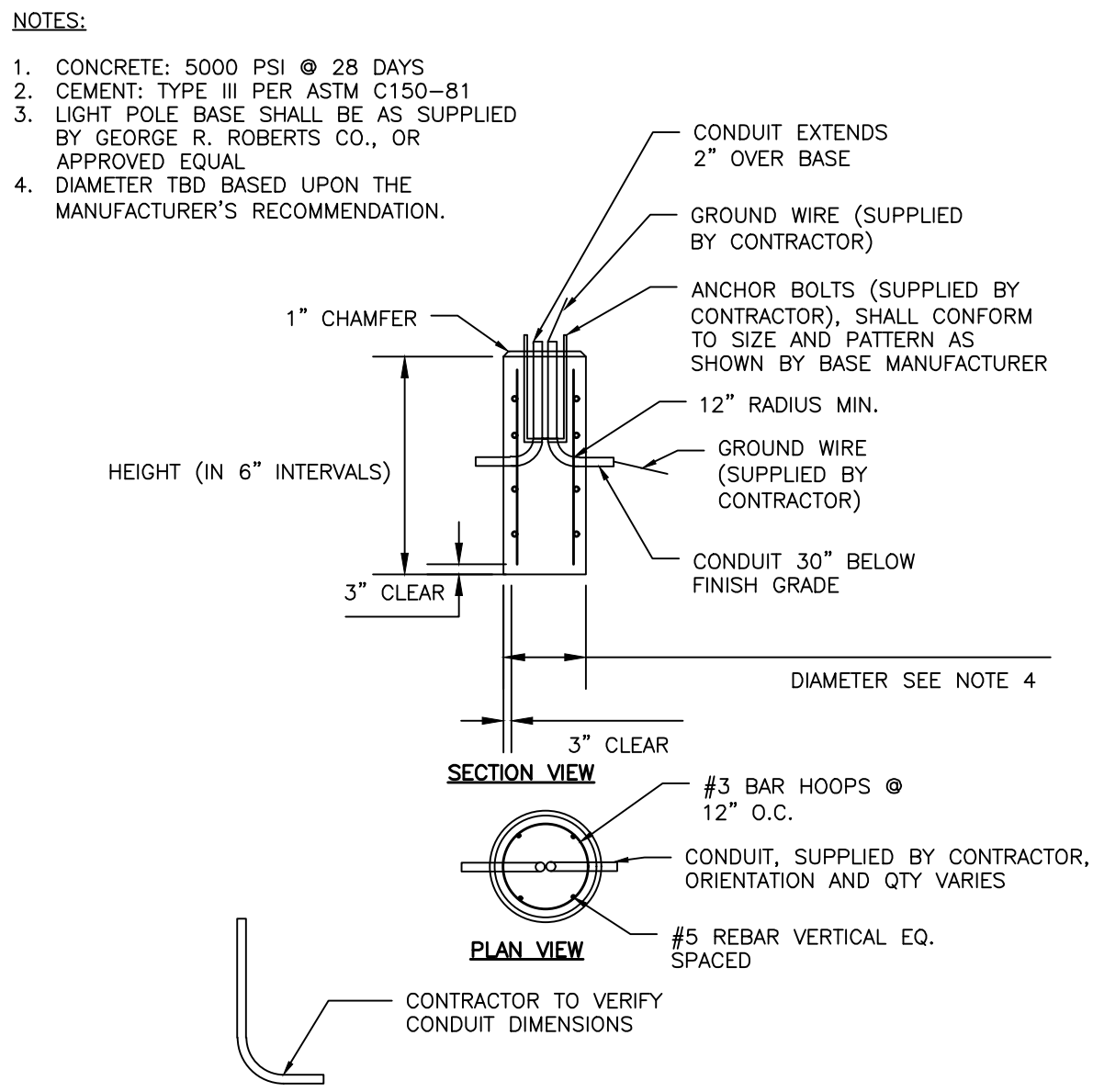
PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION



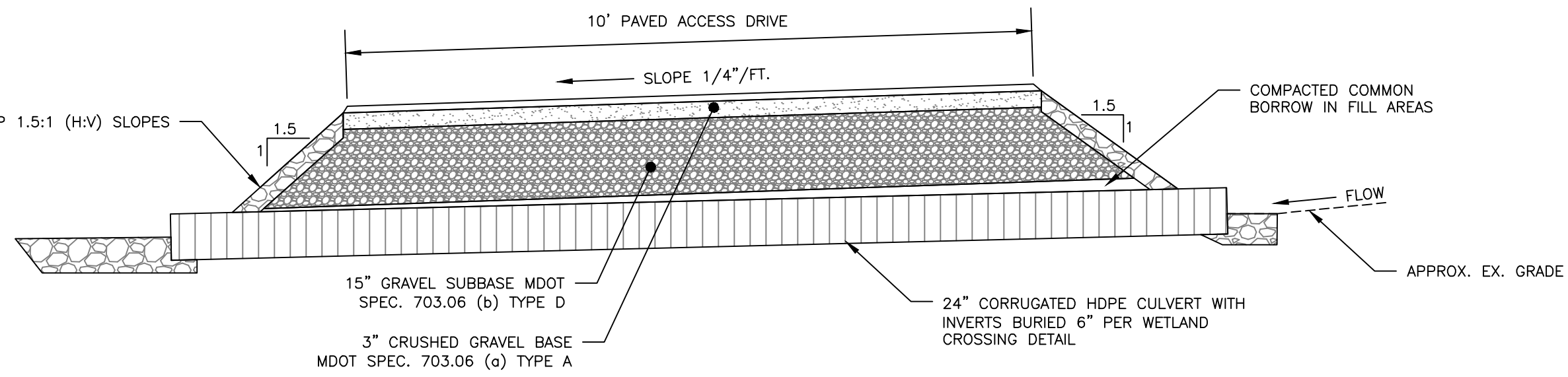
TYPICAL GRADING FOR RESIDENTIAL LOTS
NOT TO SCALE



LOCAL STREET CROSS SECTION: DEVELOPMENT ROADS
NOT TO SCALE

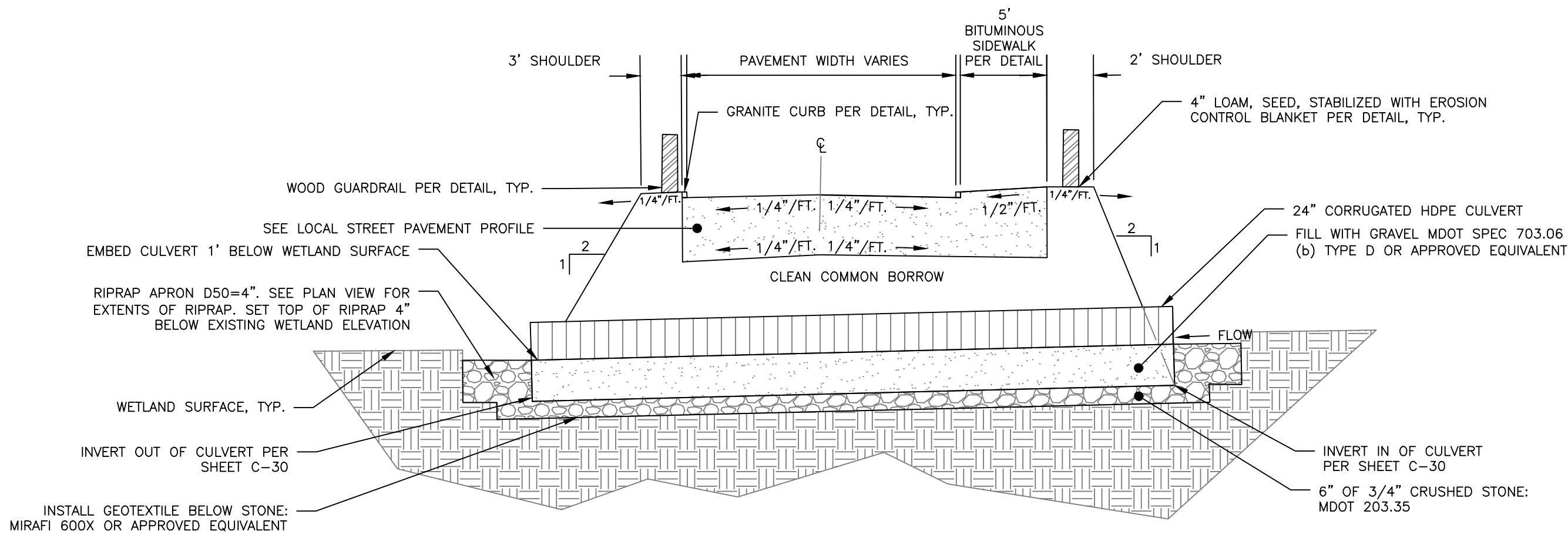


LIGHT POLE BASE
NOT TO SCALE

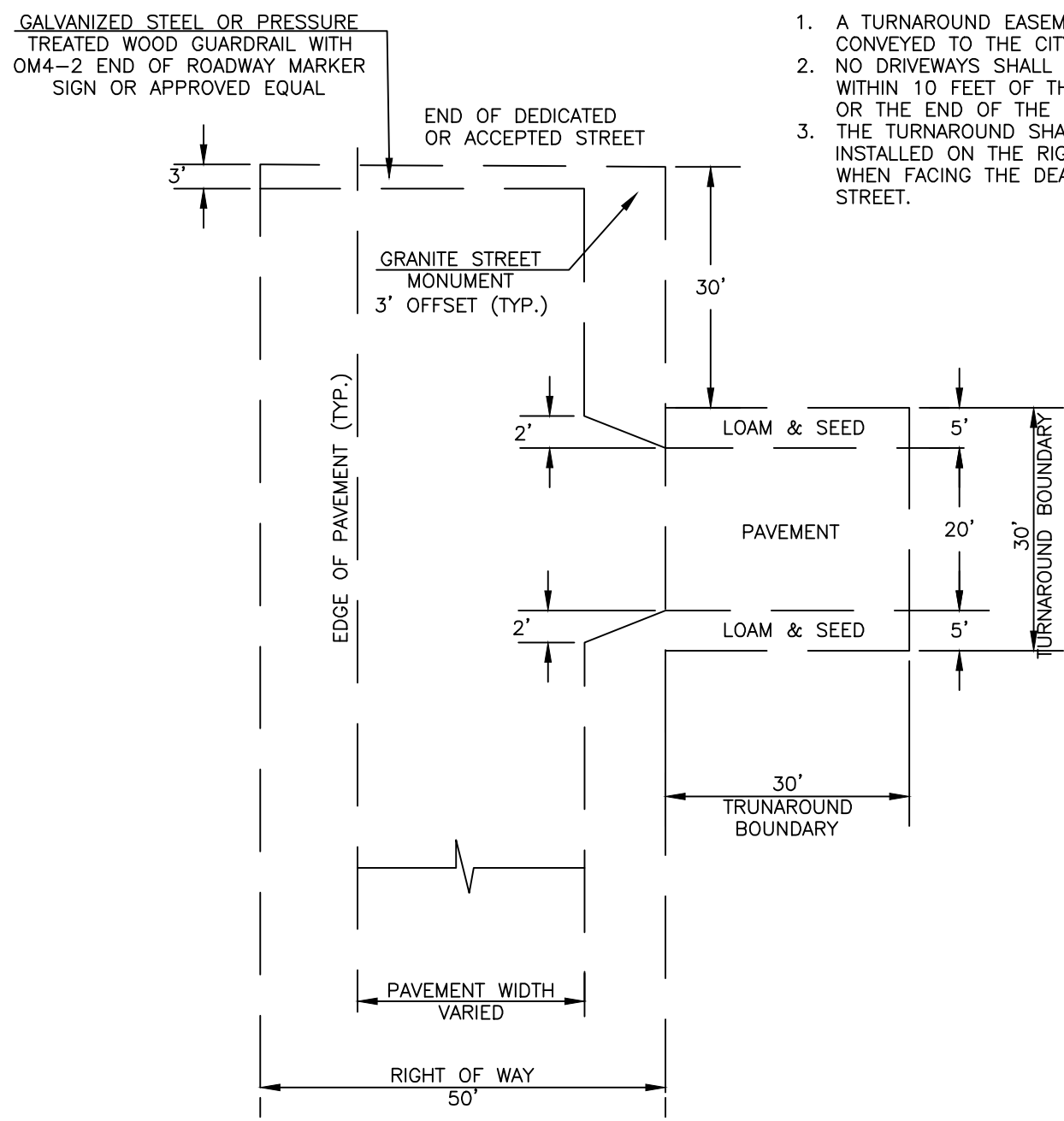


- NOTES:
1. COMPACT GRAVEL TO 95% MAXIMUM DRY DENSITY
 2. COMPACT ALL UNDISTURBED MATERIAL PRIOR TO PLACEMENT OF SUBBASE COURSE FOR GRAVEL DRIVEWAY

TYPICAL DRIVEWAY SECTION AT WETLAND CROSSING
NOT TO SCALE

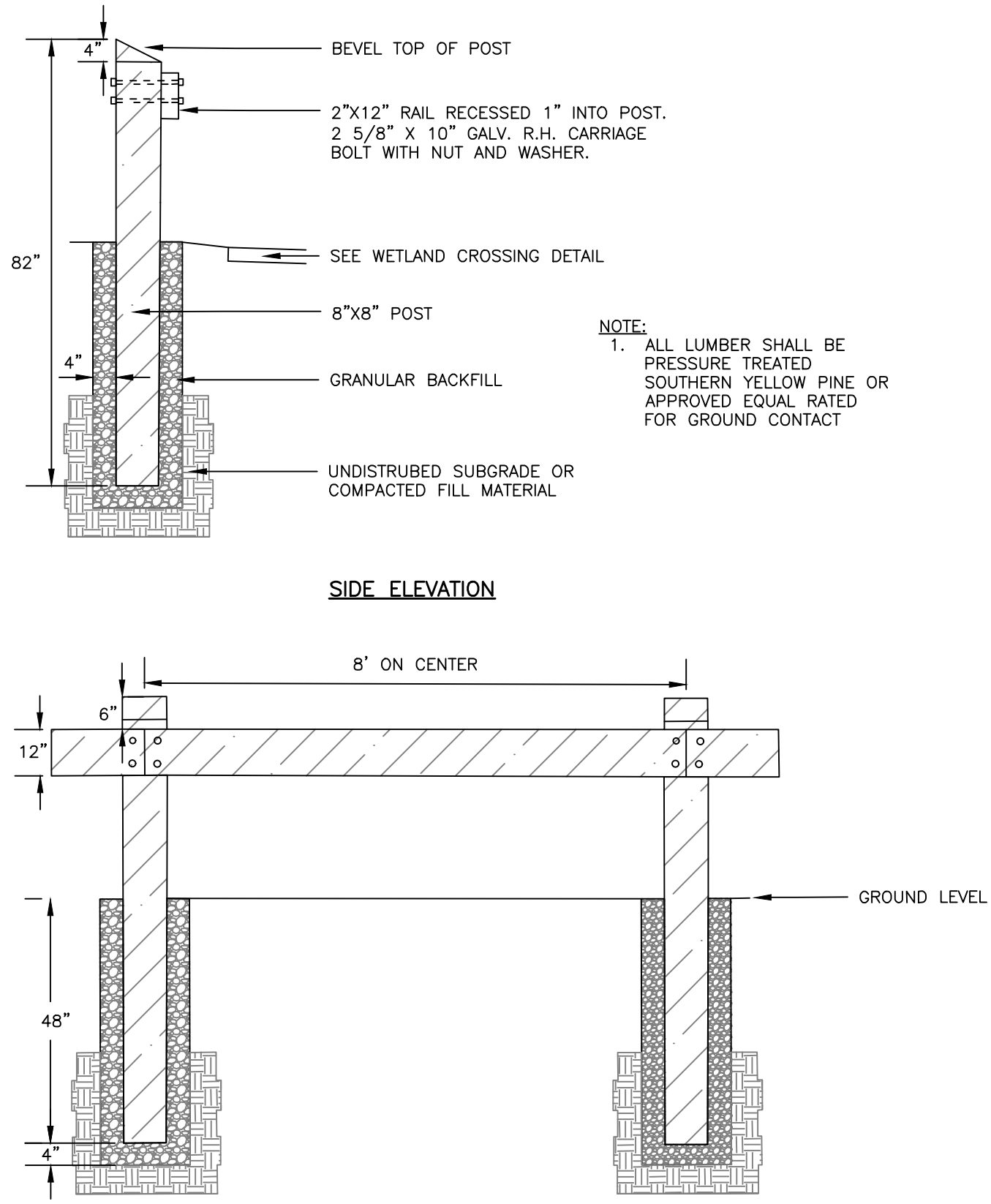


TYPICAL PRUD DRIVEWAY SECTION AT WETLAND CROSSING
NOT TO SCALE

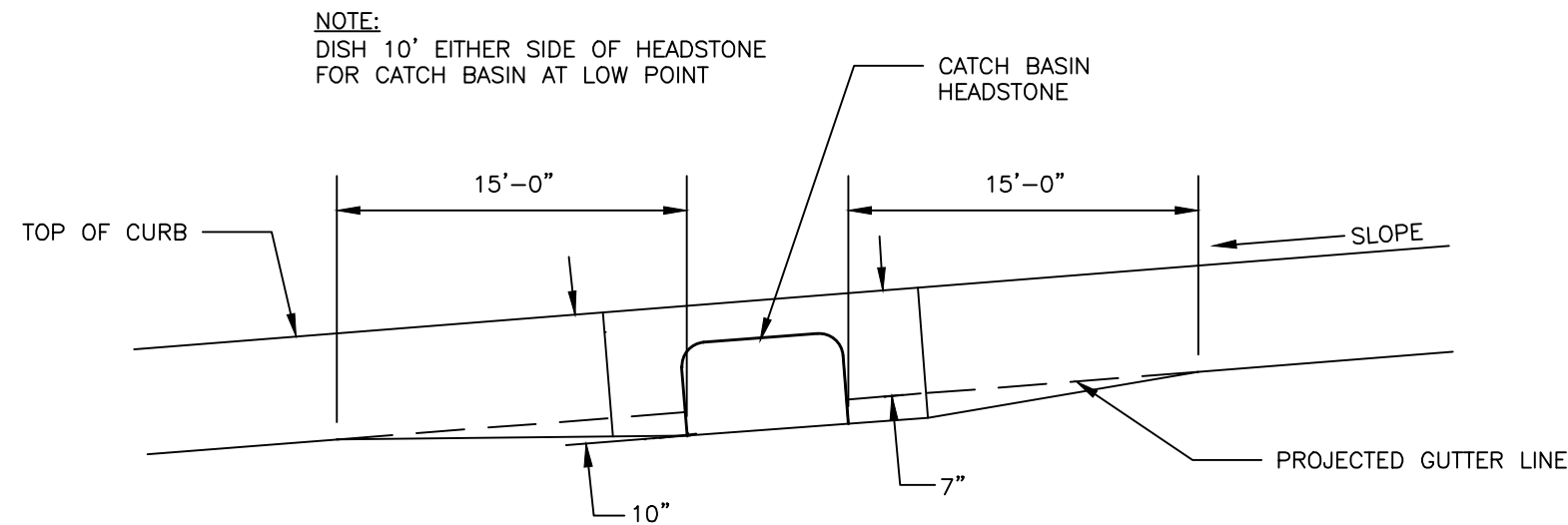


TURNAROUND ON DEAD END STREET
NOT TO SCALE

- NOTES:
1. A TURNAROUND EASEMENT SHALL BE CONVEYED TO THE CITY
 2. NO DRIVEWAYS SHALL BE LOCATED WITHIN 10 FEET OF THE TURNAROUND OR THE END OF THE STREET.
 3. THE TURNAROUND SHALL BE INSTALLED ON THE RIGHT SIDE ONLY, WHEN FACING THE DEAD END OF THE STREET.

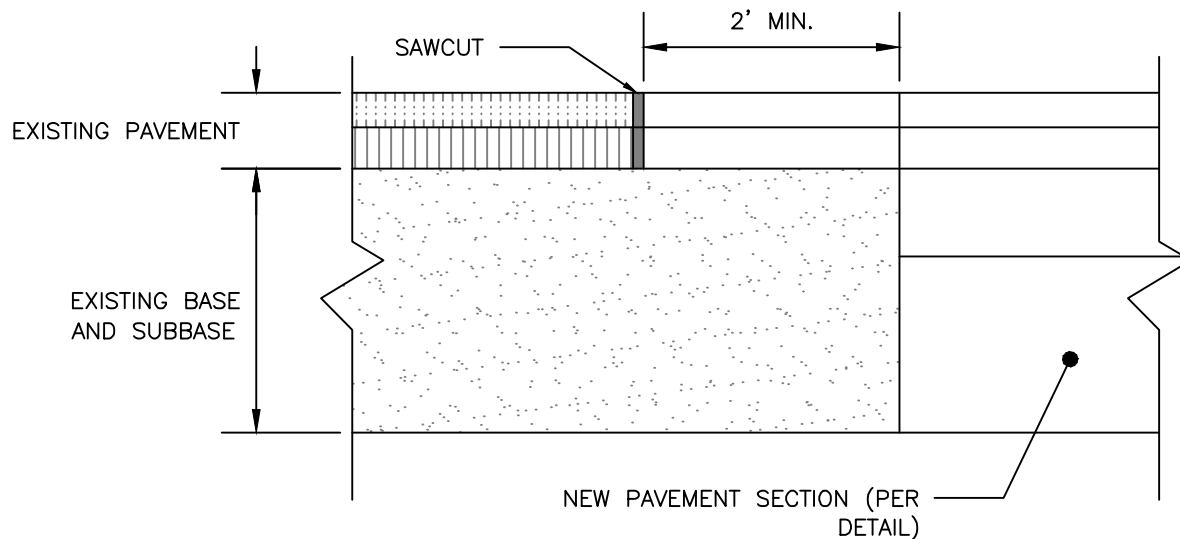


WOODEN GUARDRAIL DETAIL
NOT TO SCALE



PAVEMENT GRADING ON SLOPES FOR CATCH BASIN AND INLET
NOT TO SCALE

- NOTES:
1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. APPLY BITUMINOUS TACK COAT PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
 2. THE NEW PAVEMENT SECTION SHALL MEET THE CITY OF PORTLAND ARTERIAL BITUMINOUS PAVEMENT SECTION DETAIL AT A MINIMUM OR THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.



PAVEMENT SAWCUT DETAIL
NOT TO SCALE

PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY
PRELIM. APP.	WHS
	8/22/17
DRAWING NAME: SITE DETAILS - 3	
PROJECT NAME: STROUDWATER PRESERVE	
CLIENT: STROUDWATER DEVELOPMENT PARTNERS, LLC	
ADDRESS: KENNEBUNK, MAINE 04043	
DRAWING NO. C-52	



NOTES:

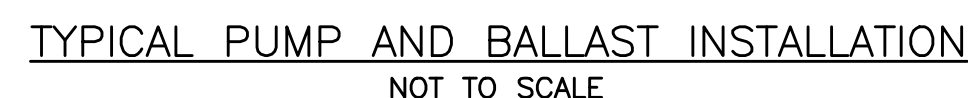
1. USE FLEXIBLE RUBBER BOOT WITH TWO STAINLESS STEEL BANDS
2. LOCATION OF CORED HOLE IN MANHOLE SHOULD BE FIELD CHECKED PRIOR TO INSTALLATION TO ENSURE ADEQUATE SEPARATION FROM MANHOLE BARREL JOINT.
3. CITY ENGINEER SHALL INSPECT AND APPROVE INSTALLATION OF FORCE MAIN PRIOR TO BACKFILLING.



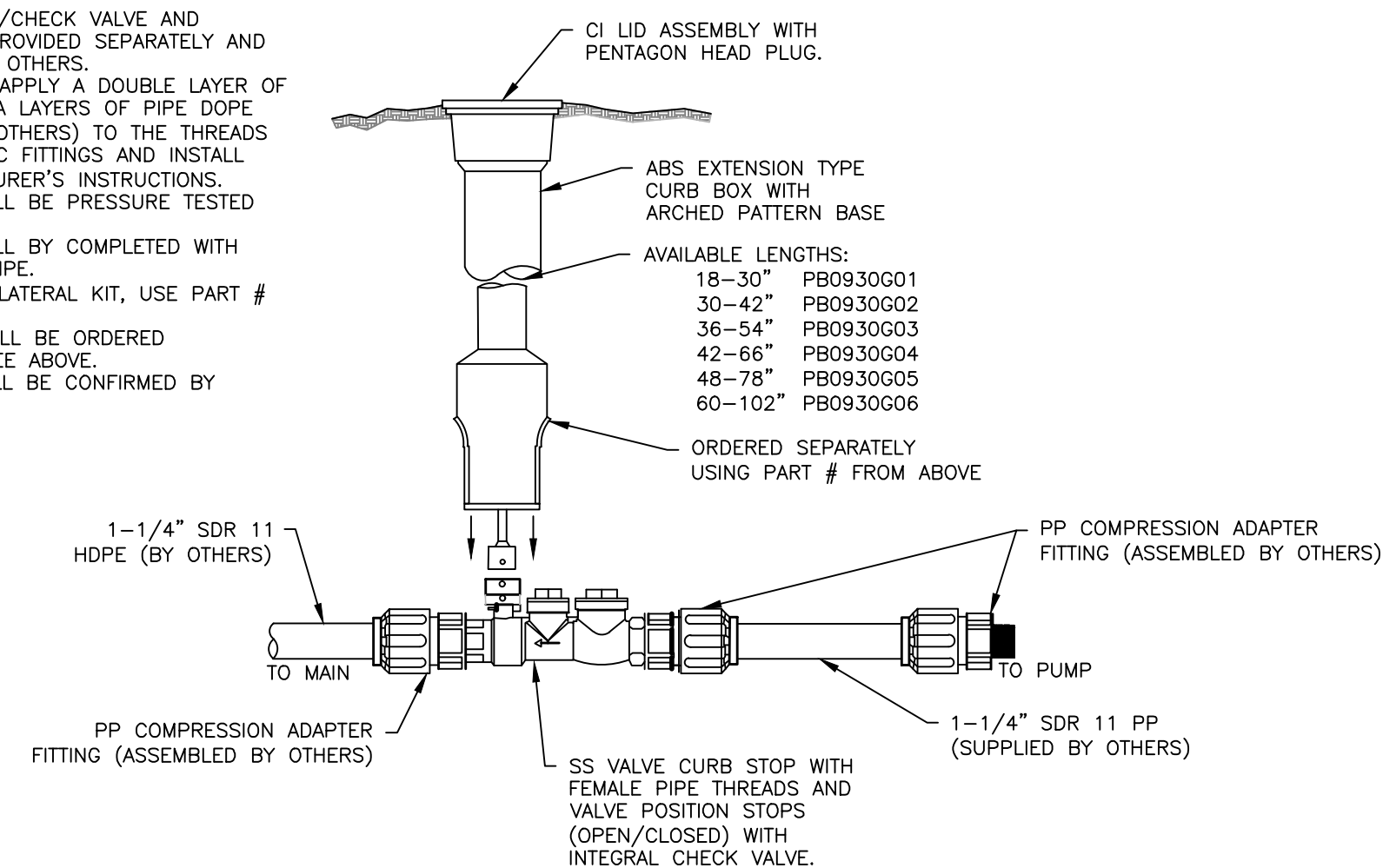
- NOTES:
1. PLACE TRENCH BACKFILL MATERIAL IN 12" LIFTS.
 2. COMPACT MATERIAL LIFTS TO 92% OF MAX. DRY DENSITY.
 3. PAVED AREAS SHALL MATCH TYPICAL ROAD SECTION WHEN LOCATED WITHIN PAVED AREAS.
 4. WORK WITHIN NEW WESTBROOK STREET SHALL BE COORDINATED WITH THE DEPARTMENT OF PUBLIC WORKS DIRECTOR. PAVEMENT CUT IN WESTBROOK STREET SHALL BE RESTORED TO EXISTING CONDITIONS OR THE COLLECTOR PAVEMENT PROFILE, WHICHEVER IS MORE STRINGENT.



- NOTES:
1. CONCRETE TO HAVE A MIN. PSI OF 5,000 @ 28 DAYS.
 2. CEMENT: TYPE III PER ASTM C150-81.
 3. DESIGN LOADING: H=20 PER ASTM C-478.
 4. JOINTS TO BE SEALED WITH 2 STRIPS OF "CON-SEAL".
 5. FITTINGS IN MANHOLE SHALL BE SCHEDULE 80.
 6. ALL BALL VALVES SHALL HAVE O-RINGS
 7. BALL VALVES SHALL BE TRUE UNION 2000 INDUSTRIAL BALL VALVES OR EQUIVALENT.



- NOTES:**
1. SS CURB STOP/CHUCK VALVE AND FITTINGS ARE PROVIDED SEPARATELY AND ASSEMBLED BY OTHERS.
 2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, A LAYERS OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.
 3. ASSEMBLY SHALL BE PRESSURE TESTED BY OTHERS.
 4. ASSEMBLY SHALL BE COMPLETED WITH SS 1/2" PIPE DOPE PIPE.
 5. ORDER SS LATERAL KIT, USE PART # NC0193G0.
 6. CURB BOX SHALL BE ORDERED SEPARATELY, SEE ABOVE.
 7. PIPE SIZE SHALL BE CONFIRMED BY OTHERS.



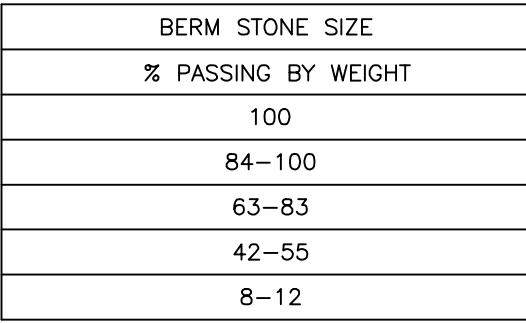
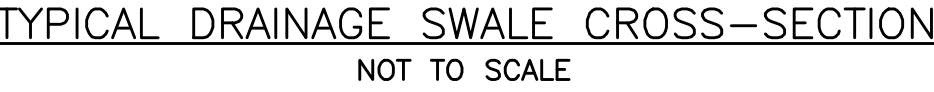
FORCE MAIN SHUT-OFF DETAIL
NOT TO SCALE



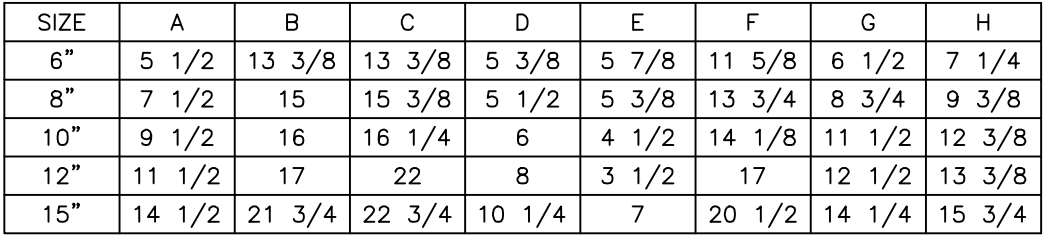
FORCE MAIN MANHOLE CLEAN-OUT
NOT TO SCALE

PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

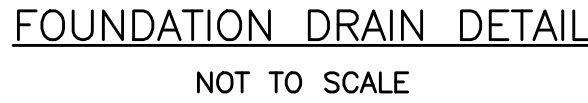
[illegible]



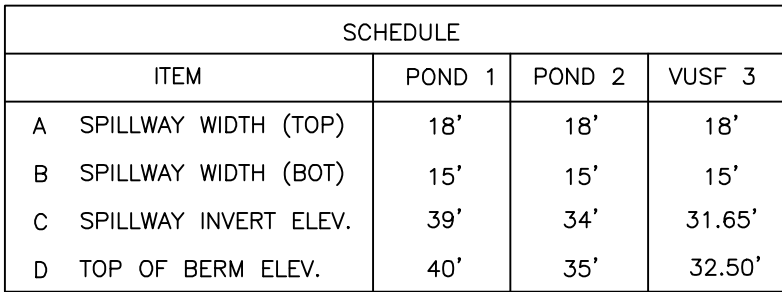
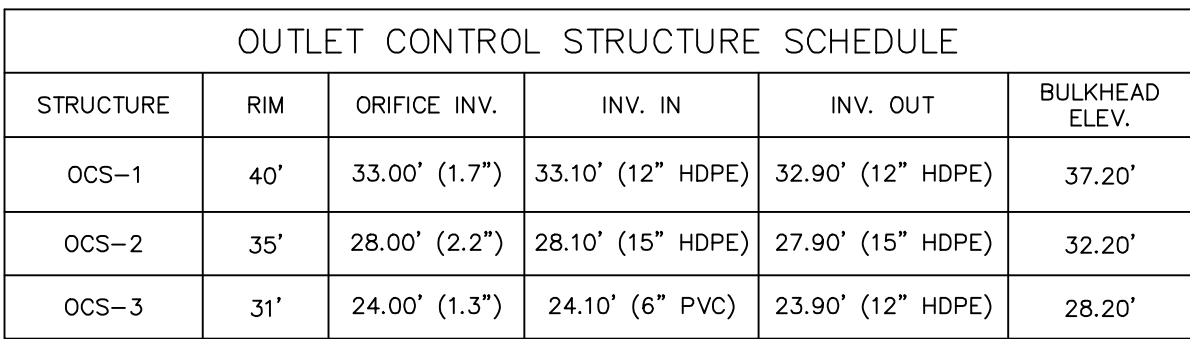
- NOTES:**
1. FIELDSTONE, ROUGH QUARRIED STONE, BLASTED LEDGE ROCK OR TAILINGS ARE ACCEPTABLE BERM MATERIALS.
 2. MEDIAN STONE SIZE TO BE APPROX 3 INCHES AT A MAXIMUM SIZE OF 6 INCHES. SEE TABLE.



- NOTES:**
1. INSTALL "CASCO TRAP" AS MANUFACTURED BY THE ETHERIDGE FOUNDRY, OR APPROVED EQUIVALENT AS SUPPLIED BY THE LEBARON FOUNDRY, MODEL #L 202 "STANDARD CATCH BASIN TRAP". INSTALL TRAP IN ALL CATCH BASINS.
 2. THE CASCO TRAP IS AN ETHERIDGE STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
 3. TO INSTALL, THE CASCO TRAP IS INSERTED INTO THE PIPE WITH THE HOOD DOWN.



- NOTES:
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
 2. DESIGN LOAD FOR H-20 WHEEL LOAD.
 3. STRUCTURE TO CONFORM TO ASTM-C478 SPECIFICATIONS.
 4. REINFORCE TO 0.12 IN SQ./LF.
 5. JOINTS SEALED WITH BUTYL RUBBER.
 6. POLYPROPYLENE STEPS 12" O.C.



- OVERFLOW SPILLWAY DETAIL
- NOT TO SCALE

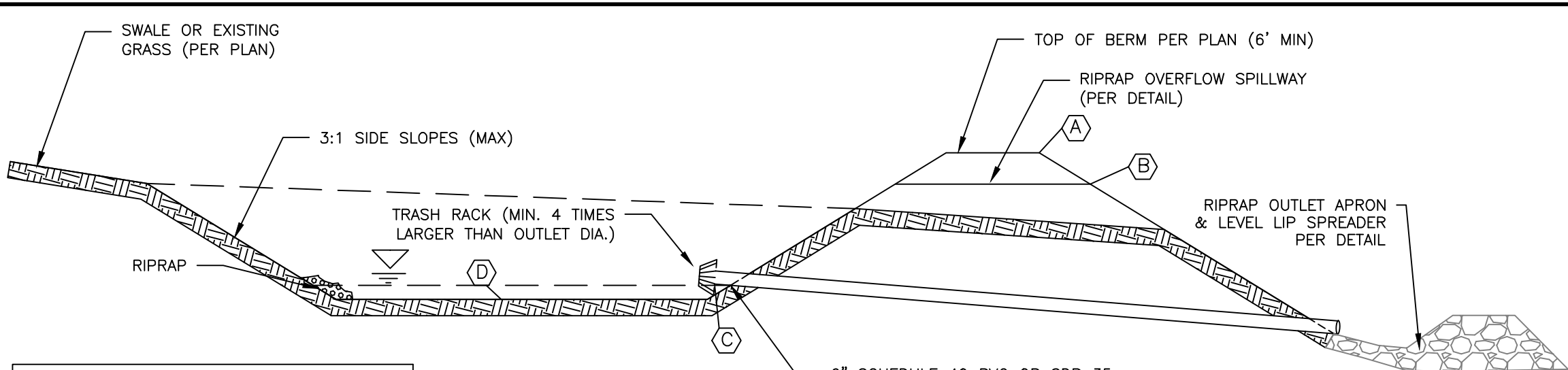
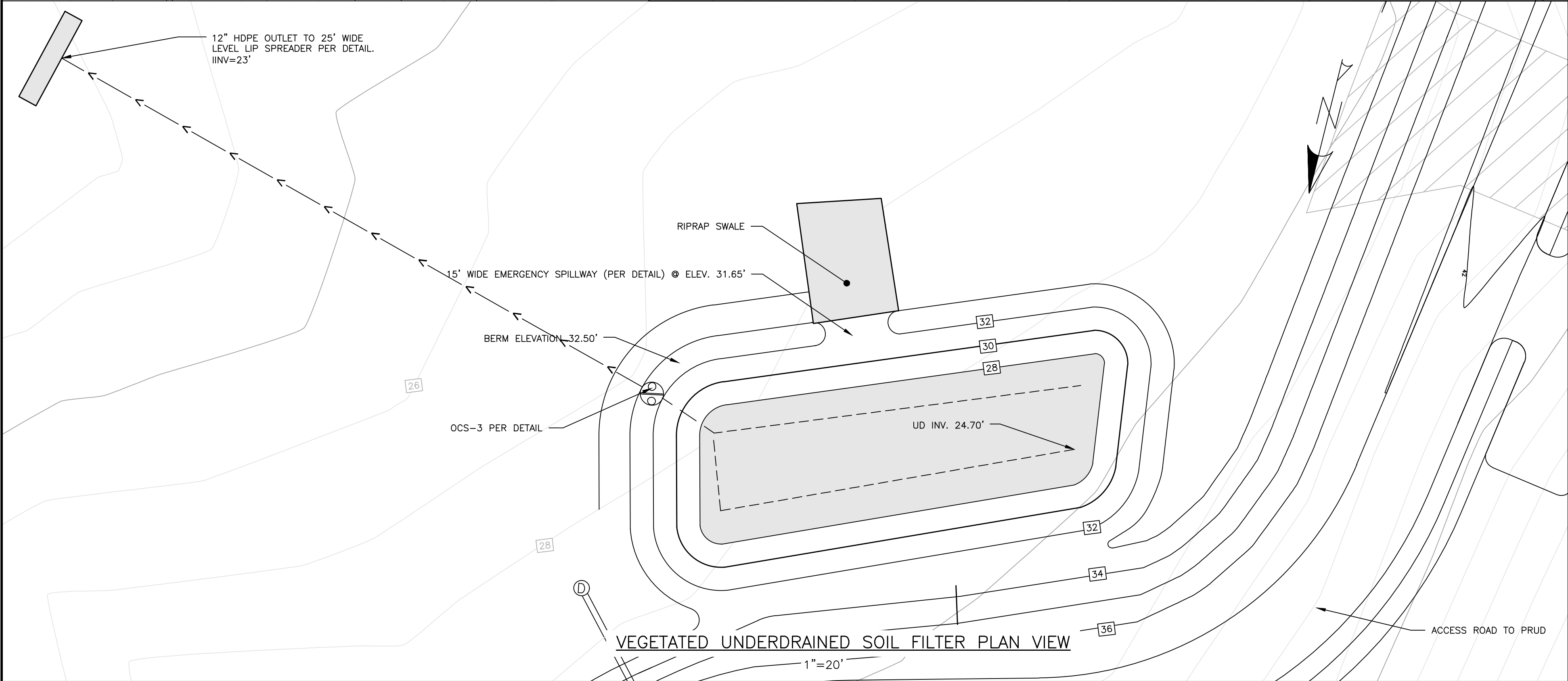
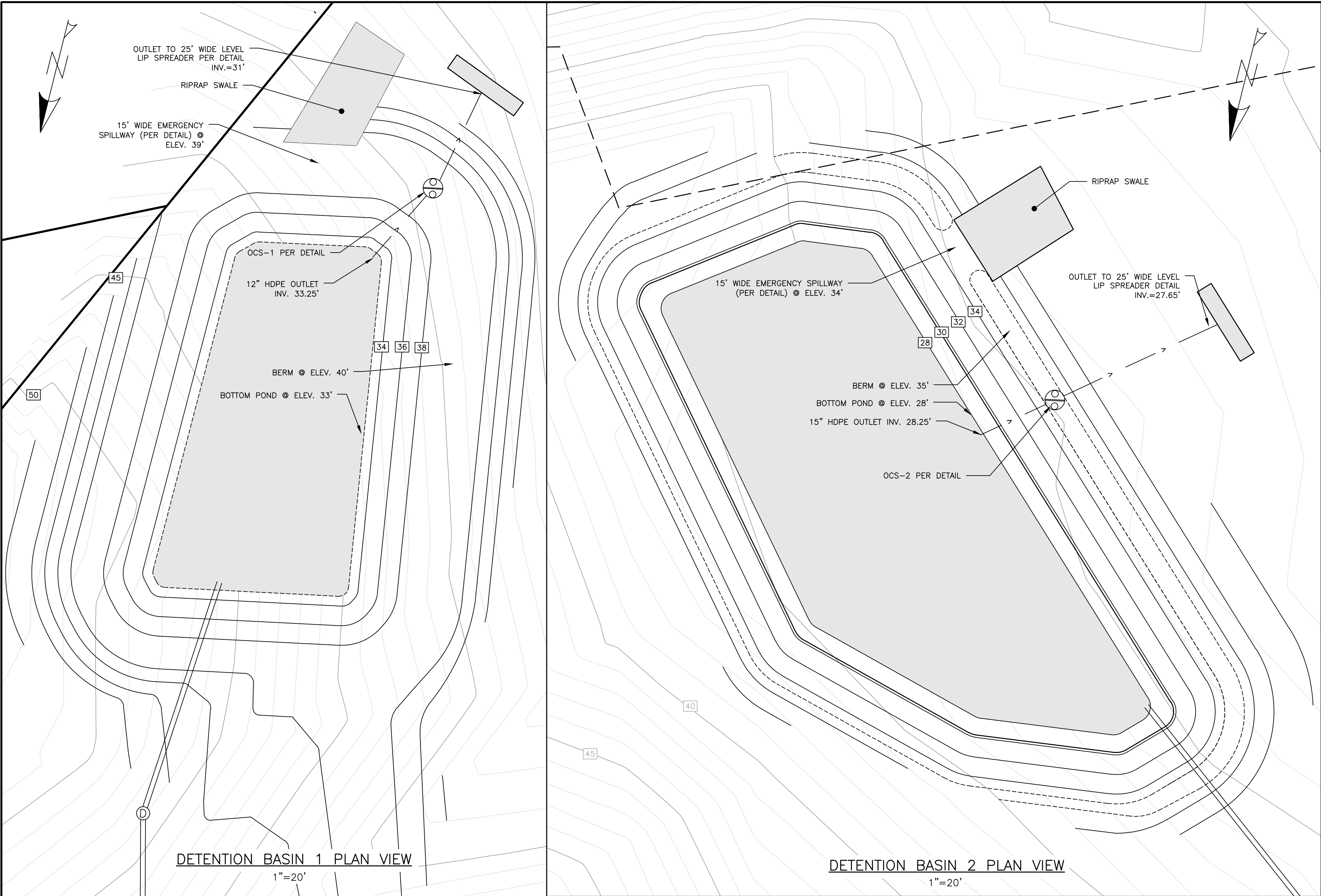


- DESIGN NOTES:**
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
 2. DESIGN LOAD FOR H=20 WHEEL LOAD.
 3. DESIGN BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
 4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH 1/2" WIDE X 1/4" DEEP BACKER ROD.
 5. POLYPROPYLENE STEPS 12" O.C.
 6. EXTERIOR WATERPROOFING.
 7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES ENTERING AND LEAVING THE BASIN OUTLETS.
 8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND - SECTION 2.
 9. ALL STEPS AND SLOPES SHALL BE FINISHED TO 1/8" TYP.
 10. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE CONCRETE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS.



- NOTES:
1. RIPRAP SHALL BE DESCRIBED BY M.D.O.T.
703.26 EXCEPT SIZE SHALL BE AS SHOWN





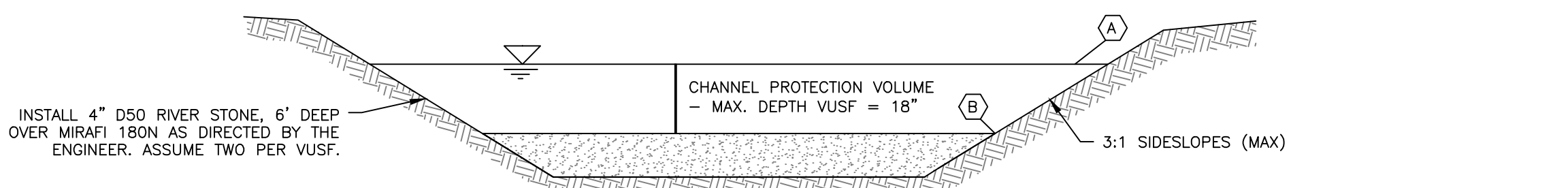
SCHEDULE		
ITEM	POND 1	POND 2
(A) TOP OF BERM	40'	35'
(B) SPILLWAY INVERT*	39'	34'
(C) OUTLET INVERT	33.25'	28.25'
(D) BOTTOM OF BASIN	33'	28'

CROSS SECTION

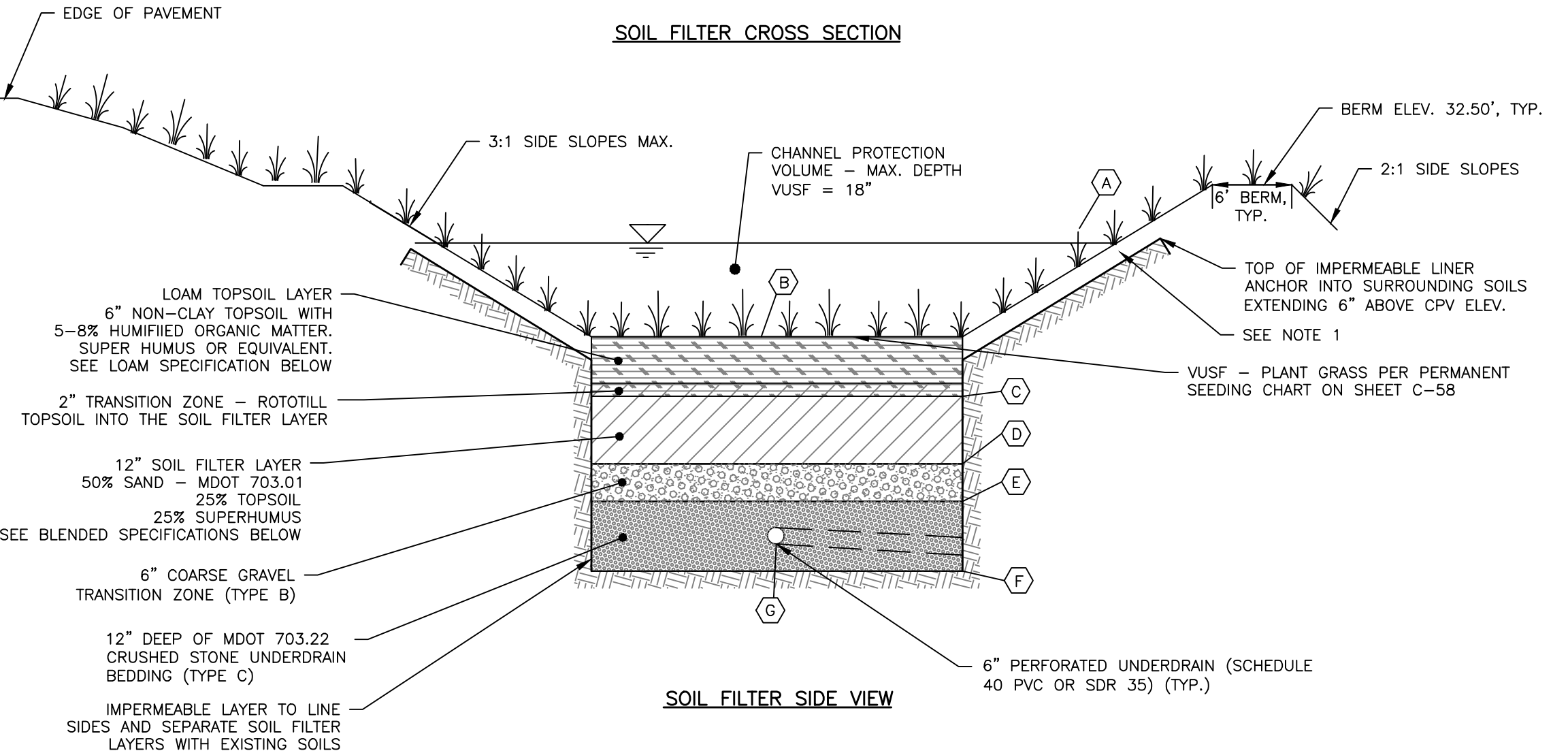
DESIGN NOTES:

1. THE BASIN SURFACE SHALL BE STABILIZED WITH ONE OF THE FOLLOWING SEED MIX: REDTOP, INDIAN GRASS, SWITCHGRASS, OR DEERTONGUE.
2. BERM FILL SHALL COMPACTED TO ATLEAST 90% OF MAX DENSITY.

DETENTION BASIN DETAIL
NOT TO SCALE



SOIL FILTER CROSS SECTION



SOIL FILTER SIDE VIEW

NOTES:

1. WRAP ALL SIDES BETWEEN THE SOIL FILTER MATERIALS, IMPERMEABLE LINER AND EXISTING SOILS WITH MIRAFI 180N OR EQUIVALENT.
2. THE SIDESLOPES SHALL BE STABILIZED WITH A MIN. OF 4" LOAM, EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX.
3. LIGHT COMPACTION SOIL FILTER AND PIPE BEDDING MATERIAL. (90 TO 92% STANDARD PROCTOR). TESTING SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING FIRM.
4. THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
5. TESTING: SIEVE ANALYSIS INCLUDING HYDROMETER TESTING FOR CLAY CONTENT FOR EACH LAYER SHALL BE PERFORMED BY A QUALIFIED SOIL TESTING LABORATORY AND SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO CONSTRUCTION. ALL TESTING AND SUBMITTALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MAINE DEP - TECHNICAL DESIGN MANUAL SECTION 7.2.5 TESTING AND SUBMITTALS.
6. ACORN ENGINEERING, INC., RECOMMENDS THE SOIL FILTER LAYER BE SUPPLIED BY JONES ASSOCIATES, INC., AUBURN, ME.

6" LOAM TOPSOIL LAYER SPECIFICATION		
SIEVE SIZE	% PASSING BY WEIGHT	
#4	75 - 95	
#10	60 - 90	
#40	35 - 85	
#200	20 - 70	

1. CLAY FRACTION <10% PASSING THE #200 SIEVE. <10% CLAY PASSING THE #200 SIEVE ALLOWED PER EMAIL FROM MARIANNE HUBERT - MDEP TO WILL SAVAGE DATED 9/20/13
2. LOAM SHALL BE LOOSE AND FRIABLE AND SHALL BE FREE FROM ADMIXTURE OF SUBSOIL, REFUSE, LARGE STONES, CLODS OR ROOTS OR RHIZOMES OR "WITCH GRASS" OR OTHER UNDESIRABLE GRASSES.

SOIL FILTER BED - SUPERHUMUS OR EQUIV. SPECIFICATION		
SIEVE SIZE	% PASSING BY WEIGHT	
1"	100	
#200	0 - 5	

SOIL FILTER BED - UNDERDRAIN BEDDING (TYPE C)		
SIEVE SIZE	% PASSING BY WEIGHT	
1"	100	
3/4"	90 - 100	
3/8"	0 - 75	
#4	0 - 25	
#10	0 - 5	

12" SOIL FILTER BED - BLENDED SAND, LOAM, SUPERHUMUS SIEVE ANALYSIS		
SIEVE SIZE	% PASSING BY WEIGHT	
#10	85 - 100	
#20	70 - 100	
#60	15 - 40	
#200	8 - 15	

1. CLAY FRACTION <2% PASSING THE #200 SIEVE.
2. SUPERHUMUS OR EQUIV.

SOIL FILTER BED - TRANSITION ZONE (TYPE B)		
SIEVE SIZE	% PASSING BY WEIGHT	
1"	90 - 100	
1/2"	75 - 100	
#4	50 - 100	
#20	15 - 80	
#50	0 - 5	
#200	0 - 5	

CONSTRUCTION OBSERVATION:

CONSTRUCTION OBSERVATION SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY ACORN ENGINEERING. THE CONTRACTOR OR OWNERS REPRESENTATIVE SHALL NOTIFY ACORN ENGINEERING A MINIMUM 48 HOURS OR 2 BUSINESS DAY WHICH EVER IS GREATER PRIOR TO ANY OF THE PHASES OF CONSTRUCTION LISTED BELOW SO THAT THE FOLLOWING SITE VISITS MAY BE SCHEDULED.

1. ONE SITE VISIT AFTER PRELIMINARY CONSTRUCTION OF THE VUSF GRADES;
2. ONE SITE VISIT DURING THE INSTALLATION OF THE IMPERVIOUS LINER;
3. ONE SITE VISIT AFTER THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
4. ONE SITE VISIT DURING THE CONSTRUCTION OF THE SOIL FILTER LAYER.
5. ONE SITE VISIT DURING THE CONSTRUCTION OF THE TOPSOIL LAYER.
6. ONE SITE VISIT DURING THE FLOODING OF THE VUSF, IF REQUIRED.

VEGETATED UNDERDRAINED SOIL FILTER DETAIL
NOT TO SCALE

PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR
PRELIM. APP.

BY
DATE
WHS
8/22/17

STORMWATER POND BMP DETAILS

STROUDWATER PRESERVE

PROJECT NAME:
STROUDWATER DEVELOPMENT PARTNERS, LLC
KENNEBUNK, MAINE 04043

DRAWING NO.
C-57

FILE:
1079_CIVIL

JN:
1079

SCALE:
NTS

DESIGNED BY:
WHS

DRAWN BY:
SUL

CHECKED BY:
WHS

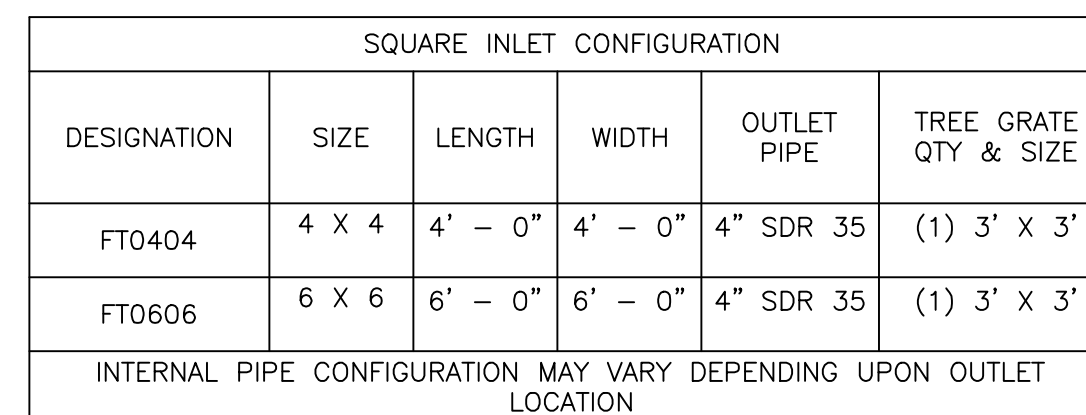
ACORN ENGINEERING, INC.
158 DANFORTH ST. PORTLAND, MAINE 04102
(207) 775-2655

STATE OF MAINE
WILLIAM SAVAGE
No. 11419
8-25-17
Professional Engineer



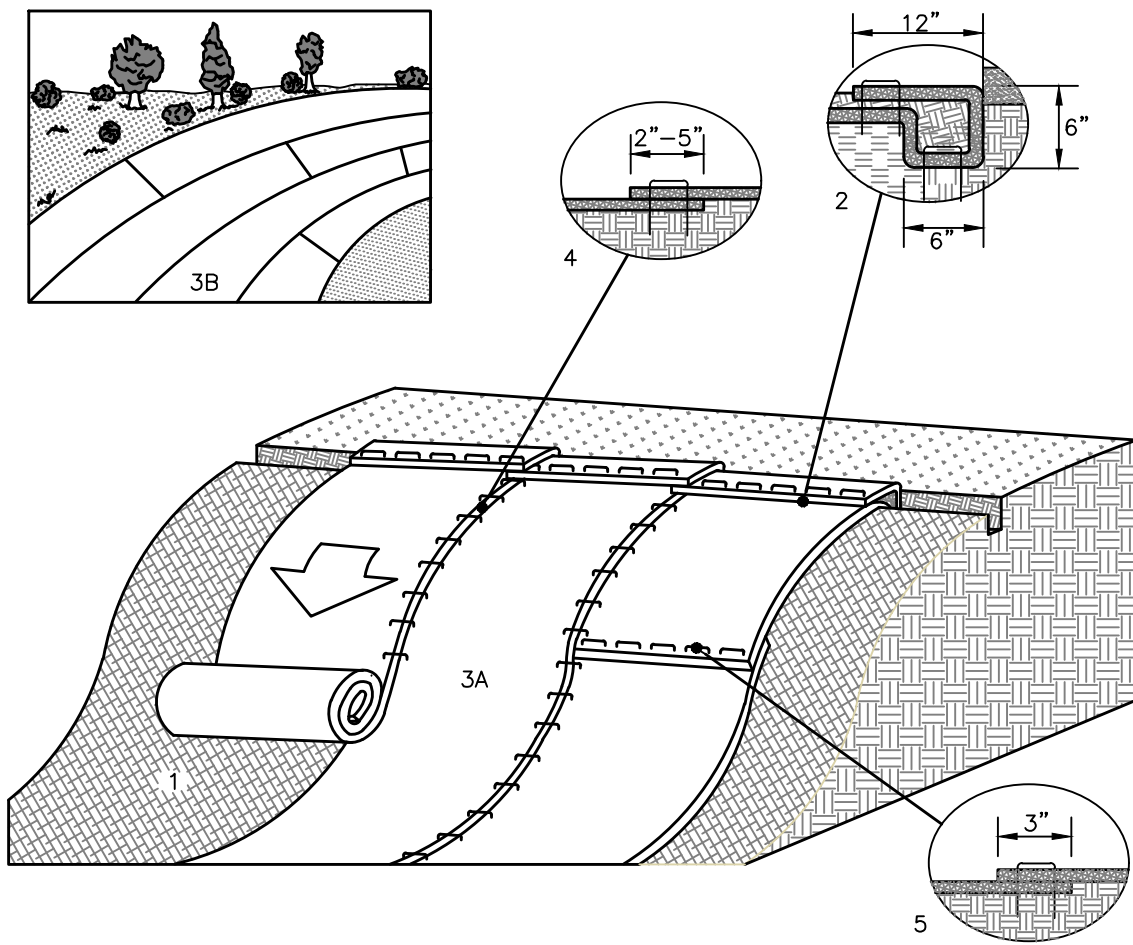
INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING UPON OUTLET LOCATION

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING UPON OUTLET LOCATION



PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

SLOPE
INSTALLATION DETAIL



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (ECB), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE ECB IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF ECB EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE ECB WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" PORTION OF ECB BACK OVER THE SEED AND COMPACTED SOIL. SECURE ECB OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE ECB.
3. ROLL THE ECB (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. ECB WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL ECB MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL ECB MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON THE ECB TYPE.
5. CONSECUTIVE ECB SPICED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE ECB WIDTH.

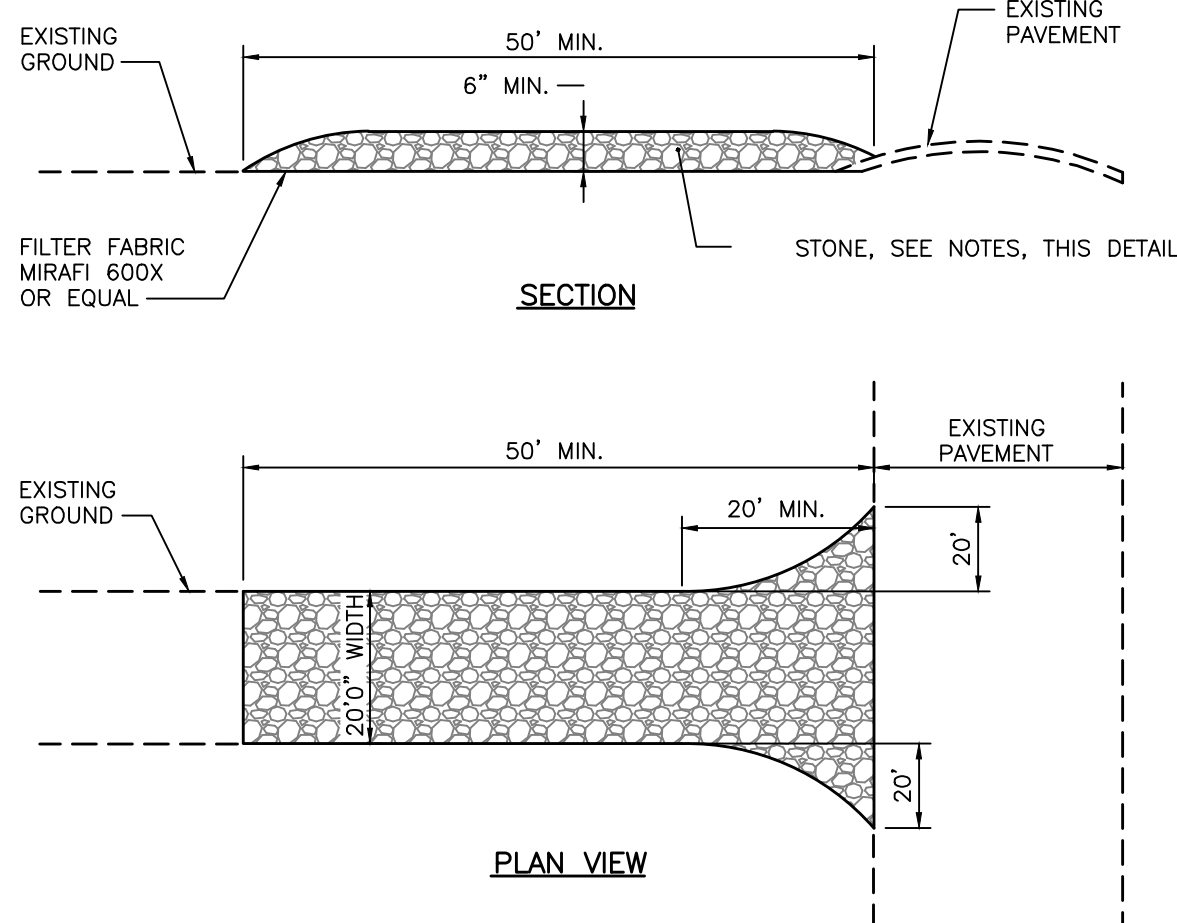
*NOTE:
IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE ECB.

EROSION CONTROL BLANKET SLOPE INSTALLATION

NOT TO SCALE

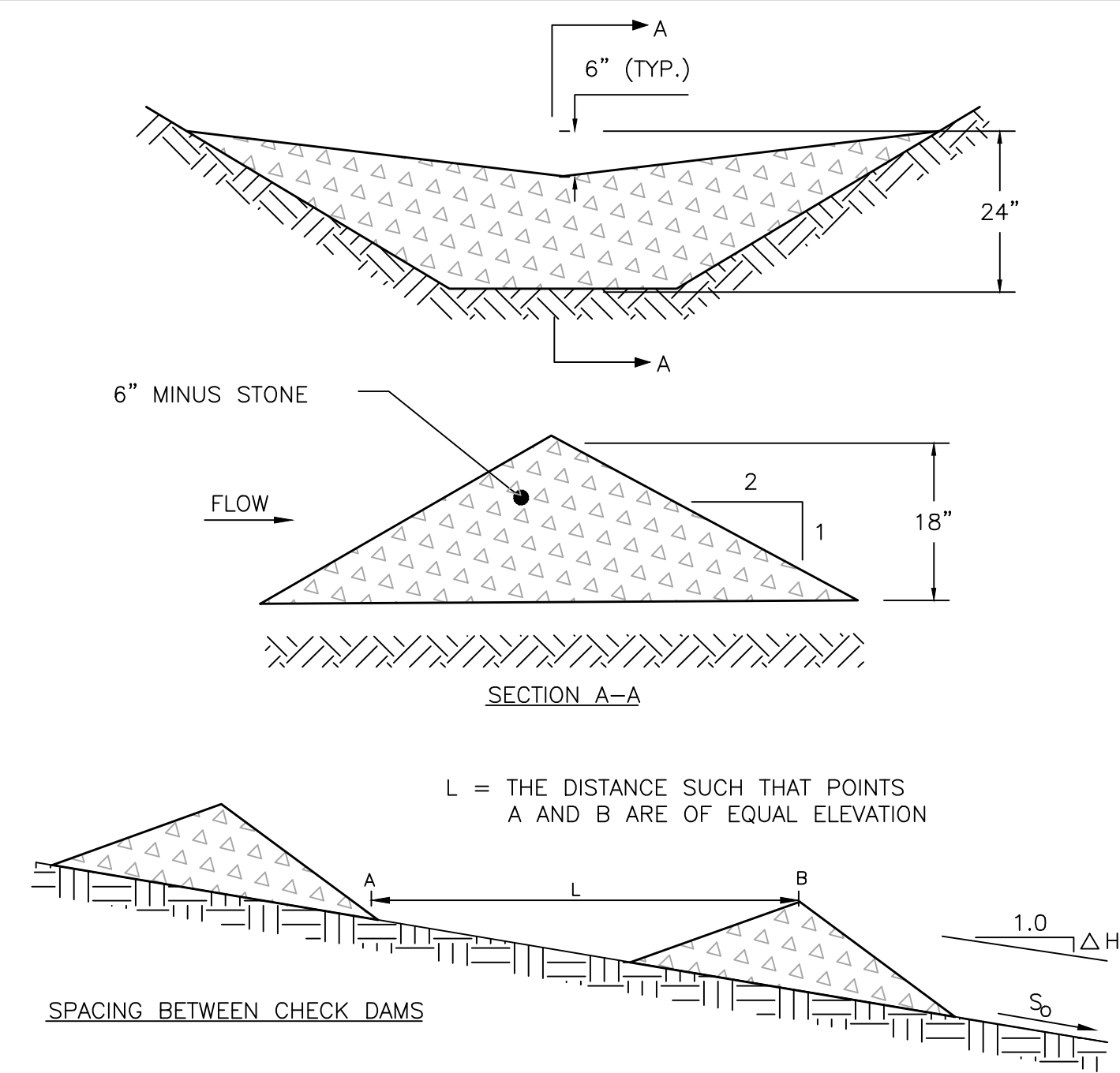
NOTES:

1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"-3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFF-SITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON-SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT-OF-WAY



STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



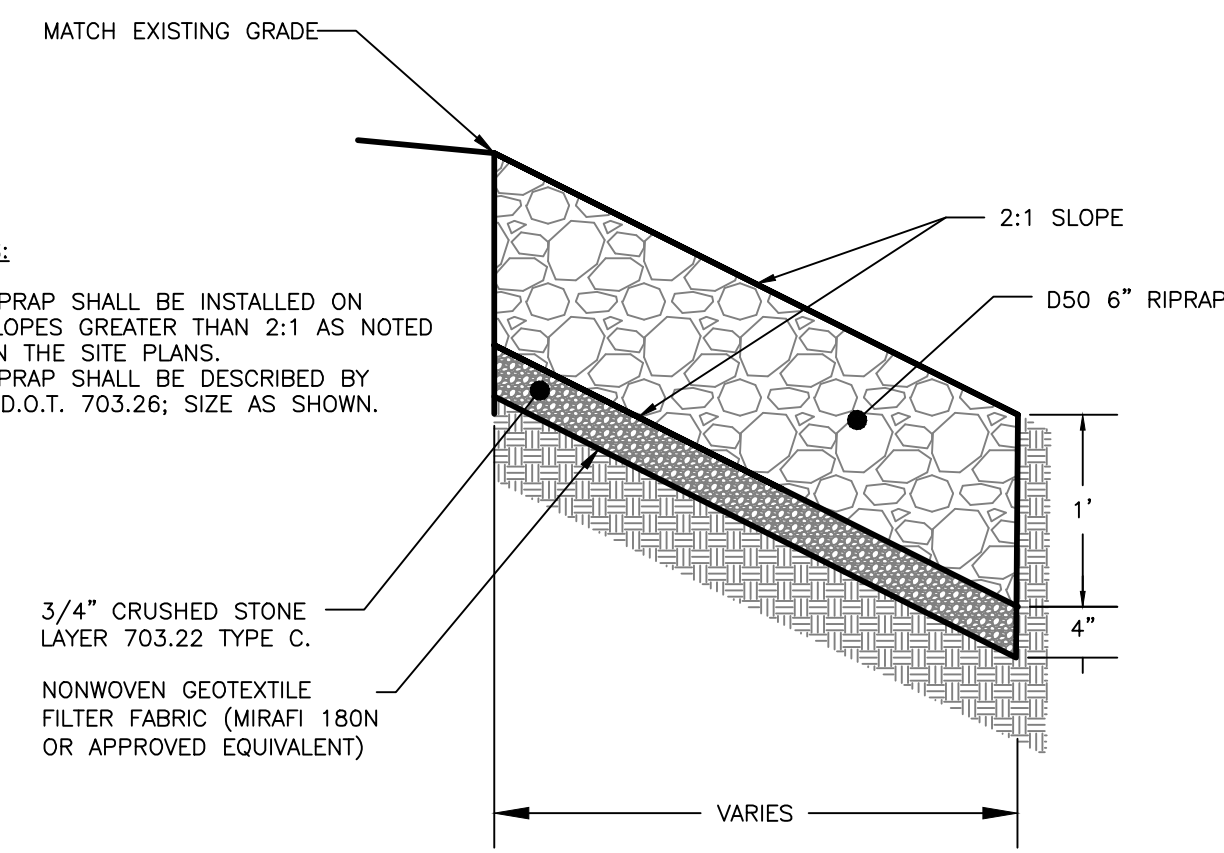
STONE CHECK DAM

NOT TO SCALE

S ₀ (FT./FT.)	L (FT.)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10

NOTES:

1. RIPRAP SHALL BE INSTALLED ON SLOPES GREATER THAN 2:1 AS NOTED ON THE SITE PLANS.
2. RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26; SIZE AS SHOWN.

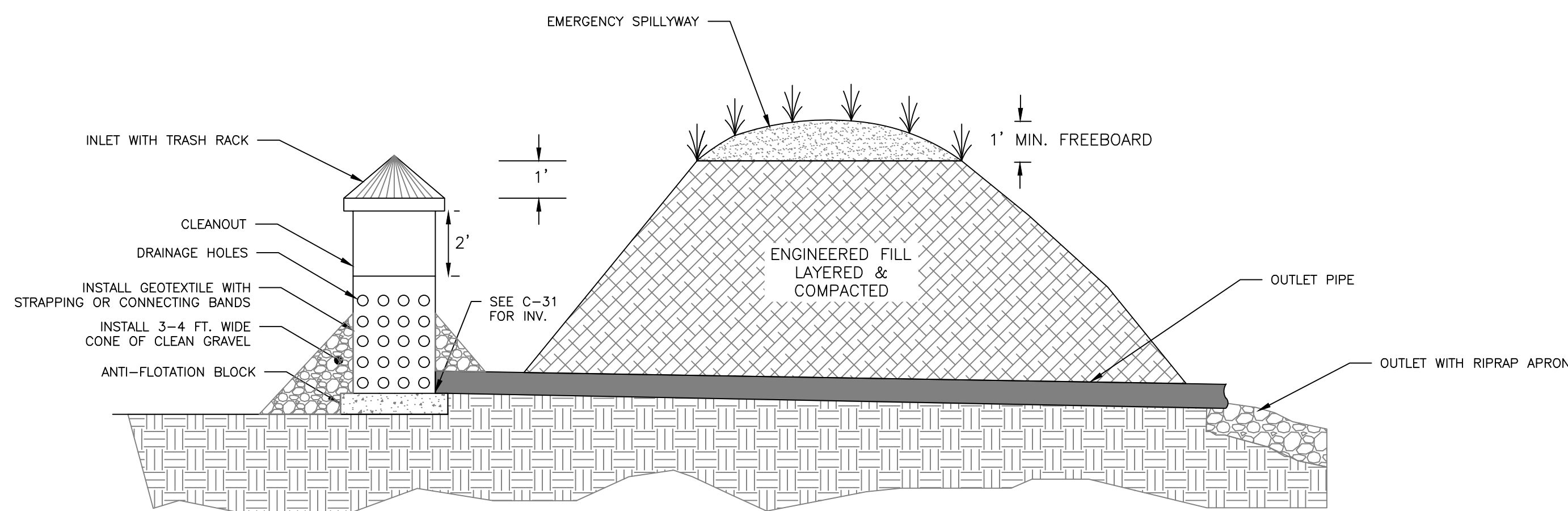


RIPRAP CROSS-SECTION

NOT TO SCALE

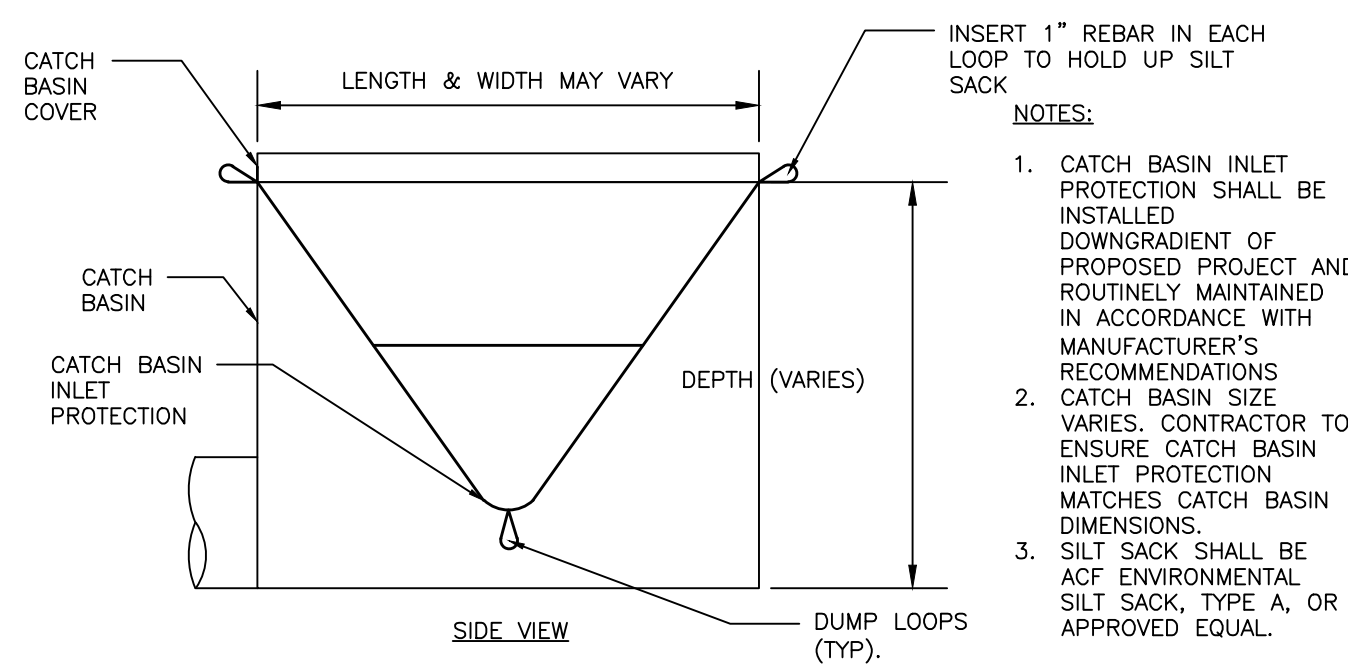
GENERAL NOTES:

1. EMBANKMENT FOUNDATION AREA SHALL BE CLEARED OF STUMPS, ROOTS, BRUSH, ETC. TO PROVIDE GOOD CONTACT.
2. BASINS ARE TO BE CONSTRUCTED BEFORE THE GROUND IS FROZEN.
3. ALL NATIVE SOIL IS TO BE SCARIFIED BEFORE THE FIRST LAYER OF FILL.
4. ALL EMBANKMENTS NOT SUPPORTED BY RIPRAP SHALL BE COVERED WITH EROSION CONTROL MIX IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN.



TEMPORARY SEDIMENTATION BASIN CROSS-SECTION

NOT TO SCALE

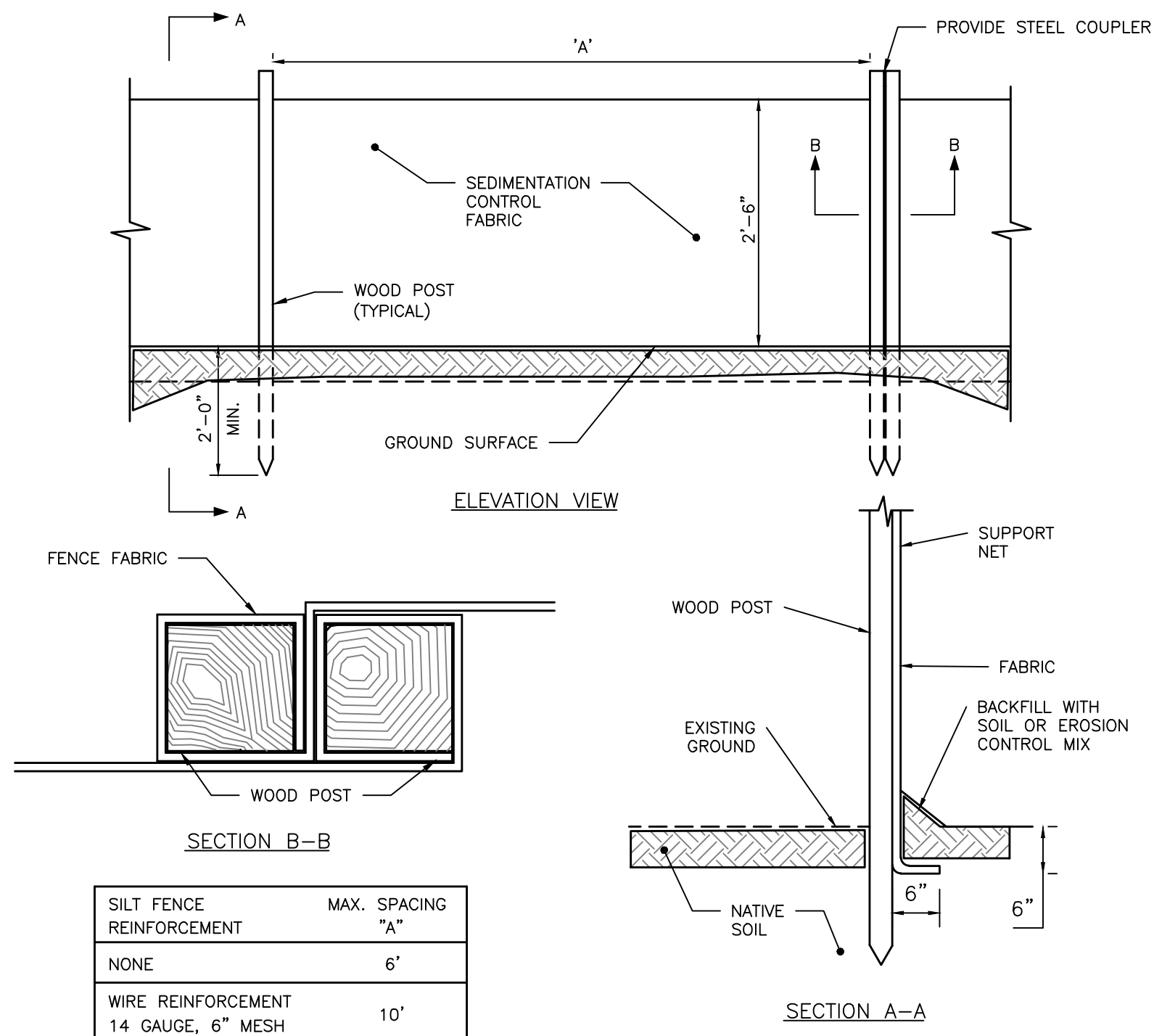


CATCH BASIN INLET PROTECTION

NOT TO SCALE

NOTES:

1. CATCH BASIN INLET PROTECTION SHALL BE INSTALLED DOWNGRADIENT OF PROPOSED PROJECT AND ROUTINELY MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS VARIES. CONTRACTOR TO ENSURE CATCH BASIN INLET PROTECTION MATCHES CATCH BASIN DIMENSIONS.
2. CATCH BASIN SIZE VARIES. CONTRACTOR TO ENSURE CATCH BASIN INLET PROTECTION MATCHES CATCH BASIN DIMENSIONS.
3. SILT SACK SHALL BE ACT ENVIRONMENTAL SILT SACK, TYPE A, OR APPROVED EQUAL.



SILTATION FENCE DETAIL

NOT TO SCALE

SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

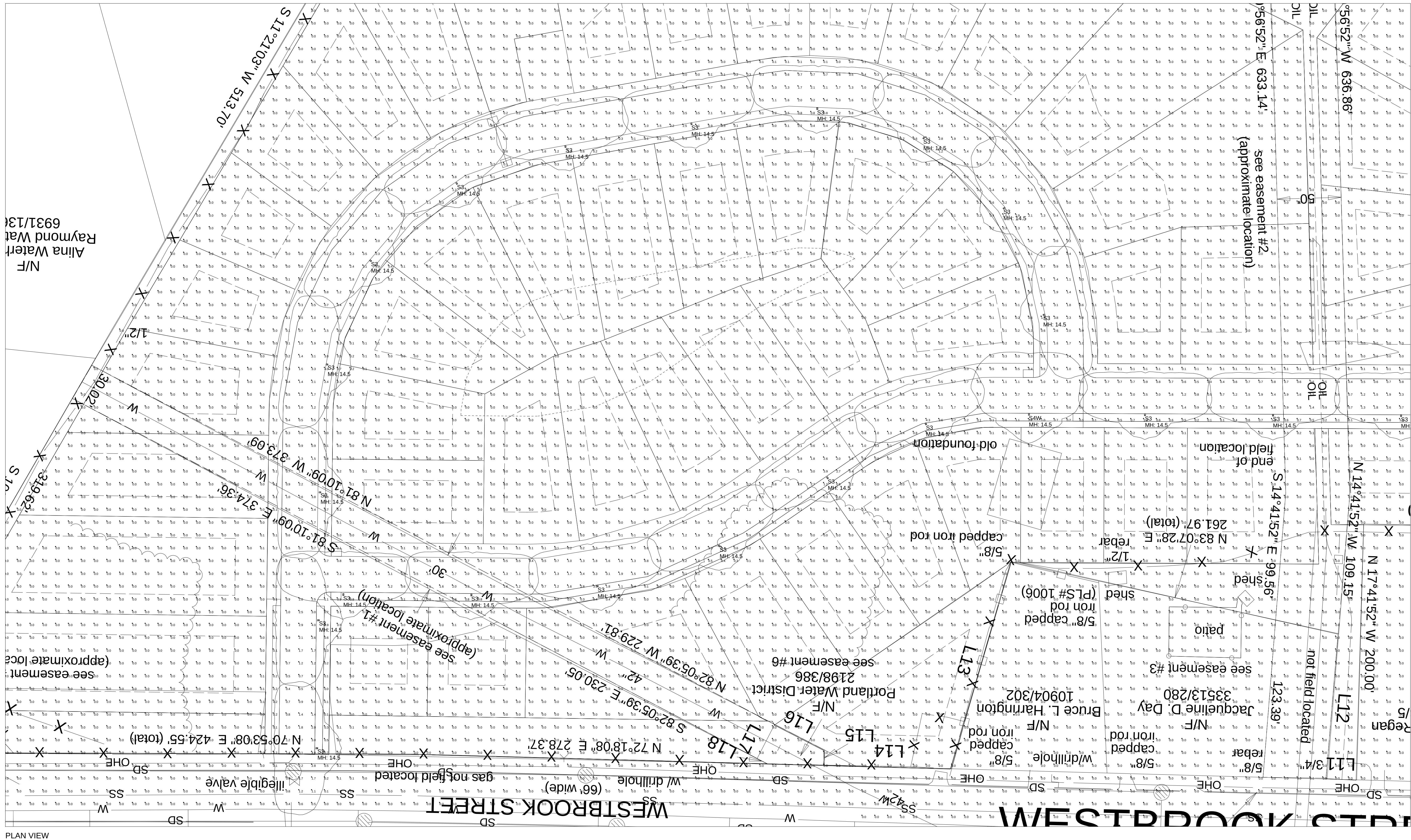
PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
ROAD 1	1.43	4.4	0.3	4.77	14.67
ROAD 2	1.45	4.2	0.3	4.83	14.00
ROAD 3	1.44	4.5	0.3	4.80	15.00
ROAD 4	1.53	4.7	0.3	5.10	15.67
site	0.15	4.7	0.0	N.A.	N.A.

Luminaire Schedule (note fixture catalogue numbers are not complete)						
Type	Symbol	Qty	Lum. Lumens	LLF	Lum. Watts	Description
S3		53	5492	0.900	54	VPS-24L-55-3K7-3
S4W		8	5406	0.900	54	VPS-24L-55-3K7-4W

NOTES:

- 1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
- 2) CALCULATIONS MAY SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
- 3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE UNLESS OTHERWISE INDICATED.
- 4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES AND STANDARD ASSUMPTIONS OF THE SPACE AND/OR SITE.
- 5) CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
- 6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
- 7) CHECK OR DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY OCCUR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.



STROUDWATER PRESERVE - PRUD UNITS

PORTLAND, MAINE

08/22/17





PLANNING BOARD REPORT

PORTLAND, MAINE

Level III Site Plan
0 Hancock Street (Thames Street Property)
0 Hancock Street, LLC, Applicant

Submitted to: Portland Planning Board
Date: September 29, 2017
Public Hearing Date: October 4, 2017

Prepared by: Caitlin Cameron, Planning Division
CBL: 019 A0014
Project #: 2017-180

I. INTRODUCTION

This is a Public Hearing on the project at Thames and Hancock Street which is for a four-story commercial office building totaling 102,545 sf with 92,545 sf of office space and 10,000 sf of retail space. WEX, Inc., an international payment company based locally, is currently in discussions on a long-term lease of 90,000 sf in the building for its corporate suites and other executive functions.

The development site is 48,000 sf recently sold by the City of Portland, bounded by Thames and Hancock streets, and a potential Mountfort Street extension in the B6 zone. Transfer of right, title, and interest as well as an accurate boundary survey were recently completed and can be found in the attachments. An existing license to the rear of the property will remain in place granting vehicle access through the site for the neighboring property.

Applicant: 0 Hancock Street, LLC
Engineer: Stantec
Architect: Archetype, PA

This Hearing was noticed to 161 property owners within 500 feet of the site and interested parties, and a legal ad was published in the *Portland Press Herald* on September 25 & 26, 2017. A Neighborhood Meeting is required and was held on September 6th and the attendees and meeting notes are attached ([Attachment K](#)). At the time of completing this Report, the Planning Division has received two additional written public comments since the Workshop ([Attachment 8](#)) – in most cases, the comments are concerned with parking and traffic management.



Required Review:

<i>Applicant's Proposal</i>	<i>Applicable Standards</i>
Mixed use building of 102,545 sf	Level III Site Plan Review and B-6 Design Review
<i>Waiver Requests</i>	<i>Applicable Standards</i>
Location and spacing of driveways- To allow driveway spacing to remain as existing. <u>Staff Comments:</u> Tom Errico, P.E. supports a waiver for driveway separation of approximately 20 feet between the proposed curb cut and the existing curb cut on Hancock Street.	Technical Manual Section 1.7.2.7 Location and spacing of driveways <i>shall be determined as follows: Along arterial, collector and local streets, minimum acceptable spacing between double or multiple driveways for driveways on adjacent lots or on the same parcel shall meet the criteria of 100 feet for 25 mph</i>
Waiver of General Stormwater standard of 50% treatment. Staff Comments: Lauren Swett, P.E. supports the waiver of the 50% for non-roof impervious area. Instead the proposal is for a roof drain filter system and rooftop vegetation. There will also be an increase in pervious surface area on the site and the proposed impervious areas are hardscaping with a lower pollutant load than the gravel parking lot.	Technical Manual Section 5, Section II. Applicability <i>D. 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.</i>

II. PLANNING BOARD CONSIDERATIONS

There are two areas that require additional attention and consideration by the Planning Board:

- Thames Street Sidewalk Design and building relationship to the street – refer to Sidewalk section
- Parking Location – refer to Parking section

III. PROJECT DATA (See Site Plan in Plan P4 for further details)

Existing Zoning	B-6, Shoreland Overlay zone			
Existing Use	Vacant, surface parking			
Proposed Use	Mixed use (including commercial office, retail)			
Property Size	48,000 sf (1.1 acres)			
	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>	
Building Footprint	0 sf	30,545 sf	30,545 sf	
Building Floor Area	0 sf	102, 545 sf	102, 545 sf	
Impervious Surface Area	48,000 sf	45,000 sf	-3,000 sf	
Parking Spaces (on-site)	100+	0	-100	
Parking Spaces (off-site)	0	320	320	
Bicycle Parking Spaces	0	14	14	
Estimated Cost of Project	\$12 to 15 million			

IV. THE SITE and CONTEXT

The previously City-owned site is a prominent parcel on Thames Street, east of Hancock Street currently used as surface parking for the public and Police Department. The Eastern Waterfront Master Plan calls for Mountfort Street to be extended to Thames and this future ROW forms the eastern boundary of the site. To the south is the Ocean Gateway terminal, Eastern Promenade Trail, and future Amethyst Lot Park (depicted in the rendering below). To the north and west is the India Street neighborhood with multiple new construction projects underway within a two-block radius.



V. PROGRAM

The proposal includes the following key elements:

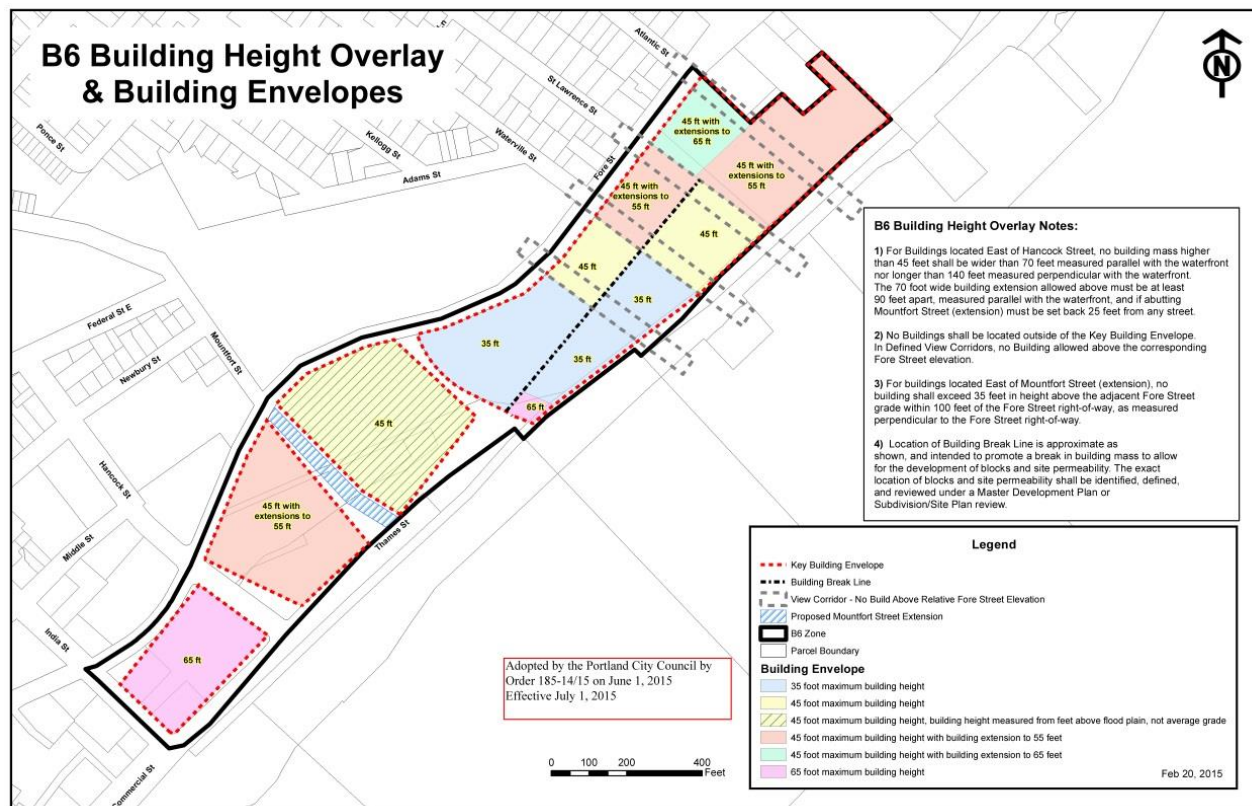
- Three to four-story building, comprising commercial office and some ground floor retail
- Elevated building in response to the Shoreland Overlay and resiliency considerations for sea-level rise
- Roof terrace and ground floor plaza space
- 284 parking spaces provided off-site; no on-site vehicle parking proposed
- Service corridor on the interior of the site with existing license agreement to remain
- Accommodation of a future Mountfort Street extension and the B-6 Height Overlay



VI. ZONING ANALYSIS

The RFP for the City-owned parcel required proposals to comply with the Eastern Waterfront Master Plan (EWMP) as well as the B6 zoning. Staff finds the proposal complies with the zoning requirements of the B6 zone and the intent of the EWMP. The proposed height of the building is three to four stories and conforms with the 45 maximum height with the allowance of a tower up to 55' established by the B6 Height Overlay Zone (image below).

Those additional setbacks are indicated on the Site Plan ([Attachment P4](#)) as well as the B6 Height Overlay & Building Envelopes diagram.



VII. STAFF REVIEW – SITE PLAN + DESIGN STANDARDS

A. SITE PLAN STANDARDS - 14-526 Site Plan Standards

Traffic - Access, Circulation, Servicing and Loading – The project uses a service corridor to the rear of the property for loading and service access. A curb cut separation waiver is requested to access this service corridor which staff approves.

Traffic Movement Permit - The applicant has submitted a Traffic Movement Permit application, posted notice, and have held a scoping meeting. However, the TMP application will be brought back to the Planning Board for approval at a future time. Approval of the TMP will be a condition of approval.

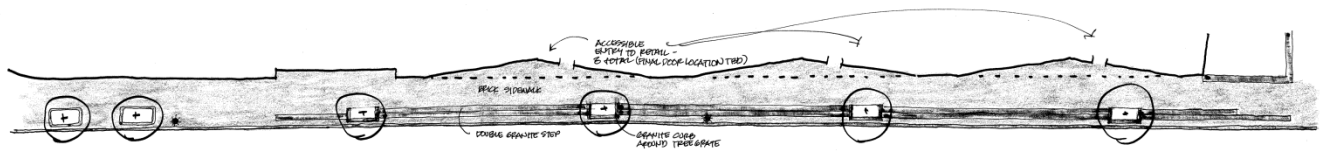
Sidewalks

The applicant is proposing brick sidewalk on Hancock and Thames streets consistent with the established streetscape.

The Planning Board is asked to consider three options for the design of the Thames Street sidewalk. The applicant has placed the finish floor elevation of the building to meet the grade on Hancock Street and to be

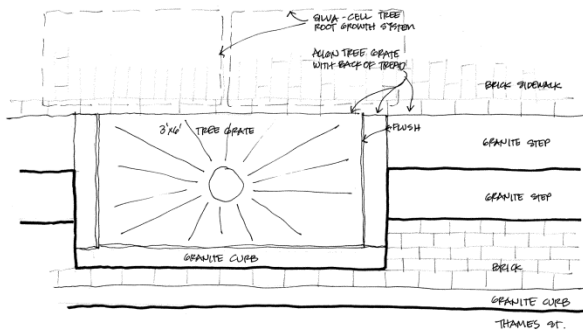
above the FEMA and Category 1 storm levels. In doing so, the elevation of the finish floor of the building on Thames Street is higher than the street and sidewalk level. There are three options considered:

- 1) Ramp and step up from the sidewalk to the finish floor on the private property (internal or external to the building) – ***staff preferred option***
 - Staff believe that the grade change is being necessitated by the building design and therefore, should be addressed on the private property rather than compromising the accessibility and maintainability of the public realm. Staff are also concerned about the width of the sidewalk in this location and prefer a solution that makes the sidewalk as wide as possible - at least 12' if possible.
 - The applicant claims it would be too onerous and not beneficial to the urban design or the retail function to take up so much area with ramps and steps. The applicant also requests to keep as much flexibility with the building design as possible given that the retail tenants have not been confirmed and the interior design – placement of doors and walls – therefore is not established to design steps and ramps for.
- 2) Raise the sidewalk to the level of the finish floor – ***applicant preferred option***
 - The image below is a concept sketch proposed by the applicant. The applicant is proposing this concept as the preferred sidewalk design on Thames Street as part of their site plan application. This design would allow ADA accessible ramps up to the building finish floor level but also provides room for car doors to open and for steps perpendicular to the sidewalk.
 - This option provides access challenges and would likely require designated ADA parking spaces on-street to be placed near the ramps. Staff are concerned about the maintenance of this design and would condition this solution on the property owner maintaining the sidewalk. The design requires about 3' of the sidewalk area to be taken up by steps and transition space therefore reducing the width of the passable sidewalk at the upper level.
- 3) Remove the retail uses facing Thames Street and remove all doors facing the street. One retail entrance would remain from the private plaza space.
 - In this scenario, neither the sidewalk or building design is compromised with ramps and steps. However, the activation and urban design implications are detrimental on Thames Street as there would be no doors facing this street which also has the longest façade of the building and faces the water.

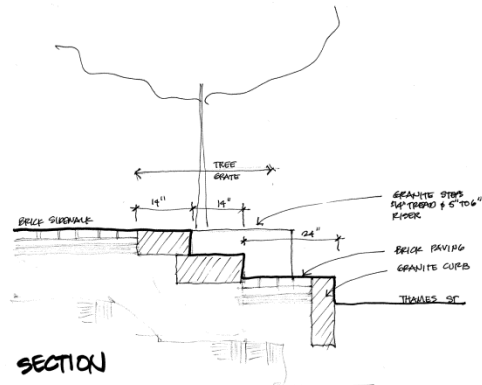


SKETCH: THAMES STREET SIDEWALK

0 10' 20' 30'



DETAIL PLAN



SECTION

SKETCH PLAN FOR THAMES STREETSCAPE

O HANCOCK, LLC

24 SEPT, 2017

STAFF
ARCHITECT
VICKI E. REEDIN

Public Transit Access - Not applicable to this project. The closest route is the 8 bus with stops on Commercial and India Streets.

Parking - The applicant is proposing 284 parking spaces within the Ocean Gateway parking garage off-site, which is very close to the project location, and no on-site parking. Only 258 parking spaces are required by the City Code of Ordinances. The applicant submitted a parking analysis ([Attachment L](#)) and a Transportation Demand Management Plan (TDM) ([Attachment M](#)) with the expectation to reduce the overall parking demand by 5% - this assumes Wex as the office tenant. Traffic Engineer reviewer Tom Errico agrees with the number of parking spaces proposed and recommends 284 parking spaces be the approved parking requirement.

Regarding the proposed parking location of the Ocean Gateway Garage, staff has provided further analysis of the garage capacity (see [Attachment 7](#)) and Tom Errico will have additional comment regarding the parking capacity as an addendum to this report upon review of the parking analysis submitted by the applicant to provide further guidance on this topic. Staff believes the garage has the capacity to meet the parking as required by Site Plan and Ordinance. However, as shown in Attachment 7, the lease agreements as part of previously approved site plans do exceed the parking garage capacity – the Planning Board would be approving this site plan with the understanding that the parking needs will be reliant on garage management practices and the sharing of spaces based on time of demand. Staff suggest that the applicant provide a proposal for an alternative parking location, should the need arise.

Bicycle Parking - The application indicates that 14 bike parking spaces will be provided in the Ocean Gateway garage. On-site bicycle parking is also provided next to the main entrance on Hancock Street.

Snow Storage - The size allocated for snow storage does not appear to be adequate. The applicant proposes to haul snow as part of their management.

Transportation Demand Management – Staff finds the TDM plan to be reasonable – this TDM is based on the assumption that WEX remains the office tenant. ([Attachment M](#) and [Attachment 6](#))

Construction Management Plan (CMP) – Under review – staff asked for some modifications to the proposed CM plan regarding street and sidewalk occupancy. The approval of the CM plan is proposed as a condition of approval. ([Attachment G](#) and [Attachment 4](#))

Landscape Preservation / Site Landscaping and Screening / Street Trees

The Thames Street and Hancock Street should include raised granite planters for street trees consistent with the streetscape design already established.

The project also includes some landscaping and planting on the roof and the plaza on the east end of the building. These features will be of benefit to the office workers as well as the general public views of the building and may benefit the stormwater/heat island effect of the building.

Water quality, Stormwater Management and Erosion Control - The project will reduce the amount of impervious surface on the property. The site is subject to a Maine Department of Environmental Protection Site Location of Development Permit and is completely within the area that was considered for Ocean Gateway. The capacity calculations at the time included this area as a parking lot, so capacity of the outfall installed for Ocean Gateway should not be an issue due to this project. Peer reviewer Lauren Swett suggested two conditions of approval ([Attachment 2](#)):

- *The Applicant has noted that the project does not require any additional Federal or State level environmental site permits. The lot was originally part of the Ocean Gateway Site Location of Development, and there may be additional permits associated with Ocean Gateway that encompass this site. We anticipate that the City or the Applicant will need to work with the original permitting agencies to determine what needs to be done to remove the site from the original permits in association with the sale of the property. We also anticipate that the Notice of Intent to Comply with the Maine Construction General Permit will be required for the project. Applicant has noted that they are working on the submission to the MaineDEP, and it likely will not be approved prior to the Planning Board Public Hearing. It is agreed that this may be a condition of approval.*
- *In Accordance with The City of Portland Technical Manual sanitary sewer laterals shall be connected to main sanitary sewer lines for sanitary building laterals under 8 inches in diameter. The connection is currently proposed directly to the existing manhole in Thames Street. Acceptability of this type of connection should be confirmed with the Department of Public Works. Public works has noted that with the pipe sizes in question, the acceptable means of connecting a 6" service into a 12" sewer main would be to cut out a section of the sewer and install a wye in the main using Fernco connectors. Finalization of the details of this connection should be made a condition of approval.*

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.

The proposals do not raise any particular concerns. Staff requested some improvements to the design and lighting of the public sidewalks between the parking garage to the office entrance. Final sidewalk design approval is proposed as a condition of approval. ([Attachment 3](#))

Fire Prevention –No anticipated concerns. ([Attachment 5](#))

Public Utilities - Existing utilities are underground and project proposes to extend underground utilities from Fore and Hancock streets. Staff has requested some revisions to the utility layout and sewer connection details – final review and approval is a proposed condition of approval. ([Attachment 2](#) and [Attachment 4](#))

Massing, Ventilation and Wind Impact and Shadows – The proposal does not appear to raise any particular concerns.

Historic Resources – No historic resources or districts within 100’ of the site.

Exterior Lighting including Street Lighting – The applicant will be expected to provide street lighting as part of the sidewalk design and reconstruction according to the City of Portland Technical Manual. Staff is working with the applicant on the placement and specification of those lights.

B. DESIGN STANDARDS

The proposal is subject to the B6 and Eastern Waterfront Design Guidelines and excerpts from the review (Attachment 1) prepared by the City’s Urban Designer are as follows:

Generally, the staff find the project to meet the design guidelines and support the direction of the project with some revisions *(in red)*:

Eastern Waterfront Master Plan – Design Guidelines for the Eastern Waterfront

Standard B (2) e. Articulation: *The project uses a combination articulation elements such as material changes, canopies, and plane changes. Interest is also provided by the roof design and massing changes. The long length of Thames Street façade is broken down to a human scale with the fenestration pattern, material placement, and the ground level design. The applicant revised the façade in response to staff and Planning Board comment regarding the articulation of the facades – these changes include revisions to the horizontal spandrel panels, articulation created at the vertical elements through 3” to 6” reveals, a further deepening of the retail entrance facades to provide a sense of enclosure and emphasis on the more active retail frontage. Staff supports the current design but calls attention to the changes at the corner for board consideration.*

Standard B (2)3. Pedestrian Environment: *Staff support providing wider sidewalks to give enough space for pedestrian amenities such as street trees and lighting. Both facades are proposed to provide active entrances with the office entrance on Hancock Street and retail entrances on Thames. Thames Street has a long façade but accommodates the pedestrian environment through the use of storefront and high transparency, retail uses and entrances, canopies, and plane changes. Staff requests that the design of the canopies be further revised in scale, proportion, and materiality in relationship to the overall building scale and to better provide a grounded, human-scale pedestrian realm.*

The signs shown in the application are not approved as part of this application and do not necessarily meet the sign ordinance. The placement and design of the signs are not consistent with the context.



IX. STAFF RECOMMENDATIONS

Staff recommends approval with some conditions to resolve outstanding issues such as:

- Additional revision to sidewalk design, utility and sewer connections, and building design based on staff and Planning Board comment for staff level approval.
- Proposal from applicant regarding the location of the required parking if the Ocean Gateway Garage is not able to accommodate the required parking spaces.

X. 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 October 4, 2017 for application 2017-180 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 upon the consulting traffic engineer's review, 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 the reduction in the driveway separation to 20 feet on Hancock Street, as shown on the plan and supported by the Traffic Engineering reviewer.
2. The Planning Board [**finds/does not find**], based upon the consulting civil engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual Section 5, Subsection II Applicability. The Planning Board [**waives/does not waive**] the *Technical Manual* standard (Technical Manual Section 5. Redevelopment Projects) to allow a waiver of the 50% treatment for redevelopment areas, since the proposal includes a roof drain filter system, rooftop vegetation, reduction in impervious area, and hardscaping with less pollutant load, as supported by the Traffic Engineering reviewer.

B. 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 October 4, 2017 for application 2017-180 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 that must be met prior to the issuance of a building permit, unless otherwise stated:

1. Prior to Certificate of Occupancy, the applicant shall receive approval for the Traffic Movement Permit.
2. Prior to Certificate of Occupancy, the applicant shall complete the transfer of ownership process with the Maine Department of Environmental Protection for the Site Location of Development Permit applicable to the property.
3. 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 Management, which specifies the annual inspections and reporting requirements. A maintenance agreement for the stormwater drainage system, including the roof 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 Public Works and the Department of Planning and Urban Development.

4. Prior to Building Permit, the Construction Management Plan shall be approved by City staff.
5. Prior to Building Permit, the final building design shall be revised and submitted for approval in accordance with staff and planning board comment.
6. Prior to Building Permit, the final sidewalk design including grading, material detail, cross slope, street light placement, ADA ramps, apron, and street tree design shall be revised and submitted to staff for final approval in accordance with staff and planning board comment per site plan approval.
7. Prior to Building Permit, the final layout of the utilities and sewer connections shall be revised per staff comment and submitted to Department of Public Works for final approval.
8. Prior to Building Permit, the applicant shall provide drafts of all necessary easements for review and approval by Corporation Counsel, the Department of Public Works, and the Planning Authority, with evidence of executed easements to be submitted prior to the issuance of a building permit, including but not limited to:
 - a. Sidewalk easement from 0 Hancock, LLC. to the City of Portland;
 - b. License from the City of Portland to 0 Hancock, LLC for canopies extending into the public right-of-way.
 - c. License from the City of Portland to 0 Hancock, LLC for foundation footings on Thames Street;

ATTACHMENTS

STAFF REVIEW COMMENTS

1. Design Review – Caitlin Cameron
2. Civil Review – Lauren Swett
3. ROW Review – Bruce Hyman
4. DPW Review – Keith Gray
5. Fire Review – John Brennan
6. Traffic Review – Tom Errico
7. Garage Parking Capacity Analysis – Caitlin Cameron

PUBLIC COMMENTS

8. Public Comment Received - Combined

APPLICANT'S SUBMITTAL

- A. Level III Site Plan Review Application
- B. Development Description
- C. RTI
- D. Technical and Financial Capability
- E. Utilities
- F. Fire Safety
- G. Construction Management Plan
- H. Solid Waste Plan
- I. Design Narrative
- J. HVAC Equipment
- K. Neighborhood Meeting Minutes
- L. Parking Assessment
- M. Traffic Demand Management Plan
- N. Wastewater Capacity
- O. Site Lighting
- P. Response to Staff Comment

PLANS

- P1 Boundary Survey
- P2 Existing Conditions
- P3 Construction Management Plan
- P4 Site Plan
- P5 Grading and Drainage Plan
- P6 Utility Plan
- P7 Landscape Plans
- P8 Landscape Details 1
- P9 Landscape Details 2
- P10 Architectural Floor Plans (4 sheets) – not updated
- P11 Elevations (2 sheets)
- P12 Renderings (8 images)
- P13 Photometric Plan
- P14 Thames Street Sidewalk Detail
- P15 Misc Details 1
- P16 Misc Details 2
- P17 Misc Details 3
- P18 Misc Details 4
- P19 Misc Details 5

Planning and Urban Development Department Planning Division



Subject: B-6 Eastern Waterfront Design Review – 0 Hancock Street

Written by: Caitlin Cameron, Urban Designer

Date of Review: Friday, September 29, 2017

Design Review Criteria:

The policies and standards listed below are applied to the design review of a B6 Site Plan application.

Eastern Waterfront Master Plan - Design Guidelines for the Eastern Waterfront

City of Portland Design Manual – (g) EWPZ Eastern Waterfront Port Zone and B6 Eastern Waterfront Mixed Use Zone

Findings of the Design Review:

Preliminary staff review was conducted during the week of September 4, 2017 and included Caitlin Cameron, Urban Designer, Christine Grimando, Senior Planner, and Deb Andrews, Historic Preservation Program Manager. Generally, the staff find the project to meet the design guidelines and support the direction of the project with some revision. **Comments in red denote topics of concern or questions for the board to consider.**

Eastern Waterfront Master Plan - Design Guidelines for the Eastern Waterfront

Introduction: *Development will serve to integrate the working waterfront, commercial business areas, and the Munjoy Hill neighborhood. For integration to be successful, thoughtful, high quality design for all aspects of construction is imperative. With care and attention paid to details and quality, the design of streets, buildings, open space, parking, and changes to the water's edge will contribute to the value of public and private property and the quality of life for Portland residents. . . . that the Eastern Waterfront become a benefit to City residents. The Master Plan, along with these Guidelines, promotes development that will be an asset, not a liability, to the surrounding neighborhoods and community at large.*

A. Streets

1. **Public Streets:** The project maintains the Mountfort Street extension as proposed in the Eastern Waterfront Master Plan.
2. **Appropriate Street Design:** Not applicable. The design for the new Mountfort Street extension is not part of this application.
3. **Sidewalks:** **Staff continue to work with the applicant on the sidewalk design.** Appropriate to the urban context, the applicant revised the drawing to remove the planters and widen the sidewalk. The street tree and street lighting design will be consistent with other developments on Thames Street to provide a consistent streetscape.

4. **View Corridors:** The proposal maintains the protected view corridors through the site according to the B6 Building Height Overlay & Building Envelopes Map.
5. **Railroad Right of Way:** Not applicable
6. **Underground Utilities:** Utilities are being provided underground from Fore/Hancock street.
7. **Marine Passenger Terminal Circulation:** Not applicable
8. **Bicycle Safety:** The bicycle facilities were revised to meet staff comment.

B. **Buildings and Architecture**

Purpose: Met – Project is mixed-use, high quality contemporary design.

Design guidelines for buildings in the Eastern Waterfront Redevelopment Area encourage architecture that enhances the development of a mixed-use . . . New construction should respect the historic character of Portland's waterfront, while representing the best elements of contemporary design.

1. **Contextual Design:** *New buildings should be designed in response to their context and should be compatible with surrounding neighborhoods.*

The site should be considered to have a unique context when it comes to the architectural approach. Staff recognizes that this site has little historic context to relate to. Where there is visual connection on Hancock Street to the India Street neighborhood context, the building employs a height, façade treatment, and massing that are sensitive to and relate to that more traditional context. On Thames Street and facing the water, the Ocean Gateway terminal, waterfront, and future Amethyst Lot park are contemporary designs that create the most immediate context for the 0 Hancock Street project and the contemporary design reflects that – the project proposes a new vision for contemporary development on the waterfront.

There is one general area of criticism which has to do with how the building relates to its urban setting – The applicant revised the building design to have better connection with the streetscape at the pedestrian level.

The signs shown in the application are not approved as part of this application and do not necessarily meet the sign ordinance.

2. **Building Composition:**

- a. **Placement:** The building is placed to comply with the B6 overlay envelope on Hancock Street. The building facing Thames Street is close to the property line to help create a consistent street wall with the surrounding blocks currently under development. The primary office entrance is oriented to the street and retail entrances are shown facing Thames Street and the private plaza.
- b. **Height:** The project complies with the B6 45' height overlay. On Hancock Street the project is four stories and steps down to three stories on Thames. This is as tall or shorter than most recent development in this area. The important thing of note is that it is a multi-story building consistent with zoning and urban design goals.
- c. **Massing:** The building has massing variation with a taller mass at Hancock Street, a curved massing with special roof treatment at the primary corner, and a low and

long mass along Thames Street. The massing is appropriate according to each street relationship and provides visually interesting building forms.

- d. **Proportion:** Buildings in the Eastern Waterfront vary in their height, length, and proportion but are often low and long – similar to the longitudinal proportions of the historic industrial complex and working waterfront building typologies. Facing the mixed-use India Street neighborhood, the building has a more vertical proportion. The proportion on Thames is horizontal.
 - e. **Articulation:** The project uses a combination articulation elements such as material changes, canopies, and plane changes. Interest is also provided by the roof design and massing changes. The long length of Thames Street façade is broken down to a human scale with the fenestration pattern, material placement, and the ground level design. The applicant revised the façade in response to staff and Planning Board comment regarding the articulation of the facades – these changes include revisions to the horizontal spandrel panels, articulation created at the vertical elements through 3” to 6” reveals, a further deepening of the retail entrance facades to provide a sense of enclosure and emphasis on the more active retail frontage. Staff supports the current design but calls attention to the changes at the corner for board consideration.
 - f. **Materials:** The proposal conveys a contemporary approach similar to other contemporary buildings nearby such as the Ocean Gateway terminal. Where the project faces the India Street neighborhood, the material placement is more traditional. Where the project faces the waterfront, curtainwall is used.
3. **Pedestrian Environment:** Staff support providing wider sidewalks to give enough space for pedestrian amenities such as street trees and lighting. Both facades are proposed to provide active entrances with the office entrance on Hancock Street and retail entrances on Thames. Thames Street has a long façade but accommodates the pedestrian environment through the use of storefront and high transparency, retail uses and entrances, canopies, and plane changes. **Staff requests that the design of the canopies be further revised in scale, proportion, and materiality in relationship to the overall building scale and to better provide a grounded, human-scale pedestrian realm.**
4. **Primary Entrances and Service Entrances:** The primary entrance is on Hancock Street which is considered by these guidelines to be a primary street. Building entrances on Thames Street for retail have been generally located. Service entrances are internal to the site with an access path interior to the block.
5. **Parking Structures:** Not applicable
6. **Infill and Small Scale Development:** Not applicable
7. **Historic Structures:** Not applicable
8. **Civic Structures:** Not applicable
9. **Marine Development:** Not applicable
- C. **Open Space and the Public Realm**
1. **Public Open Space and Plazas:** Not applicable

2. **Private Open Space and Plazas:** A plaza space at the east end of the development is proposed to occupy the space of the view corridor. Staff supports the revisions to the plaza design to accommodate ADA access from the sidewalk. In addition, an internal path cuts through the site to provide service access and possible mid-block cut through between Hancock and a future Mountfort extension. The project also proposes rooftop plazas for the office workers.
 3. **Historic Sites:** Not applicable
 4. **Public Art:** The proposal does not currently include public art or similar focal points.
 5. **View Protection:** The proposal maintains the protected view corridors through the site according to the B6 Building Height Overlay & Building Envelopes Map.
- D. **Surface Parking and Vehicle Queuing:** Not applicable - the project predominantly uses off-site structured parking meeting the Shared Use and Partnerships guideline and does not include vehicle queuing.



MEMORANDUM

TO: Caitlin Cameron, Planner
FROM: Lauren Swett, PE
DATE: September 28, 2017
RE: Level III Site Plan Response to Comments, WEX Hancock & Thames Street.

Woodard & Curran has reviewed the Level III Site Plan Application for the proposed development located at 0 Hancock Street in Portland, Maine. The project involves the construction of 102,027 square foot, 4-story building at the intersection of Hancock and Thames Street.

Documents Reviewed by Woodard & Curran

- Level III Response to Comments and attachments, dated September 26, 2017, prepared by Stantec Consulting Services Inc., on behalf of 0 Hancock Street LLC.
- Engineering Plans, dated September 26, 2017, prepared by Stantec Consulting Services Inc., on behalf of 0 Hancock Street LLC.

Comments *Comments repeated from prior memos included in italics*

- 1) *The Applicant has noted that the project does not require any additional Federal or State level environmental site permits. The lot was originally part of the Ocean Gateway Site Location of Development, and there may be additional permits associated with Ocean Gateway that encompass this site. We anticipate that the City or the Applicant will need to work with the original permitting agencies to determine what needs to be done to remove the site from the original permits in association with the sale of the property. We also anticipate that the Notice of Intent to Comply with the Maine Construction General Permit will be required for the project. Applicant has noted that they are working on the submission to the MaineDEP, and it likely will not be approved prior to the Planning Board Public Hearing. It is agreed that this may be a condition of approval.*
- 2) *In accordance with Section 5 of the City of Portland Technical Manual, a 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 Standard: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500.*
 - b) *General Standard: The Applicant is not increasing impervious surface, but will be creating 11,446 square feet of redeveloped non-roof impervious surface. They have requested a waiver from the City of Portland Requirement of providing treatment for 50% of this redevelopment area. Instead of treatment of the redevelopment area, they will be providing a roof drain filter system. They will also be providing some rooftop vegetation. The project will also be increasing pervious surface on the site, and the redeveloped impervious surface is primarily hardscaping that will have a lower pollutant load than the existing gravel parking lot. For all of these reasons, a waiver of the standard would be acceptable.*
 - c) *Flooding Standard: No additional impervious surface is being added as a result of the project. The site discharges to the Fore River, and the area was accounted for as part of the original outfall design. The project is not anticipated to increase flow to the site.*
- 3) *In Accordance with The City of Portland Technical Manual sanitary sewer laterals shall be connected to main sanitary sewer lines for sanitary building laterals under 8 inches in diameter. The connection is currently proposed directly to the existing manhole in Thames Street. Acceptability of this type of connection should be confirmed with the Department of Public Works. Public works has noted that with the pipe sizes in question, the acceptable means of connecting a 6" service into a 12" sewer main would be to cut out a section of the sewer and install a wye in the main using Fernco connectors. Finalization of the details of this connection should be made a condition of approval.*

PEZ 2017-180: WEX Public ROW Staff Comments - Bruce Hyman

Bruce Hyman <bhyman@portlandmaine.gov>

Fri, Sep 29, 2017 at 12:21 PM

To: Caitlin Cameron <ccameron@portlandmaine.gov>

Cc: Keith Gray <kgray@portlandmaine.gov>, Barbara Barhydt <bab@portlandmaine.gov>, Tom Errico <thomas.errico@tylin.com>

Good afternoon Caitlin,

These comments address outstanding topics based on the applicant's most recent submittals (uploaded 9/26/17) that may not covered by other reviewing staff:

- the placement of the lighting along the applicant's frontage is to be adjusted as necessary to provide adequate lighting of the crosswalks along the Thames Street frontage at Hancock Street and at the Mountfort ROW/Ocean Gateway Terminal driveway
- the driveway on Hancock Street is to carry brick across the applicant's driveway per the new sidewalk material policy, have a maximum cross-slope of 2% for the pedestrian access route and the sidewalk on each side of the driveway is to ramp down (not introduce a flare as currently shown) - the detail for the driveway is to reflect these items
- the detectable warning panel within the existing curb ramp at the corner of Fore-Hancock Streets (SE corner) is to be replaced (cast iron, per new curb ramp detail) to create a direct and fully ADA-accessible route from the WEX main entrance on Hancock Street to the Ocean Gateway Garage
- the brick sidewalk detail is to note a maximum cross-slope of 2%.

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



Caitlin Cameron <ccameron@portlandmaine.gov>

0 Hancock Street - Review Comments

Keith Gray <kgray@portlandmaine.gov>

Fri, Sep 29, 2017 at 12:59 PM

To: Caitlin Cameron <ccameron@portlandmaine.gov>

Cc: Bruce Hyman <bhyman@portlandmaine.gov>, "Swett, Lauren" <lswett@woodardcurran.com>, John Peverada <jbp@portlandmaine.gov>

Hello Caitlin,

Below are a few items that were discussed with Mr. Bushey from Stantec but have not been integrated within the current submission.

- There is a meeting this afternoon with Cianbro to discuss the CMPlan components. Some notable items include; requirement of a 5-foot sidewalk along Hancock Street, parking occupancy is not allowed until parking spaces are restored along AC Hotels frontage on Thames Street and no more than two parking spaces are to be occupied at a time.
- The Grading Plan shows a stabilized construction entrance on Mountfort Street. DPW does support the construction entrance location given that a temporary construction easement is obtained and there is no loss of parking spaces.
- The proposed stormdrain shall be routed on the applicant's property and not within Mountfort Street ROW. The existing catch basin within Mountfort Street will need to be reconnected.

Please contact me with any questions.

Thank you,

Keith

--

Keith D. Gray, PE
Senior Engineer
Dept. of Public Works
City of Portland Maine

207.874.8834
kgray@portlandmaine.gov

Memo

To: Caitlin Cameron - Planner
From: Keith Gray, PE – Senior Engineer, DPW
Date: September 25, 2017
Re: 0 Hancock Street (2017-180) – Level III Site Plan Application

The following comments/concerns are in regards to the Level III Site Plan Application prepared by Stantec, on behalf of the applicant, 0 Hancock, LLC, with last plan revision submitted on September 15th, 2017. Please feel free to contact me with questions.

C-4.0 – Grading, Drainage and Erosion Control Plan:

- The applicant is proposing a grade break (vertical curb) within the Thames Street sidewalk to accommodate ADA building access.
 - o DPW does not support a split grade sidewalk within the ROW
 - We suggest lowering the finish floor elevation by ramping down the sidewalk, within the applicant's property, at the Hancock Street entrance. The lowered finish floor elevation allows for a continuous sidewalk along Thames Street. See enclosed figure (For illustration purposes only, grades and design to be completed by Stantec).

C-5.0 – Utility Plan:

- Verify that no crossing conflicts exist between the proposed sewer and the existing 12" stormdrain. Rigid insulation should be provided between crossings. Test pit may be required to determine depth of gas main at sewer service.

Construction Management Plan:

- The applicant has submitted a Construction Management Plan (CMPlan) prepared by Stantec and Cainbro.
 - o The provided CMPlan indicates that the sidewalk along Hancock and Thames Street and the parking spaces along Thames Street frontage will be occupied for an extended period of time (roughly a year).

- o DPW does not support occupancy of the sidewalk and/or parking spaces for an extended period of time. The applicant shall revise the CMPlan to specify the duration required for the sidewalk occupancy. Construction sequences shall be scheduled to minimize the duration of any street occupancy.
- o DPW does not support extended occupancy of (Islander) parking spaces along Thames Street. We suggest the following options:
 - The occupancy of two parking spaces at a time for the duration required to complete the current construction activity.
 - The occupancy of all spaces requested provided that the applicant provides for the equivalent parking spaces within a close vicinity.
- o Update contact person for construction activities for Cianbro.
- o A five foot sidewalk (existing or temporary) shall be maintained along Hancock Street

MEMORANDUM

To: FILE
From: Caitlin Cameron
Subject: Application ID: 2017-180
Date: 9/29/2017

Comments Submitted by: John Brennan/Fire on 8/30/2017

Construction management plan must be approved by the Fire Department.

Comments Submitted by: John Brennan/Fire on 8/30/2017**Premises Identification**

The main entrance of the building must be the address for the property. This should be consistent with 911, tax assessor, Inspections Division and future mailing address.

Street addresses shall be marked on the structure and shall be as approved by the City E-911 Addressing Officer.

If the building entry faces a different street, both the street name and number should be large enough to read from the street.

Address numbers must be a minimum of 6 inches high.

The number should be in Arabic numerals rather than spelled out (for example, "130" instead of "One Hundred and Thirty").

Color: Addresses should be in a color that contrasts with the background.

Whenever possible, should be illuminated.

Provide additional address signs at entrances to the property when the building address is not legible from the public street.

Buildings set back in groups that share common entrances can make quickly locating a specific building and the shortest route difficult. On such sites, additional signs with directional arrows and/or diagrams of the buildings and access layout should be posted.

Comments Submitted by: John Brennan/Fire on 8/30/2017

Fire Department is requesting a Capacity To Serve letter from the Portland Water District.

Comments Submitted by: John Brennan/Fire on 8/30/2017

Emergency access to the proposed site is excellent. Emergency vehicles have access to three sides of the building.

0 Hancock Street/WEX Building - Traffic Comments

Tom Errico <thomas.errico@tylin.com>

Fri, Sep 29, 2017 at 10:05 AM

To: "ccameron@portlandmaine.gov" <ccameron@portlandmaine.gov>

Cc: "kgray@portlandmaine.gov" <kgray@portlandmaine.gov>, Katherine Earley <kas@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>, "Swett, Lauren" <lszett@woodardcurran.com>

Hi Caitlin – I have reviewed the application materials and offer the following traffic comments.

- The project requires a Traffic Movement Permit. A Traffic Movement Permit Application has been submitted and a Scoping Meeting was held on Monday September 25, 2017. It is my understanding that the Traffic Movement Permit approval will follow a separate approval schedule. The following should be noted as it relates to expectations for the outcome of the traffic impact study:
 - Given current roadway construction activities and traffic circulation impacts, a condition of approval is likely as it relates to conducting traffic counts and analysis at the Fore Street/India Street, Fore Street/Hancock Street, Middle Street/India Street, and Middle Street/Hancock Street intersections. The applicant may be responsible for the implementation of mitigation improvements, if deficiencies are identified.
 - The applicant will be working with City staff in finalizing trip generation and assignment of project trips to the study area. The applicant may be required to provide a monetary contribution to Franklin Street area improvements using methodologies developed for the [58 Fore Street](#) project.
 - The applicant has identified the Franklin Street/Middle Street intersection as the only study area location that is classified as a High Crash Location per MaineDOT methods. No action is being requested of the applicant as it relates to mitigating this location (the monetary contribution/fund would be used to implement future safety improvements).
- The applicant has conducted a parking demand analysis for the project. Parking demand for the project is primarily based on parking demand surveys conducted at the WEX facility in South Portland. Based upon surveys conducted in August and September of this year, the WEX office use would be expected to generate 0.71 parking spaces per employee. Assuming 450 employees, WEX would be expected to require a need for 320 parking spaces. For the other building uses (assumed restaurant, gift shop and Financial Loan Agency), 19 parking spaces are estimated. Given the location of the project in downtown Portland, adjustment to account for multi-modal factors (walk/bike/transit) and implementation of a robust TDM plan, seem reasonable. The proposed reduction is 55 vehicles. Based upon the analysis, it is my professional opinion that the project would be expected to require a parking demand of 284 parking spaces.
- The driveway on Hancock Street does not meet City driveway separation standards. Given low traffic volumes expected to use the driveway, I support a waiver from City requirements.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director

TYLIN INTERNATIONAL

12 Northbrook Drive

Falmouth, ME 04105

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+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

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"One Vision, One Company"

0 HANCOCK PARKING - GARAGE CAPACITY ANALYSIS					
Address	Leased Parking Space (City records)	Leased Parking Space (Applicant records)	Required Parking Spaces (per zoning)	Building Type	Notes from Applicant
Leases as part of approved Site Plan applications					
16 MIDDLE STREET	140	140	0	MIXED-USE RETAIL/OFFICE	Daytime only
185 FORE STREET	96	44	0	MIXED-USE RESIDENTIAL/RETAIL	Daytime only
50 INDIA STREET (cPORT CREDIT UNION)	20	10	3	MIXED-USE RESIDENTIAL/COMMERCIAL	Missing from applicant's calculations
113 NEWBURY STREET (BAY HOUSE)	20	13	20	MIXED-USE RESIDENTIAL/COMMERCIAL	Daytime only
145 FORE STREET (RESIDENCE INN)	140	140	50	COMMERCIAL	Lease restricts parking to 4pm- 9am
167 FORE STREET (OFFICE ADDITION)	24	14	24	COMMERCIAL	Daytime only; No lease, Site plan approval requirement
158 FORE STREET (AC HOTEL)	400	100	45	MIXED-USE RESIDENTIAL/COMMERCIAL	Lease restricts parking to 4pm- 9am
20 THAMES STREET (COVERED BY AC HOTEL LEASE)	0	50	37	MIXED-USE RESIDENTIAL/RETAIL	Daytime only
170 FORE STREET* (COVERED BY AC HOTEL LEASE)	0	157	110	MIXED-USE RESIDENTIAL/RETAIL	Daytime only
5 INDIA STREET* (COVERED BY AC HOTEL LEASE)	0	29	22	MIXED-USE RETAIL/OFFICE	Daytime only
300 FORE STREET (CIEE)	145	145	123	COMMERCIAL	Daytime only: 56.4% are used/ day
1 INDIA STREET* (Gorham Savings Bank)	0	24	24	COMMERCIAL	Daytime only
0 HANCOCK (WEX)	284	284	258	MIXED-USE RETAIL/OFFICE	TDM Plan
TOTAL SITE PLAN LEASED SPACE	1269	1150	716		
TOTAL GARAGE CAPACITY	720	720	720		
DIFFERENCE**	-549	-430	4		

*Project does not have an active Site Plan application, numbers may change

** Applicant claims lease agreements state that parking garage owner is financially obligated to cover parking off-site if no space available

Re: WEX Corp Development

Helen Donaldson <hcd@portlandmaine.gov>

Thu, Sep 14, 2017 at 3:56 PM

To: "Lynn A. Rollins" <lynnr@miloneandmacbroom.com>, Caitlin Cameron <ccameron@portlandmaine.gov>

Lynn,

I am forwarding your email to Caitlin Cameron, who is the planner leading the review on this project. She is best positioned to answer your questions.

Best,
Nell

On Thu, Sep 14, 2017 at 2:46 PM, Lynn A. Rollins <lynnr@miloneandmacbroom.com> wrote:

As a worker in the Portland area, I am very concerned that I have not read about a traffic study being conducted. It would seem to me that there needs to be some serious resources put into some traffic infrastructure before the WEX building moves forward. Working in Portland is already a somewhat difficult commute, what steps are being taken to resolve future growth?

Lynn

Lynn Rollins

Administrative Assistant



121 Middle Street, Suite 201, Portland, Maine 04101

207-541-9544 / 207-541-9548 (Fax)

www.miloneandmacbroom.com

Please consider the environment before printing this e-mail.

--
Nell Donaldson
City of Portland Planning Division
874-8723
hcd@portlandmaine.gov

Google Groups

WEX Public Hearing

Daniel DesPres <ddepres@sbcglobal.net>

Sep 25, 2017 1:30 PM

Posted in group: **Planning Board**

Just a comment on the parking issue. The WEX proposal should include a dedicated parking deck for their employees. The Ocean Gateway Parking Garage is currently stretched, particularly during the Summer months, and traffic in and out of this facility onto Fore and Middle Streets is already problematic.

Dan DesPres
Resident - 185 Fore St.



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:	Thames Street Property
Proposed Development Address:	Corner of Hancock and Thames Street - Address TBD
Project Description:	Commercial Office Building
Chart/Block/Lot:	19/A/14
Preliminary Plan	
Final Plan	Submitted 08.11.17

II. Contact Information (Please enter n/a on those fields that are not applicable)**APPLICANT**

Name:	Jonathan Cohen
Business Name:	0 Hancock Street, LLC
Address:	PO Box 910
City/State:	Portland, Maine
Zip Code:	04098-0910
Work #:	207.776.0304
Home #:	
Cell #:	
Fax #:	207.775.4367
E-mail:	jcohen@a-d-w.biz

OWNER

Name:	City of Portland
Address:	389 Congress Street
City/State:	Portland, Maine
Zip Code:	04101
Work #:	207.874.8300
Home #:	
Cell #:	
Fax #:	
E-mail:	

AGENT/REPRESENTATIVE

Name:	Stephen R. Bushey/Stantec
Address:	482 Payne Road
City/State:	Scarborough, Maine
Zip Code:	04074
Work #:	207.887.3478
Home #:	
Cell #:	207.756.9359
Fax #:	207.883.3376
E-mail:	stephen.bushey@stantec.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:	Same as Agent
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

SURVEYOR

Name:	John Swan - Owen Haskell, Inc.
Address:	390 US Route 1
City/State:	Falmouth, Maine
Zip Code:	04105
Work #:	207.774.0424
Home #:	
Cell #:	
Fax #:	
E-mail:	jswan@owenhaskell.com

ARCHITECT

Name:	Bill Hopkins - Archetype, PA
Address:	48 Union Wharf
City/State:	Portland, Maine
Zip Code:	04101
Work #:	207.772.6022
Home #:	
Cell #:	
Fax #:	
E-mail:	hopkins@archetypepa.com

ATTORNEY

Name:	N/A
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Celina Daniell
E-mail:	celina.daniell@stantec.com
Name:	Steve Bushey
E-mail:	stephen.bushey@stantec.com
Name:	Sandi Keef
E-mail:	sandi.keef@stantec.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 [] x \$25.00 each	\$
☐	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:		\$ 3,750.00

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 (\$50.00 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)

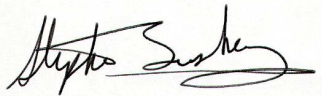
TOTAL AREA OF SITE	48,000	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	48,000	sq. ft.
<i>If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.</i>		
IMPERVIOUS SURFACE AREA		
Impervious Area (Total Existing)	48,000	sq. ft.
Impervious Area (Total Proposed)	<45,000	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	0	sq. ft.
Building Footprint (Total Proposed)	30,545	sq. ft.
Building Floor Area (Total Existing)	0	sq. ft.
Building Floor Area (Total Proposed)	102,545	sq. ft.
ZONING		
Existing	B-6	
Proposed, if applicable	No Change	
LAND USE		
Existing	Parking	
Proposed	Office Building	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)	N/A	
# of Residential Units (Total Proposed)		
# of Lots (Total Proposed)		
# of Affordable Housing Units (Total Proposed)		
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)	N/A	
# 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)	>100+	
# of Parking Spaces (Total Proposed)	320 - Using Gateway Garage	
# of Handicapped Spaces (Total Proposed)	0	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	14	
ESTIMATED COST OF THE PROJECT	\$12 to 15 million	

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:	August 11, 2017

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
X		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
Pending		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
X		1	Written summary of project's consistency with related city master plans
X		1	Evidence of utility capacity to serve
X		1	Written summary of solid waste generation and proposed management of solid waste
X		1	A code summary referencing NFPA 1 and all Fire Department technical standards
X		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
X		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;
X			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;
X			A traffic control plan as detailed in Section 1 of the Technical Manual;
X			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
X			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;
X			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;
X			Ground water protection measures;
X			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;
X		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
X		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
X		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
X		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
X		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
X		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;
X		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;
X		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

Ø HANCOCK STREET LLC
PO BOX 910
WESTBROOK, ME 04098-0910

(Please Place on Letterhead)

July 25, 2017

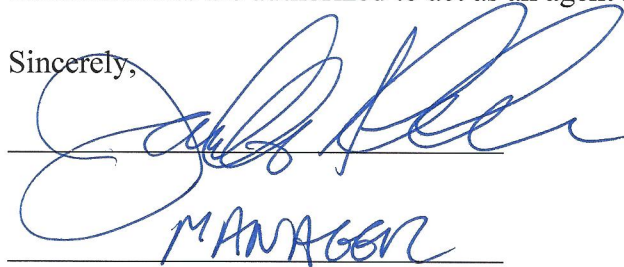
City of Portland
Planning Department
389 Congress Street
Portland, ME 04101

**Subject: Proposed Thames Street Site Plan Development
Agent Authorization Letter**

To Whom It May Concern:

O Hancock LLC has retained Stantec Consulting Services Inc. (Stantec) to prepare Local, State and Federal Permit Applications for the above referenced project. Stantec and their subconsultants are authorized to act as an agent for matters related to these permits.

Sincerely,



MANAGER

Title

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Attachment B – Figures and Site Photographs
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- Section 2: Attachment E – City Authorization Letter
(will be submitted upon City Council Action)
- Section 3: Attachment F – Financial Capacity
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1. DEVELOPMENT DESCRIPTION

1.1 PROJECT OVERVIEW

O Hancock LLC has been selected by the City of Portland to acquire approximately 48,000 SF of City property located at the northeast corner of the intersection of Thames Street and Hancock Street. The prospective development site is currently used as a City managed surface parking lot. The proposed project includes a 102,027 SF, 4-story mixed-use building with a portion of the first floor and all upper floors designated as corporate office space for WEX and 5,000 SF of the first floor as retail space. The project is guided by the Eastern Waterfront Master Plan and is designed to allow permeability and accessibility across the site.

WEX has agreed on a long-term commitment to lease a minimum of 80,000 square feet in the building.

1.2 PROJECT PURPOSE AND NEED

The property is a prime location for a mixed-use development that takes advantage of proximity to the heavy foot and car traffic from the Old Port as well as expansive views of the harbor and accessibility to the City's adjacent parks and walking paths.

The advantages of the Property are highlighted in the Eastern Waterfront Master Plan (the "EWMP") for the Thames Street road extension and the site is best suited to be densely developed with office and retail space surrounded by pedestrian pathways and public plazas and amenities. A great benefit to the site is the natural slope of the East End of Portland, north of the Property, which allows for the creation of a denser urban fabric through height along Thames Street without creating a wall in front of the residential housing units.

The proposed project is for a 102,027 SF, 4-story mixed-use building with a 30,545 SF footprint. A portion of the first floor and all upper floors are designated as office space for WEX with a portion of the first floor designed as retail space to encourage pedestrian traffic and enhance and extend the retail segment of the Old Port. Both of these uses will bring hundreds of jobs to the City of Portland and will provide meaningful benefits to the City's economy and tax base.

This project would eliminate parking from the core of the site through the provision of parking at nearby locations owned and operated by the principals of O Hancock Street, LLC, including at the Ocean Gateway Garage and 100 Fore Street. The 100 Fore Street site and the Ocean Gateway Garage can accommodate, at a minimum, replacement parking for 53 City parking spaces and 117 public parking spaces lost as a result of the sale of the Property and approximately 320 parking spaces for employees of WEX.

Pedestrian and Public Outdoor Space: By eliminating parking on the property, the project creates the opportunity for higher density and more pedestrian and public outdoor space, including sidewalk extensions as outlined in the EWMP.

Public green spaces are included that create new walkable areas and landscaping which additionally helps buffer users from traffic. The public square will create a strong entrance to the retail portion of the property which would begin along Thames Street and turn and continue along the building's east side plaza to create multiple pedestrian entrances. The plaza would be a prime space to include plantings, street furniture, public art or a monument. The plaza will transition down to match grade on the remaining City property located further east of the site. The development activity will also match into existing grades along the north side and along the street frontage of Hancock and Thames Street.

In addition to ample public outdoor space created at the ground level, the proposal includes a large roof deck that will take advantage of the accessible roof space left behind due to the required height changes included in the B-6 Height Overlay. This large roof deck would create a prominent Casco Bay viewing area for the tenants of the property. This space is graphically depicted on the architectural renderings produced on behalf of the Applicant by Archetype PA.

Transportation: The EWMP conveys a strong interest in development, promoting multiple types of transportation. As the tenant for the property, WEX would bring with it hundreds of employees who would be able to take full advantage of the proximity of systems already in place, including the nearby ferry terminal, the walking and biking trail across the street and the bus stop at the corner of Atlantic and Fore Street. The retail portion of the property would also encourage the already in place pedestrian access joining the Old Port to the East End Path. As part of this application process, the Development Team including the Applicant and WEX representatives are working with Cushman Transportation Consulting, LLC to prepare a Transportation Demand Management Plan that will help WEX make best use of the site and the transportation systems available in the greater Portland area.

In addition to the systems already in place, bicycle storage could be added to the property, with exterior storage and racks in the plaza and entry locations, along with interior storage in the Ocean Gateway Garage or the potential 100 Fore Street parking facility.

The Community benefits provided by the project include the following:

- The Project will contribute to the redevelopment and revitalization of the area;
- The Project will provide a quality office use destination to complement other mixed-use activities in the nearby vicinity; and
- The Project will incorporate exterior site enhancements for outside Plaza space, landscaping, and related site amenities.

Archetype PA has prepared a narrative outlining many of the aforementioned benefits as well as others within the written narrative contained in Attachment A to this section.

1.3 EXISTING CONDITIONS

The total site area is 48,000 SF (1.10 acres) and the property is currently managed as a pay-for-parking surface lot (75-90 spaces) by the City of Portland. The site is bounded to the north by a parking lot associated with a commercial office building including such

tenants as the Veterans Administration and SMRT Architects. Additional City land and surface parking will remain east of the site. Hancock Street (west) and Thames Street (south) border the site. The site's historic use includes the Grand Truck Railroad yard that consisted of multiple tracks and portions of various structures, including a portion of former grain elevator #2, thought to reside on the site's easterly end.

Existing utilities are limited to some underground wiring for site lighting. Generally, public utilities for water, sewer, gas, power, and communications are located in the nearby vicinity.

A limited amount of infrastructure is anticipated to be removed and/or abandoned as part of the development of the site. Aside from abandoning the existing utilities and removal of various surface features, general site preparation is anticipated to be straightforward to include site grading, new utilities, drainage, building construction and site surface improvements for sidewalk restoration and landscaping. Early foundation preparation may involve the installation of stone piers to support traditional concrete foundations. It is anticipated the old abandoned foundations and related pipes may be encountered during the course of construction and appropriate actions will be taken to address these conditions.

Existing topography is relatively flat with elevations ranging from approximately 13.0 to over 15.0 based on NGVD 1929 vertical Datum. The lot is internally draining, meaning the lowest portion of the site is towards the east end of the site and the higher grades are around the perimeter. The site improvements will involve ground disturbance over the entire site. Summit GeoEngineering has been engaged to assist with a geotechnical investigation. Their initial findings include identifying soft marine clay soils underlying the site. The preliminary recommendations include the use stone filled piers to aid with addressing long term settlement potential. The details of the geotechnical/foundation program remain under discussion and are to be clarified over the next few weeks.

The site is within the Shoreland Zone of the Fore River. This portion of the Fore River is tidally influenced and has a mean annual high tide elevation of 7.4 (NGVD 1929) and a 100-year FEMA flood elevation of 10.0 (NGVD1929). Tidal information as determined by Owen Haskell, land surveyor is defined as follows:

- Mean High Water is Elevation 4.95
- Mean Low Water is Elevation is -4.95

The building finish floor elevation will be 14.75' (NGVD29) thus placing it greater than 2' above the 100-year flood level.

Photographs of the existing site conditions are contained in Attachment B.

1.4 ACCESS CONDITIONS

The development includes primarily a building development and there will be only a small service route to the rear of the building. There will be no onsite parking, as all parking will be provided at either the Gateway Garage or 100 Fore Street properties, both of which are owned by the Applicant. A single 12' vehicular access will be provided off Hancock Street to the rear of the site, to allow access to a loading overhead door at the

rear of the building. This route will connect with the remaining City land contained within a so-called Mountfort Street Extension, to be established by the city within their remaining land. Pedestrian access will be from the sidewalks along Hancock and Thames Streets.

1.5 UTILITIES

The development site will require utility service extensions from within Hancock and Thames Street. According to the City and utility provider's records, the following is available:

- Public water supply is available in Thames Street. A 6" fire service and a 4" domestic water service are proposed off an existing 12" water main in Thames Street. Existing fire hydrants are available within 500 feet of the site.
- A sanitary sewer service will tie into the existing 12" gravity sewer within Thames Street. A grease tank will also be installed for possible future use in the event that a restaurant goes into the building's retail space. A wastewater capacity request has been sent to the City's Public Works Division as part of this application.
- Three phase power is available from Fore Street within 300 feet of the site. An underground primary power service extension has been discussed with CMP and that will extend from their existing underground facility at the intersection of Fore Street and Hancock Street, north of the site. Similarly, underground communications and cable facilities are currently contemplated from in front of the Residence Inn along Fore Street to Hancock and to the site. An underground transformer vault will be installed beneath the Hancock Street sidewalk in front of the site and underground secondary power will be extended into the building. An emergency generator is proposed to be located at the rear of the building.

1.6 TOPOGRAPHY AND DRAINAGE

Owen Haskell, Inc. has completed a Boundary and Topographic Survey of the property. The site is relatively flat with the highest points along the Hancock Street frontage. The site grades range from Elevation 13' (NGVD 29) on the east end of the site to elevation 15' along the Hancock Street frontage.

The proposed building will have finish floor elevations established at elevation 14.75' which places it greater than 2 feet above the nearby Fore River 100-year flood elevation.

1.7 SOILS/GEOTECHNICAL REVIEW

A Geotechnical Investigation has been prepared by Summit GeoEngineering. It is anticipated the subsurface soils will consist of urban fill, marine clay, and sand. The current structural design planning is considering ground improvements to help reinforce ground conditions whereby traditional concrete spread wall and column footings can be utilized, and any pile supported foundations can be avoided.

1.8 PROPOSED DEVELOPMENT

The development program includes the following components:

1.8.1 ON-SITE

The proposed development will include improvements to the entire parcel which is approximately 48,000 SF in size. The proposed land cover is anticipated to be comprised of a 30,545± SF multi-story building footprint, a narrow circulation drive at the rear of the building, at-grade loading at an overhead door on the north side, various sidewalks/ pedestrian hardscape and plaza improvements, lawn, planted landscape features, and utilities services. The building's main entrance will be positioned on the west end, facing Hancock Street and the retail space will be accessed from a plaza space on the east end of the building.

The landscape Plaza area will contain both hard and landscaped surfaces. The hard surfaces may consist of patterned concrete or paver blocks while the landscaped areas are likely to contain various themes including plantings, fixed and non-fixed site measures including, but not limited to, benches, fencing, exhibits, etc. The north side of the site will include mostly hard surfaces consisting of pavement, grass pavers, or similar measures along with a less amount of vegetative landscaping. The Applicant realizes the importance of continuity and connectivity to the adjacent uses, parking, and pedestrian designs and they are working to assure the site is well integrated to the long-term vision of the site and nearby properties.

Multiple bicycle racks will be positioned nearby the building entrance. The exact styling and positioning of these site improvements including benches and related measures are being discussed and refined with the Owner and the Tenant. Additional information on these site features will be supplied to the City as the design is refined.

1.8.2 OFF-SITE

The offsite improvements include utility service extensions in both Thames Street and Hancock Street and various sidewalk improvements. Along Hancock Street, the existing sidewalk will be reconstructed as brick and an existing wide curb opening will be closed to create a new brick sidewalk condition in front the building. Along Thames Street, the existing bituminous asphalt sidewalk will be reconstructed and a new grass esplanade will be introduced behind the existing curb line to allow for grade differential along the building front and the street line. The intent is to raise the sidewalk nearly flush with the proposed building finish floor elevation, thus affording potential retail or office access from entry doors that might be installed in the future. The grade differential to the street varies from 6" to over 15", thus the esplanade will aid in overcoming this difference while maintaining the opportunity for continued parallel parking along Thames Street in front of the site. We note that the proposed office tenant is expected to utilize parking to be made available within the Gateway parking garage as the primary parking supply. It is expected that the parking supply within the garage will be available for long term WEX use as some short term (none contracted) parking tenants will be required to seek alternative parking locations. The Gateway Garage currently contains 720 parking spaces. Additional information related to parking is contained in subsequent sections of this narrative.

1.9 LAND ORDINANCE REVIEW

1.9.1 OVERVIEW

The project is located in the B-6 Zone. The proposed uses include:

- Professional business and general offices;
- Retail and retail service establishments; and
- Restaurants and other eating and drinking establishments.

These uses are all allowed by right in this zone.

The space and bulk criteria for the B-6 Zoning District are not overly restrictive. There is no minimum lot size, minimum frontage, minimum front yard, side yard, rear yard, or street setbacks in the B-6 Zone. The current proposal remains within the eastern waterfront Master Plan, the B-6 Building Height Overlay and Building Envelopes approved design parameters and no zoning relief is required. See additional information contained in the narrative within Attachment A for further background.

1.9.2 SHORELAND ZONING

The site is located within the Shoreland Zoning District. However, there are no specific restrictions related to vegetative clearing or resource setbacks given the nature of the site's historic 100% developed conditions.

1.10 TRAFFIC

Traffic Solutions LLC has been retained to assist with the preparation of any traffic analysis related to the development. We await a meeting with City officials to determine the data collection and analysis requirements for the project, given that the development parking will be provided at the Gateway Garage and that the parking is expected to basically displace existing parking demand already frequenting the garage. A more robust traffic analysis and possibly a Traffic Movement Permit Application will be provided to the City once the traffic consultant and peer reviewed discuss trip generation, parking, and related traffic data values.

1.11 PARKING DEMAND

The proposed development will include 450 office employees. The 4th Edition of the Institute of Transportation Engineers Parking Generation publication provide parking rates for a number of land use categories. LUC#701 Office Building suggests that the average peak period parking demand is 0.84 spaces per employee, which requires a total of 374 parking spaces based on a total of 450 employees. The City of Portland Code Section 14-332 outlines parking supply for various land uses as follows:

- *Offices; professional and public buildings: one (1) parking space for each four hundred (400) square feet or major fraction thereof, of floor area exclusive of cellar not used for bulk storage.*

Based on an office area of approximately 97,027 SF this equates to 243 spaces.

- *Retail Stores: One (1) parking space for each two hundred (200) square feet of first floor area in excess of two thousand (2,000) square feet not use for bulk storage.*

This equates to 15 parking spaces.

Based on the City Code, the parking supply required is 258 parking spaces. The Applicant is proposing to provide a total of 320 parking spaces for long term lease to WEX. We believe that the implementation of a robust Transportation Demand Management Plan achieves the objective of reducing the overall demand for parking from the facility, therefore the Applicant's stated parking supply at the Gateway Garage will be more than adequate to meet project demand. Further, the Applicant controls, by ownership the surface parking facility at the 100 Fore Street site, whereby an additional 50 to 100 parking spaces may be made available to the proposed development. These spaces are provided within a walking distance of less than 5 minutes to the site.

1.12 NATURAL FEATURES

The site contains no visible natural features or resources. The site's land use goes back greater than a century.

1.13 STATE AND FEDERAL PERMITS

The project as presented does not require any additional Federal or State level environmental site permits. The Development Team is working with Bill Bray of Traffic Solutions to ascertain the applicability of a Traffic Movement Permit and we are requesting further discussion with City Staff and the City's Traffic Peer reviewer, Tom Errico, on the data needs and information required to complete this determination. We look forward to working with Staff/Peer reviewer on this issue.

1.14 NOISE AND VIBRATION

The B-6 Zone has the following standards for noise and vibration:

(b) Noise:

"3. Maximum permissible sound levels: The maximum permissible sound level of any continuous, regular or frequent source of sound produced by an activity shall be as follows:

- a. Sixty (60) dBA between the hours of 7:00 a.m. and 10:00 p.m.*
- b. Fifty (50) dBA between the hours of 10:00 p.m. and 7:00 a.m., as measured at or within the boundaries of any residential zone.*

In addition to the sound level standards established above, all uses located within this zone 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."

(c) Vibration: Vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries."

It is the Applicant's intention to comply with the noise and vibration standards above. Night time activity will be minimal. Temporary noise sources during construction will include construction equipment operations, pavement grinding, dump trucks delivering gravel/fill to the site and related noise.

The site is well separated from noise sensitive sites with no direct abutting impacts to abutting residential neighborhoods.

The site is surrounded by commercial uses as previously outlined.

1.15 LIGHTING

The primary purpose for site lighting for the site is for security in the vicinity of the buildings and to provide lighting at key building entry points. Security at the site may be supplemented by infrared cameras mounted on the building. Copies of the catalog cuts for the building mounted lighting is included with this submission as Attachment C. It is the Applicant's intent to work with City staff as to the replacement of various Street fixtures along the Hancock and Thames Street frontage for consistency with nearby development and the City's master plans.

1.16 EASEMENTS OR OTHER BURDENS

According to the Boundary Survey prepared by Owen Haskell Inc., the site is encumbered by a license agreement with Jackrabbit LLC as evidenced in Attachment D to this section. The terms of the agreement involve the creation of "Functionally Equivalent" access to Jackrabbit LLC. We understand this access will be created as part of the City's objective of creating a Mountfort Street Extension right of way, east of the proposed development site. We will continue to work with City staff as to the coordination between the proposed site development and use of adjacent City lands for access and parking.

1.17 STORMWATER MANAGEMENT

The site's stormwater regime consists of sheet flow conditions across the mostly paved and gravel surfaces. There is an existing catch basin located within the gravel lot east of the property and this catch basin appears to collect the majority of site generated runoff. The catch basin outlets through a 24" storm drain that ties into the Thames Street system. The Thames Street system discharges thru a 36" storm drain to a hydrodynamic separator before the outfall into the Fore River just east of the Gateway Terminal. The development will include the use of one or more roof drain filter boxes to treat runoff from the building area. These have been successfully used and approved by the City at other building locations including the nearby 185 Fore Street site and 16 Middle Street site. The Applicant is requesting a waiver of the City's Flooding Standards based on the site's location proximate to the Fore River.

1.18 EROSION AND SEDIMENT CONTROL

Temporary Erosion and Sediment Control measures are included as part of the plan documents. Temporary measures during construction are expected to be modest since there will be limited earthmoving involved. The primary emphasis will be on keeping paved areas clean and swept and existing drainage inlets protected during

construction. Dust control will also be a primary objective during the course of construction.

1.19 FLOODING

The project site has been depicted graphically on a portion of the FEMA Flood Insurance Rate Map and is provided as Figure 2 in Attachment B at the end of this section. The buildings will be constructed with a minimum finish floor elevation of 14.75 feet, which is greater than 4 feet higher than the 100-year flood elevation of 10.0 feet.

1.20 BLASTING

Based on previous soil investigation at the site, blasting is not anticipated for construction of the project. If blasting or rock removal is required, the contractor will be required to prepare a Blasting Plan and preblast survey prior to any rock removal.

1.21 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.

Odors will be generated during the construction phase of the development.

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 are considered negligible considered the proposed office use.

These odors are not likely to be offensive, as they are of low intensity; therefore, no provisions for odor control are planned. However, appropriate ventilation procedures will be utilized on site for health and safety of staff as necessary.

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

1.22 SUNLIGHT

The proposed buildings at the site will not cast significant shadows onto neighboring residential 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 grading plan shows the relative elevations of the buildings with respect to elevations along the property lines.

1.23 ATTACHMENTS

Attachment A – Architect's Narrative
Attachment B – Figures and Site Photographs
Attachment C – Lighting Catalog Cuts
Attachment D – Jackrabbit LLC License Agreement

ATTACHMENT A

Architect's Narrative

0 Hancock Street

Planning Board Workshop

The following write-up on 0 Thames Street reviews how the proposal responds to the city, the community and the Master Plan for Redevelopment of the Eastern Waterfront including the specific strategies, goals and amenities of the project and design direction. Highlights of the project will be emphasized with acknowledgements on how the project will move forward from this point.

How the project responds to the city, the community and the Master Plan for Redevelopment of the Eastern Waterfront:

The proposal for the development at the corner of Hancock and Thames is one of mixed-use including office space, to be rented to Wex as its global headquarters, as well as over 5,000 S.F. of retail space. The site's proximity to the heavy foot and car traffic of the Old Port makes it an ideal location for both uses – offering an exciting and amenity-filled location for Wex employees and a prime location to continue to extend the commercial hub and help connect it to the, already in place and growing, public park and path system. The use of the building and the design respect and contribute to the urban fabric of the city.

The location is also responsive to and supportive of current and proposed pedestrian and vehicular traffic patterns. The site design includes multiple paved and planted plazas as well as an access road wrapping the back side of the building that also functions as a pedestrian and bike path. It is a direct link between the quickly developing residential and hotel filled blocks behind the site and the Eastern Promenade Trail. The proposal is intentionally sensitive to the vehicular traffic patterns of the city and recognizes both the existing and proposed future grid of the streets that includes possible Thames and Mountfort extensions.

The owner of 0 Hancock is also the owner of the Gateway Garage and 100 Fore Street meaning that there is existing and available multi-level and grade level parking as well as an area for potential development of more multi-level parking. This ties directly into the EWMP goals to reduce grade level parking and keep the parking set back from critical waterfront sites. It enables all of 0 Hancock to be utilized for the mixed-use purposes and sitework that will enhance the area.

Not only is the project sensitive to pedestrian and vehicular traffic, but it also takes advantage of other forms of transportation located nearby and encourages use of them both for the public and its tenants. Aside from being easily accessible by foot or car, the site is located adjacent to bike paths and routes and will offer exterior bike racks for the public and tenants as well as interior bike storage at the Gateway Garage for tenants. To encourage multi-modal transportation, the fit-up will include showers and changing areas. 0 Hancock is only a short walk from the ferry terminal and bus stops. In addition to access to public and private transportation, the site is located across the street from the Ocean Gateway giving it high visibility and accessibility to the many cruise ship visitors which is beneficial to the retail component.

The major and most notable material used in the design is glass. The perimeter with views of the water is clad mostly in curtain wall which transitions to large runs of glass and punched openings as the building turns back towards the East End. In contrast to the many brick buildings of the Old Port and the wood clapboard clad 3 flats of the east end, the addition of a largely glass building adds a timeless design to the fabric of the area. Unlike opaque building materials glass creates a very strong connection between the interior and the exterior and the private and public. The reflectivity of the façade causes the appearance of the building to change with the day and the season and its transparency allows it to showcase the everchanging interior. The skin is much more linked to its current surroundings and interior rather than a specific time period and style.

The height and volume of the proposed building are in direct response to the EWMP and the height overlay zone. The building's peeling back from the corner of Thames and Hancock and stepped massing keep it in scale with its surroundings, and both of these design elements and the high level of glazing make it particularly sensitive to the view corridors and pedestrian experience. Because of the large footprint of the project (30,000 S.F.), it has been broken down into three distinct masses, denoted by step backs, roof and parapet height and glazing/curtain wall treatment. The three masses can be read from the corner of Thames and Hancock, and although they help to scale the building, the materials and relationships create continuity between the three masses to tie them together as a single design.

The specific strategies, goals and amenities of the project:

At the site level of the project there are several important highlights of the design, some of which tie back into the goals of the EWMP. The strategy to eliminate the need for surface parking and consolidate it into efficient structures that are not a public street edge or critical waterfront is key. Because of the amazing location with its proximity to the water and its ensured water views and visibility and accessibility, as much of the site as possible should be given to the tenants and public and not used for the storage of vehicles.

Another positive aspect of the site is its location at the lowest point of the slope that is the east end. The building is able to stand 3 and 4 stories high without blocking the views of neighbors located further from the water but at a higher elevation.

The landscaping of the site shows greening of as many areas as possible creating life at all edges including the roof not unlike the deck of a boat and takes full advantage of the views, sounds and energy of the harbor. The 'vest pocket' park acts as an extension of the Eastern Promenade Trail and the proposed Amethyst Park drawing interest into and around the site. The importance of greening the site is reflected in details such as the access drive including grass pavers and a green screen to act as fencing between it and the neighboring parking.

The building design at the pedestrian level breaks down in massing and scale along the street through setbacks and manipulation of the curtainwall system. The main entrance for the office space is denoted by a step back in the façade that continues all the way through roof level. Along Thames Street there are large glazed areas that read as separate sheets of glass reaching up past the roof towards the sky as they create a transparent wind block for the large roof deck. Although there are three distinct sections of this façade, two of these terminate at the second level allowing the building to step back

underneath itself at angles – the office portion facing towards the islands and the retail towards Commercial Street. Finally, at the plaza on the northeast end of the building the first floor is again pushed back under the upper floors, this time with a curved wall allowing the building to create a strong edge for the plaza. These pushed back portions create a strong relationship between the exterior and interior and draw people to the retail component while creating covered transition spaces.

Not only does the massing increase the exterior/interior relationship but the daytime/nighttime interaction with the city is crucial to the design. During the day, the skin system engages and naturally reflects its surroundings and at night (or the afternoon as our latitude causes in the winter months), the same skin becomes transparent revealing the activity of the interiors and acting as a beacon that is visible from many directions due to siting. This causes the building to be a natural 'landmark' as it is set apart from the more opaque and non-reflective buildings surrounding it -The Ocean Gateway and the new ferry terminal are other newer projects which have used glazing in a similar fashion. The interior and exterior lighting designs will be critical and can be used to create a sensitive and elegant 'landmark'.

The transition in building skin treatment reflects the changing nature of the context. The curtain wall is a transparent face to the sea and responds to the open reflective expanses and modern terminal architecture while the punched openings facing the city are responsive to the historic building context of Portland and the city fabric. Where the wall becomes more solid, the insulated metal panels will still have amounts of reflectivity based on finish so that light will constantly be changing the appearance of the building.

Highlights of the building:

In summary:

The sensitive management of parking reserves the valuable site for the most appropriate uses.

The development of strong exterior spaces and attention to detail in greening the site creates public spaces that seamlessly tie into the existing and proposed surrounding parks and paths and take full advantage of the views and amenities offered.

The roof deck furthers the development of outdoor space at the private level and making the best use of the stepped massing of the building as required by zoning.

The transition from transparent to punched openings is responsive to the varied context – the sea and the city.

There is a strong interaction between the building interior and exterior that is promoted by skin concept, public spaces and access.

The mixed-use proposal and site plan activate the area from early morning through the evening both drawing from its surroundings and enhancing them as well.

Areas still being worked on that will greatly enhance the final design:

Although the massing and skin and site plan of the building have been brought to the table after many revisions, there are still elements being worked through that will be important to the final design of the project.

Finalizing the color and finish of all skin systems will be an important element as well as what connection system is used and where.

Because of the amount of glazing, sun control will also be a large component of the final fit-up.

The plazas and roof deck are great amenities of the building. Mohr & Seredin is the Landscape Architecture team on the project and they will continue to further the planting/paving schemes.

The interior fit-up is being done by SMRT and there is a very open dialogue between the core & shell team and SMRT to make sure that there is integration of the interior, exterior, experience and perception from both sides of the skin. This will hold true for both the office space and the retail space.

ATTACHMENT B

Figures and Site Photographs



LOCATION MAP THAMES STREET SITE - PORTLAND, MAINE

SOURCE: U.S.G.S.



Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

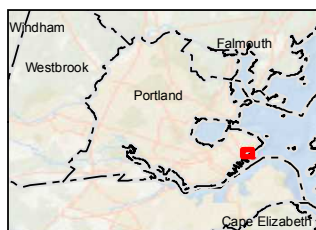
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DRAWN: PBF
CHECKED: SRB
DATE: 8/9/2017
FILENAME: 50450_loc_figure
SCALE: N.T.S.

FIGURE

1



Legend

- Approximate Project Boundary
- FEMA Flood Hazard Layer (Q3)
- 100 Year Flood Zone (Zone AE)
- 100 Year Coastal Flood Zone (Zone VE)

0 200 Feet
1 inch = 200 feet (At page size of 8.5"x11")



Project Location
Hancock St. and Thames St.
Portland, Maine

195350450
Prepared by KWH on 2017-08-11
Review by CD on 2017-08-11

Client/Project
0 Hancock Street LLC
WEX Development
Site Development

Figure No.

2

Title

Notes

1. Coordinate System: NAD 1983 StatePlane Maine West FIPS 1802 Feet
2. FEMA Flood Hazard data provided by Maine Office of Geographic Information (MEGI).
3. Aerial imagery provided by ArcGIS Online Bing Maps web mapping service. (<http://www.esri.com/software/arcgis/arcgisonline/bing-maps.html>).

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FEMA Flood Insurance Rate Map



PHOTO 1 – Thames Street Frontage



PHOTO 2 – Hancock Street Frontage



Stantec Consulting Services Inc.
 482 Payne Road, Scarborough Court
 Scarborough ME 04074-8929
 Main: 207.883.3355 Fax: 207.883.3376

**Thames Street Property, Portland, Maine
 Site Photos Taken by Steve Bushey – 08/10/17
 (Stantec JN 195350450)**



PHOTO 3 – Aerial view from Gateway Garage



PHOTO 4 – Aerial view from Gateway Garage



Stantec Consulting Services Inc.
482 Payne Road, Scarborough Court
Scarborough ME 04074-8929
Main: 207.883.3355 Fax: 207.883.3376

**Thames Street Property, Portland, Maine
Site Photos Taken by Steve Bushey – 08/10/17
(Stantec JN 195350450)**

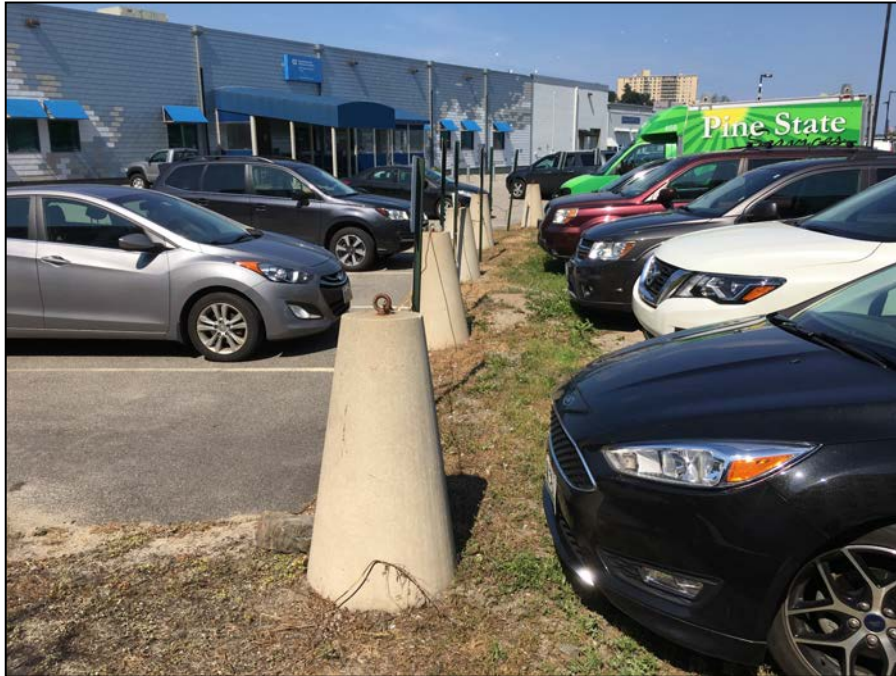


PHOTO 5 – North Side



Stantec Consulting Services Inc.
482 Payne Road, Scarborough Court
Scarborough ME 04074-8929
Main: 207.883.3355 Fax: 207.883.3376

**Thames Street Property, Portland, Maine
Site Photos Taken by Steve Bushey – 08/10/17
(Stantec JN 195350450)**

ATTACHMENT C

Lighting Catalog Cuts

Specifications

GENERAL DESCRIPTION

The lighting post shall be all steel, one or two piece construction, consisting of a tapered shaft welded to a steel anchor base. The post shall be provided with (1) OUC roadway arm, 45" from post center to luminaire center, (1) Boston Harbour QSM leveling fitter, and (1) Cambridge style Ø17" clamshell base.

MATERIAL

The shaft shall conform to ASTM A595 Grade-A and is supplied in .1196" thickness. The anchor base is fabricated from structural quality hot rolled carbon steel plate conforming to ASTM A36. The base plate telescopes the pole shaft and is circumferentially welded top and bottom.

DIMENSIONS

The post shall be 15'-0" in height with a 10" square base. An integral Ø3.5"x8" tenon will be provided for arm mounting.

WIRE ACCESS

A reinforcing handhole rim is provided on the post and is made of a rectangular shaped tubing material. It is provided with one or two steel attachment bars, steel cover, and one or two round head machine screw. The handhole is welded in the post shaft and is located above the base.

INSTALLATION

The post shall use four L-type anchor bolts (anchor bolts by others). Anchor bolts shall be installed on a Ø9" bolt circle.

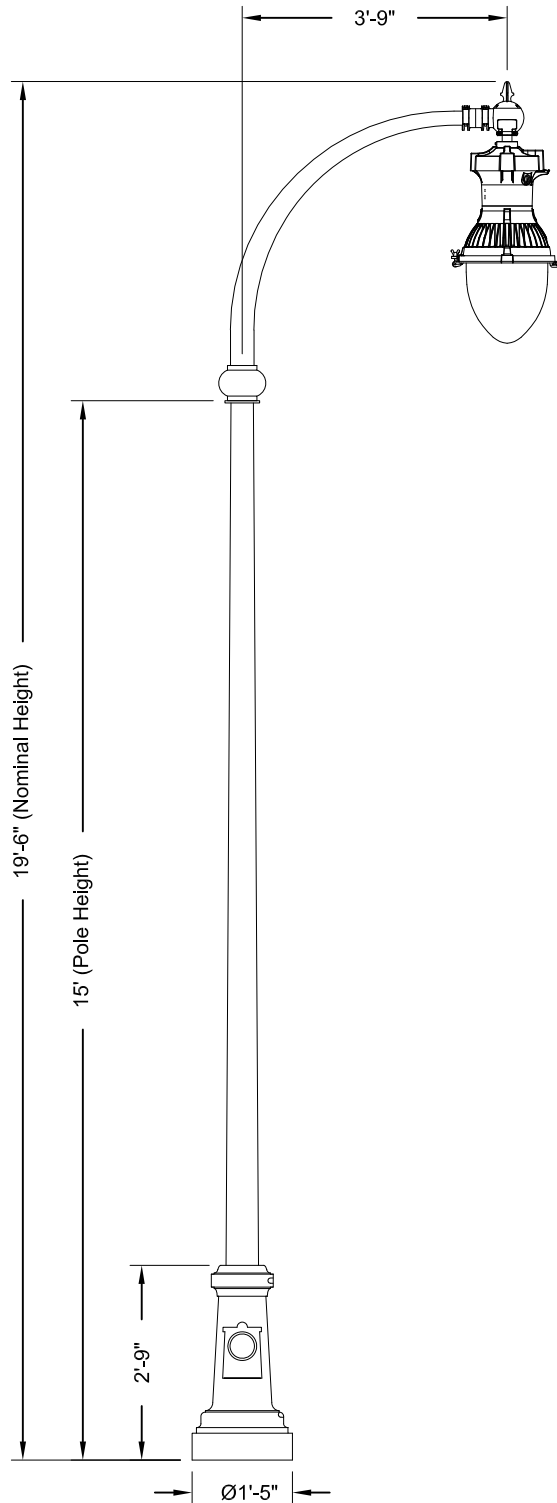
FINISH

The pole assembly shall have a standard Holophane black finish.

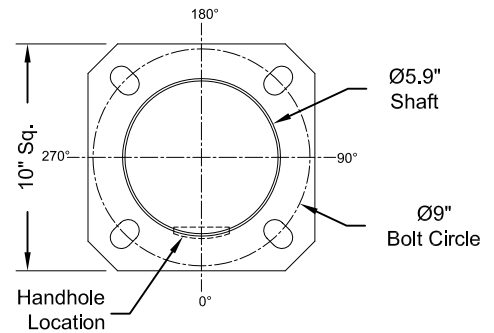
LUMINAIRE DESCRIPTION

- Esplanade Utility LED
- 110W System, 4K CCT, Auto-Sensing Voltage (120-277)
- Black finish, Asymmetric Teardrop Type Glass
- Quick Lock Stem Mount, Shorting Cap, Extended Life Driver
- NEMA Twistlock Photocontrol Receptacle

For complete standard specifications, please see LUM_ESL.



Anchorage Detail



DO NOT USE TO SET ANCHOR BOLTS
CONTACT CUSTOMER SERVICE FOR TEMPLATE

Catalog #'s:

RFD108969

Pole: DS210590AU617A

Clamshell Base: CM17CSBU617A

Roadway Arm: OUC45/1CABKH

STANDARD MATERIAL

Fixture: ESL1104KASB4SPSCREL

Fitter: BHDF13200BK

Customer Signature

Date



City Of Portland Portland, Maine

ORDER #: 2066-14-10519-1	TYPE:	DRAWING #:
REVISION:	REVISION DATE:	TSG 009221
DRAWN: MAB	ORIGIN DATE: 10/27/15	
		PAGE: 1 of 1

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.

VIPER S SERIES

SMALL VIPER LUMINAIRE

Cat.#

Job

Type



BEACON
design . performance . technology

Approvals

SPECIFICATIONS

Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

Construction:

- Manufactured with die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

Electrical:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is $\geq .90$ at full load.
- All electrical components are rated at 50,000 hours at full load and 25°C ambient conditions per MIL- 217F Notice 2.
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher.
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.
- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- The housing is designed for an optional twist lock photo control receptacle.
- Ambient operating temperature -40°C to 40°C
- Surge protection - 20KA.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night (see www.beaconproducts.com/products/energeni).
- In addition, Viper can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance cost while optimizing light quality 24/7. See ordering information or visit www.hubbelllighting.com/sitesync for more details.

Installation:

- Mounting options for horizontal armnd, vertical tenon or traditional arm mounting available. Mounting hardware included.

Finish:

- IFS polyester powder-coat electro-statically applied and thermocured.
- IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish.
- The finish meets the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

Listings:

- DesignLights Consortium (DLC) qualified, consult DLC website for more details: <http://www.designlights.org/QPL>
- Certified to UL 1598 and CSA C22.2 No.250.0
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: <http://www.beaconproducts.com/products/vipersmall>

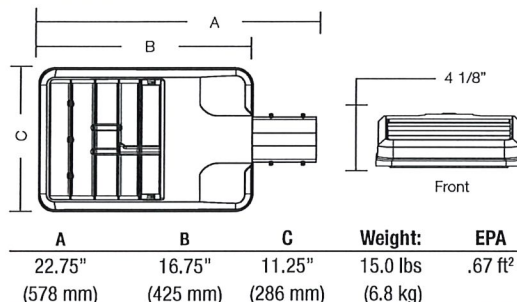
Warranty:

Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

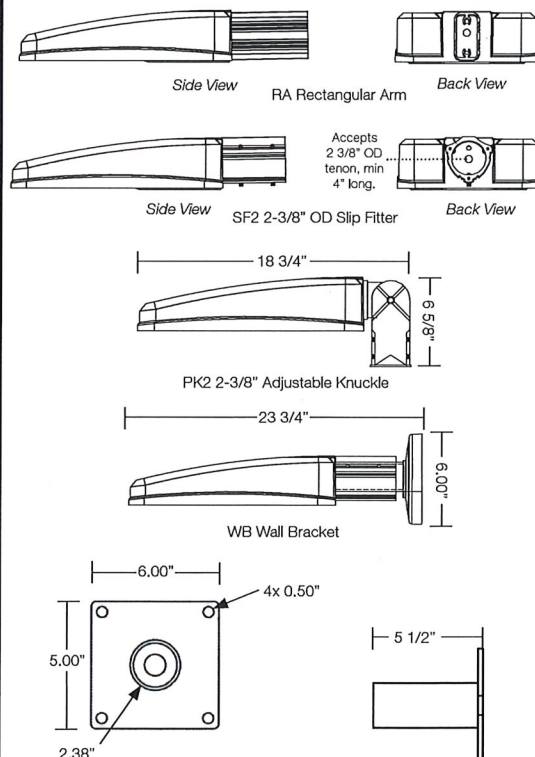
PRODUCT IMAGE(S)



DIMENSIONS



MOUNTING OPTIONS



CERTIFICATIONS/LISTINGS



*3000K and warmer CCTs only



BEACON
design . performance . technology

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HUBBELL
Lighting

ORDERING INFORMATION ORDERING EXAMPLE: VPS/36NB-80/5K/T4/UNV/PCR-TL/SWP/BLC/RA/BBT

VPS									
SERIES	ENGINE-WATTS	LED COLOR ⁸	VOLTAGE	ELECTRICAL OPTIONS	HOUSE SIDE SHIELD OPTIONS	FINISH			
VPS viper-small	24NB-55 55W, LED array	3K 3000K	UNV 120-277V	PCR-TL Twist lock receptacle with photo control	BLC ³ backlight control	BBT basic black textured			
	30NB-70 70W, LED array	4K 4000K	347V 347V	PCR-SC Twist lock receptacle with shorting cap		BMT black matte textured			
	36NB-80 80W, LED array	5K 5000K	480V 480V	PCR-SC Twist lock receptacle with shorting cap	BIRD DETERRENT	WHT white textured			
	48NB-110 110W, LED array			PCR-SC Twist lock receptacle with shorting cap	BSP bird spike	MBT metallic bronze textured			
	60NB-136 136W, LED array			PCR-SC Twist lock receptacle with shorting cap		BZT bronze textured			
				PCR-SC Twist lock receptacle with shorting cap		DBT dark bronze textured			
				PCR-SC Twist lock receptacle with shorting cap		GYS gray smooth			
				PCR-SC Twist lock receptacle with shorting cap		DPS dark platinum smooth			
				PCR-SC Twist lock receptacle with shorting cap		GNT green textured			
				PCR-SC Twist lock receptacle with shorting cap		MST metallic silver textured			
				PCR-SC Twist lock receptacle with shorting cap		MTT metallic titanium textured			
				PCR-SC Twist lock receptacle with shorting cap		OWI old world iron			
				PCR-SC Twist lock receptacle with shorting cap		RAL			

¹ Must specify group and zone information at time of order. See www.hubbellighting.com/controls/sitesync for further details.

² Specify time delay, dimming level and mounting height.

³ T4 optic only.

⁴ To rotate optics Left or right 90 degrees, specify L or R after the optical distribution example T4L.

⁵ Not available with other wireless control or sensor options.

⁶ When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.

⁷ Not available for 347V or 480V input.

⁸ This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Viper_Small_LED_turtle_spec_sheet.pdf

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbellighting.com/products/sitesync or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-S/24NB-55/5K/T3/UNV/SWP/RA/DBT SiteSync only
VP-S/24NB-55/5K/T3/UNV/SWPM-20F/RA/DBT SiteSync with Motion Control

MDD ORDERING INFORMATION: When ordering a fixture with the motion detection option (MDD), please specify the appropriate information. These settings are specified in the ordering as shown in the example below.

VP-S/24NB-55/5K/T3/UNV/MDD - 1 to 30 min. - 33% or 50% - ?? / RA/DBT
High to Dim Delay Low Level Mounting Height (ft.)

Accessories and Services (Ordered Separately)

Catalog Number	Description
SWUSB*	SiteSync loaded on USB flash drive (Windows based only)
SWTAB*	SiteSync Windows Tablet
SWBRG*	SiteSync Wireless Bridge Node

*When ordering with SiteSync, one of the following interface options must be chosen and ordered separately. Each option contains the SiteSync License, GUI and Bridge Node.

+ If needed, an additional Bridge Node can be ordered.



DesignLights Consortium qualified.
Consult DLC website for more details:
<http://www.designlights.org/QPL>

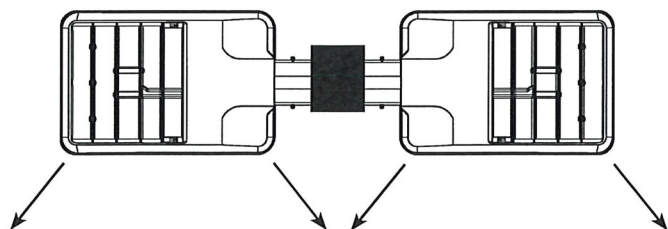


SiteSync Lighting Control is available from our most popular brands in a broad range of award-winning product families.



LEFT ROTATED OPTIC

RIGHT ROTATED OPTIC



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ATTACHMENT D

Jackrabbit LLC License Agreement

LICENSE AGREEMENT

This **LICENSE AGREEMENT** is made between the **City of Portland**, a body corporate and politic located at 389 Congress Street, Portland, Maine (hereinafter the "City"), and **JACKRABBIT, LLC**, a Maine limited liability company with a mailing address of 44 Oak Street, Portland, Maine, 04101 (hereinafter "Jackrabbit").

WHEREAS, the City and Jackrabbit each own property adjacent to Jackrabbit's building located at 144 Fore Street in the City of Portland, Maine; and

WHEREAS, the City wishes to have access to a portion the Jackrabbit's above-described property (hereinafter the "Jackrabbit Property"), and Jackrabbit wishes to have access to a portion of the City's above-described property (hereinafter the "City Property") for the purposes of vehicular traffic, travel and parking as described in the Agreement;

NOW THEREFORE, the City does hereby grant to Jackrabbit, its successors and assigns in ownership of the Jackrabbit Property, a revocable license to enter upon and to use the City Property for the purpose of vehicular traffic and travel, and Jackrabbit does hereby grant to the City, its successors and assigns in ownership of the City Property a revocable license to enter upon and use the Jackrabbit Property for the purpose of vehicular traffic, travel and parking, subject to the following terms and conditions:

1. Location. The City Property and Jackrabbit Property are described and delineated in Exhibit A, attached hereto and incorporated herein by reference.

2. Use of City Property by Jackrabbit. The City Property shall be used by Jackrabbit as shown on Exhibit A attached hereto for vehicular traffic, travel and minimal parking related to Jackrabbit's ownership and Jackrabbit's and his tenants' and invitees' use of Jackrabbit's building located at 144 Fore Street, only. All of Jackrabbit's parking shall be immediately adjacent to the building located at 144 Fore Street and at either end of the building, as shown on Exhibit A attached hereto. Vehicles shall not block the flow of traffic in the shared travel lane. Any vehicles that park on City Property not in accordance with this paragraph and do not display a City hang tag or permit will be subject to ticketing, booting and towing at the City's discretion. All use of the City's Property by Jackrabbit must be in compliance with state and federal law, and local ordinance, including but not limited to local land use ordinances.

3. Use of Jackrabbit Property by the City. The Jackrabbit Property shall be used by the City as shown on Exhibit A attached hereto for vehicular traffic, travel and parking related to the City's activities, including but not limited to providing parking for users of the Eastern Promenade Trail after 5:00 p.m. Monday through Friday and all day on weekends and holidays. All use of the Jackrabbit Property by the City must be in compliance with state and federal law, and local ordinance, including but not limited to local land use ordinances.

4. Signage. Jackrabbit agrees to post signs on or around its building located at 144 Fore Street, at its own expense, indicating that parking adjacent to the building is reserved for tenants and customers of the building.

5. Maintenance. Jackrabbit shall be responsible for maintenance and repair,

including snow plowing and removal, of the Jackrabbit property and the shared travel lane indicated on Exhibit A. City shall be responsible for maintenance and repair, including snow plowing and removal, of the City property.

6. **No Fees.** Jackrabbit shall be liable for no fees for its use of the City Property in accordance with this License Agreement, and the City shall be liable for no fees for its use of the Jackrabbit Property in accordance with this License Agreement.

7. **Event Revenue.** Jackrabbit shall retain any revenue from parking for special events only for parking spaces located on Jackrabbit property. The City shall retain any revenue from parking for special events for parking spaces located on City property.

8. **Insurance: City.** City is self insured and any claims which are the responsibility of the City under this agreement shall be covered by said self insurance fund.

9. **Insurance: Jackrabbit.** Jackrabbit shall procure and maintain throughout the term of this License Agreement, or provide through its contractor(s), comprehensive general liability insurance in the minimum amount of Four Hundred Thousand Dollars (\$400,000) covering Jackrabbit's activities hereunder and naming the City as an additional insured thereon. In addition, Jackrabbit shall provide evidence of automobile liability insurance in said minimum amount, and workers compensation insurance in the statutory amount, if applicable. All contractors to Jackrabbit performing work under this License shall provide the City with evidence of the above insurance coverages with the City as an additional insured, and workers compensation and employers liability insurance in the statutory amounts which shall have an endorsement waiving subrogation against the City. Such contractor insurance may be in place of that required of Jackrabbit so long as it remains in effect and names the City as an additional insured.

Certificates evidencing such insurance policies shall be delivered to City and shall provide the City with no less than thirty (30) days prior notice of cancellation or non-renewal.

All insurance policies hereunder shall be primary to any insurance, or self-insurance, maintained by City.

10. **Effective Date.** This License is effective as of the date of execution.

11. **Term.** This license shall have a term of ten (10) years and shall automatically continue for successive ten year periods unless the parties agree upon and establish functionally equivalent access to the Jackrabbit Property or the affected portion of it on terms similar to this Agreement as mutually agreed upon by Jackrabbit and the City. If the parties fail to agree, then on written notice from either party any dispute shall first be submitted to nonbinding mediation by a single mediator. If no mediation occurs or if no agreement is reached within 30 days thereafter, then on written notice from either party the dispute shall be submitted to arbitration, to a single arbitrator to be agreed upon within 20 days of the date on which the notice is served. If the parties cannot agree on a single arbitrator then on written notice from either part the dispute shall be submitted to a panel of three arbitrators and the notice shall specify the name and address of the person designated to act as an arbitrator on its behalf. Within 20 days after the service of such notice, the other party shall specify the name and

address of the person designated to act an arbitrator on its behalf. If the other party fails to notify the initiating party of the appointment of its arbitrator within the time above specified, then the appointment of the second arbitrator shall be made by the first arbitrator. The two arbitrators so chosen shall meet within 15 days after the second arbitrator is appointed and if, by 30 days after the date of the appointment of the second arbitrator, the two arbitrators shall not agree upon a resolution of the dispute, they shall together appoint a third arbitrator. The three arbitrators shall meet and render a decision within 30 days after the date of the appointment of the third arbitrator. The decision of a majority of the arbitrators shall be final. All arbitrators appointed must be employed or active in the real estate industry, including without limitation, as managers, real estate brokers, bankers, attorneys, developers, investors or otherwise.

The party's shall share the costs of providing a functionally equivalent access equally, but if the City's proportionate share based on the original square footage of the portion of the access relocated on its land to all of the original square footage of the access from the City to Jackrabbit access is less, then it shall pay the lesser share.

12. Termination. In the event either party does not comply with the terms of this Agreement, the aggrieved party must first request the other party to cure the problem. In the event the problem is not cured within thirty (30) days, the party can terminate the Agreement upon thirty (30) days written notice.

Any notice of an Event of Default delivered pursuant section 12 of this license agreement must be sent by certified mail, return receipt requested to Jackrabbit at the address for Jackrabbit set forth above, or at such other address as Jackrabbit may provide to the City in writing from time to time. In addition following a notice sent to the City by certified mail, return receipt requested, by a party identifying itself as the holder of a mortgage on Jackrabbit's Property, the City shall concurrently send such mortgagee a copy of any notice of an Event of Default which the City sends to Jackrabbit.

Notwithstanding any other provision herein, in the event that a notice of an Event of Default is delivered to Jackrabbit pursuant to section 12 hereof, any mortgagee of Jackrabbit's Property who has identified itself to the City shall be entitled to cure such default within the time frames set forth above, and the City agrees to accept such performance by any such mortgagee of Jackrabbit's obligations hereunder.

In the event the adjacent Thames Street Lot, owned by the City, is redeveloped and the use of City Property by Jackrabbit pursuant to this Agreement presents an encumbrance to redevelopment of said lot, the City shall provide Jackrabbit and any mortgagee of Jackrabbit's Property who has identified itself to the City one (1) years notice of termination of this Agreement, provided that the City must provide functionally equivalent access to the Jackrabbit Property on terms similar to this Agreement in order for such notice of termination to be effective.

In the event the City takes by eminent domain proceedings a portion of the Jackrabbit Property necessary for a future extension of Mountfort Street, then this License shall terminate with respect to that portion of the License area necessary for such extension of Mountfort Street, and the City shall not be required to pay damages for such partial

termination or for any increased value of the portion of the Jackrabbit Property so taken attributable to this License Agreement.

12.No Interest in Land. The City shall have no authority to modify or make any changes to the Jackrabbit Property subject to this License without the prior consent of Jackrabbit, and Jackrabbit shall have no authority to modify or make any changes to the City Property subject to this License without the prior consent of the City, provided that the parties hereby consent to the changes identified in the City's minor site plan approval issued on August 16, 2010.

13. This Agreement amends and restates in its entirety a prior License Agreement between the parties dated October 14, 2010.

Dated as of January 21st, 2011

JACKRABBIT, LLC

By: [Signature]

name: Pres. Mike Marino
its Pres

CITY OF PORTLAND

By: [Signature]

name: Joseph E. Gray, Jr.
its City Manager

STATE OF MAINE
CUMBERLAND, ss.

January 21, 2011

PERSONALLY APPEARED before me the above named Mike Marino in his said capacity, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said limited liability company.

[Signature]
Notary Public/~~Attorney at Law~~
Print name: Barbara J. Brewer

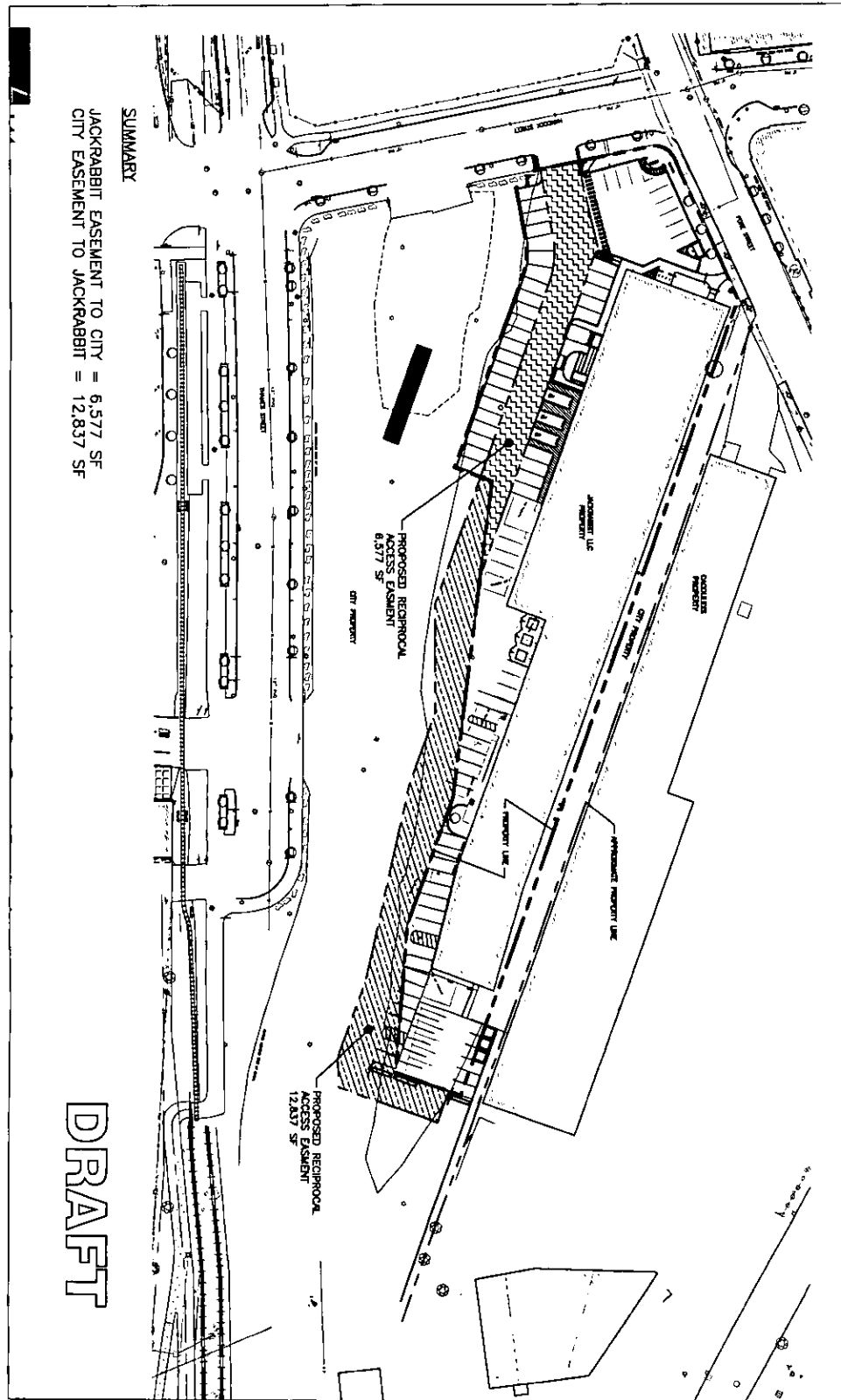
STATE OF MAINE
CUMBERLAND, ss.

January 21, 2011

PERSONALLY APPEARED before me the above named Joseph E. Gray, Jr. in his/her said capacity, and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of the City of Portland.

[Signature]
Notary Public/~~Attorney at Law~~
Print name:

Exhibit A



SUMMARY
JACKRABBIT EASEMENT TO CITY = 6,577 SF
CITY EASEMENT TO JACKRABBIT = 12,837 SF

Received
Recorded Register of Deeds
Jan 27, 2011 02:48:05P
Cumberland County
Pamela E. Lovley



Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

September 28, 2017

Ms. Caitlin Cameron, Urban Designer

Planning & Urban Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

**Subject: Application for Level III Site Plan Approval
Commercial Office at the Corner of Thames and Hancock Streets
WEX Headquarters
Letter of Response #2 – Title, Right or Interest**

Dear Caitlin:

On behalf of 0 Hancock Street LLC, our office is submitting the attached Quitclaim Deed without Covenant signed and recorded on September 28, 2017 regarding the above referenced project.

We are also posting this to the project folder on eplan.

If you have any questions regarding this submission, please contact our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

A handwritten signature in blue ink, appearing to read "Stephen R. Bushey".

Stephen R. Bushey, P.E.

Associate

Phone: 207-887-3478

Fax: 207-887-3376

stephen.bushey@stantec.com

Attachment

c: Bill Hopkins, Archetype PA
Jonathan Cohen, 0 Hancock Street LLC

V:\1953\active\195350450\civil\admin\permitting\local\City of Portland Level III\lor\lor_2_Cameron_deed_20170928.docx

ATTACHMENT

COPY

Recorded September 28, 2017 @ 11:43 a.m. 34347-163

QUITCLAIM DEED WITHOUT COVENANT

CITY OF PORTLAND, a body corporate and politic and Maine municipal corporation ("Grantor"), FOR CONSIDERATION PAID, releases to **0 HANCOCK STREET, LLC**, a Maine limited liability company having a mailing address of P.O. Box 910, Westbrook, Maine 04098-0910 ("Grantee"), certain real property, together with any improvements thereon, located on Hancock Street, in the City of Portland, County of Cumberland and State of Maine (the "Property"), more particularly described on Exhibit A attached hereto and made part hereof.

Meaning and intending to describe a portion of the premises conveyed to the Grantor by virtue of a Quitclaim Deed granted by the Canadian National Railway Company dated August 30, 1993 and recorded in the Cumberland County Registry of Deeds in Book 10924, Page 84.

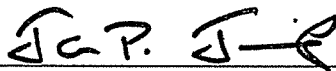
Grantee covenants and agrees by acceptance of this Deed that the Property herein conveyed is subject to the covenants and restrictions and Grantor's option to repurchase the property set forth in Exhibit B attached hereto and hereby made a part hereof.

IN WITNESS WHEREOF, Grantor has caused this instrument to be executed on its behalf by Jon P. Jennings, its City Manager, duly authorized, on this 28th day of September, 2017.

WITNESS:

CITY OF PORTLAND





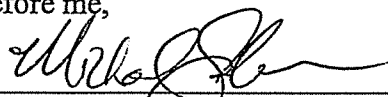
Jon P. Jennings
Its City Manager

STATE OF MAINE
COUNTY OF CUMBERLAND

September 28, 2017

Personally appeared the above-named Jon P. Jennings, City Manager of the City of Portland, as aforesaid, and acknowledged the foregoing to be his free act and deed in his said capacity, and the free act and deed of said City of Portland.

Before me,



Attorney-at-Law/Notary Public

Commission Expires:

Print Name: Michael Waldman, Bar No. 9842

Exhibit A

Thames Street

A certain lot or parcel of land situated on the northeasterly side of Hancock Street and the northwesterly side of Thames Street in the City of Portland, County of Cumberland, and State of Maine, depicted on ALTA/NSPS Land Title Survey entitled "Hancock & Thames Street, Portland, Cumberland, County, Maine, made for 0 Hancock Street, LLC" prepared by Owen Haskell, Inc., dated August 30, 2017 and last revised September 27, 2017, bounded and described as follows:

Beginning at a capped iron rod marked P.L.S. # 2114 found at the common corner of Jackrabbit Limited Liability Company (deed book 28485 page 242) and land of the grantor, being located S53°47'21"E along the northeasterly sideline of said Hancock Street 101.86' from a point of curvature where said Hancock Street begins to intersect with Fore Street;

Thence, the following courses and distances along land of said Jackrabbit Limited Liability Company:

N36°12'03" E a distance of 46.90' to a capped iron rod set at a tangent curve to the right;

Thence, along said curve which bears a radius of 48.99', an arc length of 26.51', a chord bearing of N51°42'14"E, and a chord length of 26.19' to a 5/8" iron rod;

N67°12'25" E a distance of 145.04' to a capped iron rod #2114;

N22°47'35" W a distance of 28.78' to a capped iron rod set at other land of the Jackrabbit Limited Liability Company (deed book 12434, page 163);

Thence, N54°21'35" E along land of said Jackrabbit Limited Liability Company 149.44' to a capped iron rod set at the proposed extension of Mountfort Street as shown on said plan and other land of the grantor;

Thence, S45°34'01"E along the southerly sideline of said proposed Mountfort Street Extension through land of the grantor 118.44' to a capped iron rod set at the northwesterly sideline of said Thames Street;

Thence, the following courses and distances along said sideline of Thames Street:

S47°28'43"W a distance of 177.52' to a capped iron rod set;

S46°24'59"W a distance of 108.38' to a tangent curve to the left, marked by a granite monument with plug 3' offset of and perpendicular to the end of the previously stated course;

Thence, along said curve to the left which bears a radius of 1029.00', an arc length of 45.75', a chord bearing of S45°08'33"W, and a chord length of 45.75' to a tangent curve to the right at

said northwesterly sideline of Thames Street where it intersects the northeasterly sideline of Hancock Street, marked by a granite monument with plug found 3' offset of and perpendicular to the end of the previously stated course;

Thence, along said curve to the right which bears a radius of 12.00', an arc length of 17.25', a chord bearing of S85°03'01"W, and a chord length of 15.80' to a point which is marked by a granite monument with plug 3' offset of and perpendicular to the end of the previously stated course;

Thence, N53°47'21"W along said northeasterly sideline of Hancock Street 147.90' to the point of beginning.

Containing 48,000 square feet, more or less.

For a more particular description see the aforementioned plan.

Reserving to the Grantor a drainage easement twenty (20) feet in width over, under, through and across a portion of the Property, which portion is more particularly described as follows (the "Drainage Easement Area"):

A certain lot or parcel of land situated on the northwesterly side of Thames Street in the City of Portland, County of Cumberland, and State of Maine, depicted as "Proposed Drainage Easement" on ALTA/NSPS Land Title Survey entitled "Hancock & Thames Street, Portland, Cumberland, County, Maine, made for 0 Hancock Street, LLC" prepared by Owen Haskell, Inc., dated August 30, 2017 and last revised September 27, 2017, bounded and described as follows:

Commencing on the northwesterly sideline of said Thames Street at a capped iron rod set at the intersection of said Thames Street and the southwesterly sideline of a proposed extension of Mountfort Street, thence N45°34'01"W along said Mountfort Street Extension 22.45' to the point of beginning.

Thence, S15°16'37"W a distance of 42.06' to the northwesterly sideline of said Thames Street;

Thence, S47°28'43"W along the sideline of said Thames Street 37.53';

Thence, N15°16'37"E a distance of 84.98' to the southwesterly sideline of said Mountfort Street Extension;

Thence, S45°34'01"E a distance of 22.90' to the point of beginning.

Containing 1,270 square feet, more or less.

Meaning and intending to describe a strip of land 20' wide and centered on an existing underground 24" polyvinyl chloride (PVC) storm drain pipe.

Said easement includes the right perpetually to enter at any and all times upon the Drainage Easement Area, and the right, but not the obligation, to maintain an existing drainage pipe together with all necessary fixtures and appurtenances for retaining, channeling and or otherwise conveying water; and to lay, relay, repair, maintain, replace, clean and remove any and all facets of said drainage system, including but not limited to pipe or pipes in the Drainage Easement Area, with all necessary fixtures and appurtenances together with the right, but not the obligation, at all times to make connections with said drainage system to land adjoining said drainage easement by means of pipes or other services; to remove pavement, to trim, cut down and remove trees, bushes, and other vegetation of all kinds to such extent as in the sole judgment of the Grantee is necessary or appropriate for any of the above purposes; Grantee, its successors and assigns shall have the right to the use and enjoyment of said Drainage Easement Area for such purposes only as will in no way interfere temporarily or otherwise with the perpetual use thereof by the Grantor, its successors and assigns for the purpose above mentioned; provided that no building or any kind of permanent structure, including, but not limited to, walls and fences, shall be erected on the Drainage Easement Area by the Grantee and its successors or assigns. Provided, however, that in the event that Grantee, at its sole expense, replaces and relocates said existing drainage pipe and related fixtures and appurtenances in a manner and to a location satisfactory to the Grantor such that Grantor no longer requires an easement on the Property, Grantor shall execute and deliver to Grantee a release, in recordable form, of all of Grantor's right, title and interest in and to the above-described easement and the Drainage Easement Area.

This conveyance is made subject to covenants, agreements, terms and conditions set forth in a License Agreement between Jackrabbit, LLC and the City of Portland, dated October 14, 2010, which was amended, restated and replaced in its entirety by License Agreement dated January 21, 2011.

EXHIBIT B

Covenants, Restrictions, Option to Repurchase

1. The purpose of these covenants, restrictions, and option to repurchase (the "Covenants") is to ensure that the Grantee develops the property described in Exhibit A attached hereto (the "Premises") in accordance with the terms and conditions of a certain Purchase and Sale Agreement dated September 11, 2017 between Grantor and Grantee, a copy of which is on file with the City of Portland's Department of Finance and incorporate herein (the "Agreement").
2. Grantee agrees to complete within twenty-four (24) months after the date of the deed to which these Covenants are attached (the "Closing Date"), construction of a) a single office tenant use (but with the ground floor commercial space for multiple additional tenants up to 10,000 square feet) commercial building project with a maximum of one hundred thousand (100,000) square feet on the Premises to be leased to WEX (said lease shall be for a term of at least 15 years), and b) a combination of new surface and structured parking for between 450-550 parking spaces located within seven hundred fifty (750) feet from the Premises and not on the Premises, which parking will be available for public use twenty-four (24) hours a day (the "Project").
3. Payment In Lieu Of Property Taxes. Grantee agrees in the event that the Premises or any portion thereof shall be exempt from real and personal property taxes, by transfer, conversion, or otherwise, then the then-owner of the exempt portion shall make annual payments to the Grantor in lieu of taxes in the amount equal to the amount of property taxes that would have been assessed on the exempt portion of the real and personal property situated on the Premises had such property remained taxable. Grantee shall possess and be vested with all rights and privileges as to abatement and appeal of valuations, rates, and the like as are accorded owners of real and personal property in Maine.
4. Grantee covenants and agrees to indemnify, defend, and hold Grantor harmless from and against any and all claims, damages, losses, liabilities, obligations, settlement payments, penalties, assessments, citations, directives, claims, litigation, demands, defenses, judgments, costs, or expenses of any kind, including, without limitation, reasonable attorneys', consultants', and experts' fees incurred in investigating, defending, settling, or prosecuting any claim, litigation or proceeding, that may at any time be imposed upon, incurred by or asserted or awarded against Grantee or Grantor and relating directly or indirectly to the violation of or compliance with any federal, state, or local environmental laws, rules, or regulations governing the release, handling or storage of hazardous wastes or hazardous materials and affecting all or any portion of the Premises, except to the extent that such a claim results directly from the Grantor's release, handling or storage of hazardous wastes or hazardous materials on the Premises.
5. Grantor's Option to Repurchase. Subject at all times to the remaining terms and conditions in this Section 5, if Grantee fails to commence construction of the Project (including the parking structure) as described in section 2 above within 24 months after the Closing Date,

Grantor shall have the right, for up to one year from that two year anniversary, but not the obligation, to repurchase the Premises at the Purchase Price set forth in the Agreement (such right set forth above and described below is hereinafter referred to as the "Option").

- a. In order to exercise this Option to repurchase, Grantor must notify Grantee of its intent to do so on or before September 30, 2020 (the "Notice"). Grantee agrees that if it receives such Notice, it will reconvey to Grantor the Premises within 60 days of the date of the Notice for the Purchase Price paid by Grantee to Grantor.
- b. In the event Grantor provides the Notice of its intent to exercise the option, the Notice is to be accompanied by a payment to Grantee or its successors or assigns of earnest money in the amount of One Thousand Dollars (\$1,000.00) (the "Earnest Money"). Grantor shall indicate in said Notice the date, time and place for closing, which shall be held not less than thirty (30) nor more than sixty (60) days after the giving of such Notice.
- c. If Grantor, its successors or assigns, exercises this Option to purchase the Premises, then in consideration of the terms, covenants and conditions contained herein, the parties mutually agree as follows:
 - i. Upon the giving of the Notice together with the Earnest Money, Grantee shall thereby be bound to sell and City shall thereby be bound to purchase the Premises upon the terms and conditions set forth herein. Grantee or its successors, transferees or assigns shall convey the Premises by a good and sufficient quitclaim with covenant deed granting marketable title thereto, free and clear of all encumbrances and defects in title except for utility and public easements of record servicing the Premises and the License Agreement referenced in Exhibit A. The closing shall be held at the date, time and place set forth in said Notice, or at such reasonable date thereafter as may be required to clear any encumbrance and defects in title, and Grantee or its successors, transferees or assigns shall then and there deliver the deed to Grantor, its successors or assigns, upon tender of the balance of the Purchase Price by certified check, cashier's check, or cash. The balance to be tendered to Grantee or its successors or assigns shall be the Purchase Price, less the Earnest Money and any other option consideration actually received by Grantee.
 - ii. If counsel for Grantor, or its successors or assigns, shall be of the opinion, given in good faith, that the title to said Premises is defective or is otherwise not free and clear of all material encumbrances or that the title is not marketable, then Grantor, its successors or assigns, shall have the right, provided it or they shall have exercised this Option, to extend the time for conveyance of the Premises, during which time Grantee or its successors, transferees or assigns shall make a reasonable effort to remove such defects at its own expense, to the satisfaction of counsel of Grantor, its successors or assigns. If record title proves defective and Grantee or its successors or assigns shall fail to remove such defect within a reasonable time after notice

from Grantor of the nature of the defect, Grantor may, at its election, (a) cure any such defect and deduct the cost thereof from the Purchase Price at closing, or (b) elect to close notwithstanding any such defect, or (c) terminate this Option by written notice to Grantee or its successors or assigns, whereupon all Earnest Money paid by Grantor to Grantee or its successors or assigns shall immediately be returned to Grantor and thereafter the parties shall be relieved of all obligations and this Option shall terminate.

- iii. If all obligations of this agreement have been performed, excepting that Grantor does not complete the purchase, Grantee or its successors or assigns shall retain the Earnest Money as full liquidated damages, and without recourse to any other remedies, and whereupon this Option shall terminate.
 - iv. Full possession of the Premises, free of all encumbrances except as aforesaid, is to be delivered to Grantor at closing, with the Premises to be in the reasonably functional condition, reasonable wear and tear excepted.
 - v. Real estate taxes and utilities shall be prorated as of the time of the passing of title. Real estate transfer taxes, if any, arising in connection with the conveyance of the Premises shall be paid by Grantor and/or Grantee or its successors or assigns in accordance with the custom of the locality where the Premises are situated.
- d. Notwithstanding anything else to the contrary herein, in the event that Grantor fails to give the Notice on or before September 30, 2020, or Grantor commences substantial construction of the commercial office building (with building permit in place), which is a portion of the Project, on or before September 30, 2019, the Option, including Grantor's right and option to repurchase the Premises, shall terminate, and upon such termination, Grantor shall execute and record an affidavit indicating that the Option, including Grantor's right and option to repurchase the Premises, has terminated.
- e. The parties hereto hereby agree that this right and option to purchase, and the Grantor's rights in the Premises thereby created, are immediately fully vested and are hereby deemed to be fully vested in any event, not contingent, and shall, by agreement, not be subject to the Rule Against Perpetuities, or any statutory enactment thereof, or similar law.

6. The covenants, restrictions, and option to repurchase herein may be amended or modified in whole or in part only by written agreement of Grantee and Grantor.

7. The Covenants set forth herein are intended to be and shall be considered covenants that run with the Premises and shall bind all subsequent owners of the Premises.

8. Except as specifically set forth herein, the Covenants set forth herein shall survive a sale, transfer, foreclosure or transfer of title in lieu of foreclosure, or other disposition of the Premises.

9. The Covenants set forth herein are enforceable by Grantor as a contract and shall inure to the benefit of and be enforceable by Grantor, its successors, and assigns.

10. The validity of any clause, part or provision of the covenants, restrictions, and option to repurchase herein shall not affect the validity of the remaining portions of thereof.

3. TECHNICAL AND FINANCIAL CAPACITY

3.1 TECHNICAL 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 and their respective team leaders

3.2 CONSULTANT TEAM

<i>Civil Engineer</i>	Stephen Bushey, P.E. Stantec 482 Payne Road Scarborough, ME 04074 (207) 887-3478 – Work (207) 883-3355 – Fax stephen.bushey@stantec.com
<i>Surveyor</i>	John Swan Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, ME 04105 (207) 774-0424 – Work (207) 774-0511 – Fax jswan@ownehaskell.com
<i>Architect</i>	Bill Hopkins Archetype, PA 48 Wharf Street Portland, ME 04101 (207) 772-6022 – Work (207) 772-4056 – Fax hopkins@archetypepa.com
<i>Landscape Architect</i>	Stephen Mohr Mohr & Seredin 18 Pleasant Street Portland, ME 04101 (207) 871-0003 – Work (207) 871-1419 – Fax smohr@mohrseredin.com
<i>Geotechnical Consultant</i>	William Peterlein, P.E. Summit Geoengineering Services 145 Lisbon Street, Suite 601 Lewiston, ME 04240 (207) 576-3313 – Work bpeterlein@summitgeoeng.com

3.3 EXPERIENCE OF PROJECT TEAM

All members of the project team have significant expertise and experience on the project site. Resumes for key personnel can be provided upon request. 0 Hancock LLC, is owned by Jonathan Cohen, who is a well-established landowner in the City with an extensive background of land development success.

3.4 FINANCIAL CAPACITY

The Applicant has adequate financial resources to undertake this project as identified in the letter from Androscoggin Bank accompanying this submission in Attachment F.

3.5 CONSTRUCTION COST ESTIMATE

A breakdown of the preliminary project cost estimates includes the following:

- Construction Cost: \$12 to 15 million
- Soft Costs: \$200,000 to \$400,000
- **Total Costs: \$12 to 16 million**

3.6 ATTACHMENTS

Attachment F – Financial Capacity Letter from Androscoggin Bank

ATTACHMENT F

Financial Capacity Letter from Androscoggin Bank

EXHIBIT O - ANDROSCOGGIN BANK LETTER



30 Lisbon Street
PO Box 1407
Lewiston, Maine 04243
1 800 966.9172
androscogginbank.com

April 5, 2017

City of Portland
389 Congress Street
Portland, ME 04101

To Whom It May Concern:

Jonathan Cohen is a client in good standing with Androscoggin Bank. Mr. Cohen demonstrates both the financial capacity and the industry experience necessary to purchase, develop, construct, own and operate a commercial real estate project such as a Corporate Headquarters office building at Hancock and Thames Street in Portland.

If there are any questions on this matter, please do not hesitate to contact me at (207) 518-6314 or jdeering@androscogginbank.com

Sincerely,

A handwritten signature in blue ink that reads 'Jeremiah C. Deering'.

Jeremiah C. Deering
Vice President
Lead Commercial Lending Officer



4. UTILITIES

The following information is made in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-527(g)(7).

4.1 OVERVIEW

Electrical, water, sewer, and gas services to the property will be extended from existing supply mains in the adjacent streets. These services will be updated to serve the new proposed use. The Development Team has contacted all governing utility agencies and companies and will continue to coordinate the provision of new services, as required throughout the design and construction phases of the project. The following sections outline current conditions and anticipated improvements associated with each system.

4.2 WATER SUPPLY

There are existing water supply mains in Hancock Street (8" main) and Thames Street (12" main). A new 6" fire service will be required to support sprinkler systems in the building. A 4" domestic service will provide water supply to the building. We have enclosed Ability to Serve information from the Portland Water District as part of the submission as well as their confirmation that they have adequate capacity to service the development.

4.2.1 Total Project Water Usage

A preliminary estimate of project water use has been undertaken using commonly accepted daily water demand criteria:

Building – Office/Retail Use	Design Flow (GPD)
Office – 450 Employees @ 15 gpd/Employee	6,750
Retail – 15 Employees @ 15 gpd/Employee	225
TOTAL	6,975

4.3 WASTEWATER DISPOSAL

The proposed building will be served by a new 6" domestic sanitary service that will exit the east side of the building and tie into an existing 12" gravity main installed within Thames Street. This system ultimately discharges to the existing PWD pump station at India Street. Domestic sanitary flows are expected to be similar to the water use. At this time, a grease trap is likely to be installed to allow for the potential of a restaurant use within the ground floor retail space. A Wastewater Capacity request has been submitted to the City's Public Works Department concurrently with this submission and we await their reply.

4.4 NATURAL GAS SUPPLY

There is an existing 6" gas main located within Thames Street. Details as to service sizing for natural gas into the building remain incomplete, but it is expected that a natural gas service connection will be made for heating the building. A copy of the Unitil capacity availability determination is contained in Attachment G.

4.5 ELECTRICITY SUPPLY/COMMUNICATIONS

The Development Team is coordinating various improvements to the site's overall power supply and communications systems with the utility providers. The Applicant will continue to coordinate provision of power to the site with CMP. Similarly, communications and cable service will be coordinated with Fairpoint and Time Warner Cable. All facilities for power and communications will be underground, including the placement of a below grade transformer vault within the Hancock Street sidewalk off the southwest building corner. Confirmation from the utility providers is contained in Attachment G.

4.6 ATTACHMENTS

Attachment G – Ability to Serve Correspondence

ATTACHMENT G

Ability to Serve Correspondence



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

June 21, 2017

Mr. Jamie Cough
Central Maine Power
162 Canco Road
Portland, Maine 04103

**Subject: Proposed Land Development
Corner of Hancock and Thames Streets, Portland, Maine
Request for Ability to Serve Letter**

Dear Jamie:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at the corner of Hancock and Thames Streets in Portland, Maine into a mixed-use building. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 14 according to the City of Portland Tax Assessor's Maps. The project will consist of construction of a 100,000 SF four story mixed-use development on a 1.1 acre parcel area. The proposed building use is summarized as follows:

Space	Use (SF)
WEX-General Office Use (Assumed Space)	90,000
Retail	12,285
Total	102,285

We trust that the power supply system in the site vicinity has adequate capacity to serve this project. We are in the process of completing the Preliminary Site Plan Application for a submission to the City Planning Staff and we would appreciate your confirmation of site conditions. We anticipate that a new underground service from the existing overhead along Hancock and Thames Street will be installed as well as a new pad mount transformer possibly located at the west side of the site. The electrical design has not yet been started; however, we would like your initial assessment of project conditions and service capacity.

We look forward to your review of this request and a summary of your findings and any updated cost projections for the project you may be able to provide.

Please include in your assessment any costs that could be associated with the following:

- Upgrades to nearby CMP infrastructure;



Mr. Jamie Cough
June 21, 2017
Page 2

- All onsite overhead and underground improvements;
- Impact fees or connection fees; and
- CMP engineering costs.

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen Bushey, PE
Associate, Senior Project Manager
Phone: (207) 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

v:\1953\active\195350450\civil\admin\utility contacts\abs_cmp_cough_20170621.docx

From: [Cough, Jamie](#)
To: [Bushey, Stephen](#)
Cc: [Daniell, Celina](#)
Subject: CMP Ability to Serve Request
Date: Wednesday, June 21, 2017 11:25:59 AM
Attachments: [Easement Information Worksheet.doc](#)
[Standard Easement Sample.pdf](#)
[EDET July 2017.xlsx](#)

6/21/17

Stephen Bushey, PE,
Stantec Consulting Services
482 Payne Road Scarborough Court
Scarborough ME 04074-8929
Sent via email to: Stephen.Bushey@stantec.com

RE: CMP Ability to Serve Letter for Corner of Hancock and Thames Streets in Portland, ME.

Project Description:

The project will consist of construction of a 100,000 SF (General Office Space 90,000 sq. ft. and Retail 12,285 sq. ft.) four story mixed-use development on a 1.1 acre parcel area.

Dear Mr. Bushey:

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 feel free to contact me.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- 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.
- Preliminary meetings with CMP to determine the details of job
- 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, potential substation upgrades, 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.

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](http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf)
(<http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf>)

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 your 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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Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 26, 2017

Mr. Kyle Bouchard

FairPoint Communications

5 Davis Farm Road

Portland, Maine 04103

**Subject: Proposed Land Development
Corner of Hancock and Thames Streets, Portland, Maine
Request for Ability to Serve Letter**

Dear Mr. Bouchard:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at the corner of Hancock and Thames Streets in Portland, Maine into a mixed-use building. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 14 according to the City of Portland Tax Assessor's Maps. The project will consist of the construction of a 100,000 SF four story mixed-use building on an approximately 1.1 acre parcel area.

We would like to verify Fairpoint's ability to provide communication service for the project and from which location will communications service extend underground from.

We are in the process of completing the Preliminary Site Plan Application for a submission to the City Planning Staff and we would appreciate your confirmation of site conditions in a timely manner.

We look forward to your review of this request and a summary of your findings and any updated cost projections for the project you may be able to provide.

Please include in your assessment any costs that could be associated with the following:

- Upgrades to nearby Fairpoint infrastructure;
- All onsite overhead and underground improvements;
- Impact fees or connection fees; and
- Fairpoint engineering costs.



Mr. Scott Derrig
June 26, 2017
Page 2

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen Bushey, PE
Associate, Senior Project Manager
Phone: (207) 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

v:\1953\active\195350450\civil\admin\utility contacts\abs_fairpoint_derrig_20170621.docx

From: Daniell, Celina
To: ["Bouchard, Brian M."](#)
Subject: RE: Ability to Serve Hancock & Thames Street - Portland, ME
Date: Friday, July 21, 2017 2:59:00 PM
Attachments: [abs_fairpoint_bouchard_20170721.pdf](#)
[image001.png](#)
[image003.png](#)

From: Bouchard, Brian M. [mailto:bbouchard1@fairpoint.com]
Sent: Thursday, June 22, 2017 8:09 AM
To: Daniell, Celina <Celina.Daniell@stantec.com>
Subject: Ability to Serve Hancock & Thames Street - Portland, ME

Good morning Celina,

My name is Brian Bouchard and I am currently the OSP Engineer for the Portland area in place of Scott Derrig.

Looking at the plot of land in question it is difficult for me to fill out an ability to serve letter that outlines any sort of costs or requirements without knowing where the proposed utility room/demarcation point will be. Currently FairPoint does not have a lot of facilities around this area, but we do have the capability to serve this building from a pole that sites on the corner of Fore St and Hancock St if conduit is place to this point or a building entrance is provided. Otherwise likely poles will have to be set or underground construction to extend from our manholes to your building will be required. If you have a site plan that you could send me that would be fantastic, otherwise I will detail this in a more proper format and send it along to you.

Thank you,

Brian Bouchard - ME OSP Engineer

FairPoint Communications | 5 Davis Farm Rd Flr 2, Portland, ME 04103 | bbouchard1@fairpoint.com
www.FairPoint.com | 207.712.1063 cell | 207.797.1098 fax

From: Daniell, Celina [mailto:Celina.Daniell@stantec.com]
Sent: Wednesday, June 21, 2017 10:44 AM
To: Derrig, Scott
Cc: Bushey, Stephen
Subject: Ability to Serve Hancock & Thames Street - Portland, ME

Scott,

Attached please find an ability to serve the project for the above referenced site.

If you have any questions, please contact our office.

Thank you,

Celina Daniell

Senior Technical Assistant
Stantec
482 Payne Road Scarborough Court, Scarborough ME 04074-8929
Phone: (207) 887-3469
Fax: (207) 879-0896
Celina.Daniell@stantec.com

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Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

July 31, 2017

MEANS Group
Portland Water District
225 Douglass Street
P.O. Box 3553
Portland, Maine 04104-3553

**Subject: Proposed Land Development
Corner of Hancock and Thames Streets, Portland, Maine
Water Supply and Ability to Serve**

Dear Coordinator:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at the corner of Hancock and Thames Streets in Portland, Maine. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 14 according to the City of Portland Tax Assessor's Maps. On behalf of the developer, we would like to verify the Portland Water District's ability to provide domestic and fire supply water for the project and determine any impact fees.

The project will consist of construction of a single 100,000 SF four story mixed-use development with ancillary site improvements including utilities on a 1.1-acre lot.

Space	Use (SF)
Office Use (650 Employees)-Assumed Space	90,000
Retail	10,000
Total	100,000

The projected water use using the Maine State Plumbing Code and typical City of Portland flows information is as follows:

Building – Office/Retail Use	Design Flow (GPD)
Office – 650 Employees @ 15 gpd/Employee	9,750
Retail – 20 Employees @ 15 gpd/Employee	300
Total Retail	10,050



MEANS Group
July 31, 2017
Page 2

At this time, a fixture count for the building is not available, so an estimate of peak demand has not been prepared. This will be provided to PWD as the design is advanced.

Based on this amount of flow, we trust that the existing water supply system in the site vicinity has adequate capacity to serve this project. We are in the process of completing the Level III Site Plan Application for a submission to the City Planning Staff and we are seeking to provide documentation indicating the District's ability to provide water supply service for fire and domestic needs to this project.

The proposed building will have fire protection sprinkler systems; however, at this time, the size and flow requirements of the sprinkler system have not yet been determined. As the building and site design effort progresses, our office will meet with you to provide detailed information for the new water services and connections proposed for this project.

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen Bushey, PE
Associate, Senior Project Manager
Phone: 207.887.3478
Stephen.bushey@stantec.com

Attachment – Preliminary Site Plan

v:\1953\active\195350450\civil\admin\utility contacts\abs_pwd_means_20170731_update.docx

From: [Robert Bartels](#) on behalf of [AMaP MEANS](#)
To: [Bushey, Stephen](#)
Subject: RE: WEX site Thames Street
Date: Wednesday, August 09, 2017 3:48:56 PM
Attachments: [0 Hancock Street, PO - Ability to Serve Determination.pdf](#)

Stephen,

Please see attached. Let me know if you have any questions.

As design progress please send any updated plans you may have regarding the water services to this site.

An RPZ will be required for backflow prevention at the service entrance on the domestic water service line.

Thanks,

Robert Bartels
Senior Project Engineer
Portland Water District
Phone:
E-mail: rbartels@pwd.org
<http://www.pwd.org>

From: Bushey, Stephen [<mailto:Stephen.Bushey@stantec.com>]
Sent: Wednesday, August 09, 2017 2:49 PM
To: Robert Bartels <rbartels@pwd.org>
Subject: RE: WEX site Thames Street

Robert,

Please see the attached plan for your consideration. If acceptable we'd kindly accept a "Capacity availability letter from you to include in a submission package to the city that we are hoping to submit on Thursday.

thanks

Stephen Bushey
Associate, Senior Project Manager
Stantec
482 Payne Road Scarborough Court, Scarborough ME 04074-8929
Phone: (207) 887-3478
Stephen.Bushey@stantec.com

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From: Robert Bartels [<mailto:rbartels@pwd.org>]
Sent: Monday, August 07, 2017 2:44 PM
To: Bushey, Stephen <Stephen.Bushey@stantec.com>
Subject: RE: WEX site Thames Street

Yes, we are waiting on an updated utility plan.

Robert Bartels
Senior Project Engineer
Portland Water District
Phone:
E-mail: rbartels@pwd.org
<http://www.pwd.org>

From: Bushey, Stephen [<mailto:Stephen.Bushey@stantec.com>]

Sent: Monday, August 07, 2017 2:43 PM

To: Robert Bartels <rbartels@pwd.org>

Subject: WEX site Thames Street

Robert,

Are you waiting on us to provide an updated utility plan before you issue an capacity availability letter?

I hope to get the update utility plan to you tomorrow most likely.

thanks

Stephen Bushey
Associate, Senior Project Manager
Stantec
482 Payne Road Scarborough Court, Scarborough ME 04074-8929
Phone: (207) 887-3478
Stephen.Bushey@stantec.com

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Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

August 9, 2017

Stephen Bushey, P.E.
Stantec
482 Payne Road Scarborough Court
Scarborough, ME 04074

Re: 0 Hancock Street, PO
Ability to Serve with PWD Water

Dear Mr. Bushey:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on July 31, 2017. Based on the information provided per plans dated 8/8/17 for final site plan review, 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 constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 4-inch DI domestic service and 6-inch DI fire service may be installed from the 12" DI water main in Thames Street. The services should enter through the properties frontage on Thames Street at least 10-feet from any side property lines.

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 not currently have existing water service.

Water System Characteristics

According to District records, there is an 12-inch diameter DI water main in Thames Street and a public fire hydrant located approximately 50 feet from the site. Recent flow data is not available in this area. The most recent static pressure reading was 107 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

A handwritten signature in black ink, appearing to read 'Robert A. Bartels'.

Robert A. Bartels, P.E.
Senior Project Engineer

From: [Brian Johnson](#) on behalf of [AMaP MEANS](#)
To: [Bushey, Stephen](#)
Subject: RE: 398180-Hancock St, PO - PWD Hydrant Flow Data
Date: Thursday, July 27, 2017 10:49:36 AM
Attachments: [FO - Thames Street - Hydrant Flow Data Map - 2017.pdf](#)

Hi Steve,

Attached is a map containing Hydrant Flow and Static Pressure Data from the area near Thames Street and Hancock Street - Portland

The red text beside each hydrant is the hydrant ID and the latest observed static pressure, including the date that pressure was observed.

The callout boxes in maroon are showing hydrants that have test data with residual PSI from a two hydrant flow test.

If the data is out of date or insufficient for your needs, please contact the MEANS Group to request a hydrant flow test and we will work with you to get more complete data.

Should you require further information, please don't hesitate to contact us.

Have a great day,

Brian Johnson

MEANS Group

Main Extensions and New Services

Portland Water District

225 Douglass Street

Portland, ME 04104-3553

P:(207)774-5961 Ext. 3199

F:(207)761-8307

MEANS@pwd.org

Brian Johnson
Asset Management Technician
Portland Water District
Phone: 207-774-5961 x
E-mail: brianjohnson@pwd.org
<http://www.pwd.org>

From: Bushey, Stephen [<mailto:Stephen.Bushey@stantec.com>]

Sent: Tuesday, July 25, 2017 1:44 PM

To: AMaP MEANS <means@pwd.org>

Subject: RE: 398180-Hancock St, PO

Hi Robert,

I've been asked to find out if you have any flow information for hydrants in the vicinity of the Thames/Hancock Street site. Do you have anything you can share before we meet next week?

thanks

Stephen Bushey

Associate, Senior Project Manager

Stantec

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

Phone: (207) 887-3478

Stephen.Bushey@stantec.com

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From: Robert Bartels [<mailto:rbarrels@pwd.org>] On Behalf Of AMaP MEANS

Sent: Thursday, July 20, 2017 8:54 AM

To: Bushey, Stephen <Stephen.Bushey@stantec.com>

Cc: Gordon Johnson <gjohnson@pwd.org>; Jay Arnold <jarnold@pwd.org>; Daniel Scala <dscala@pwd.org>

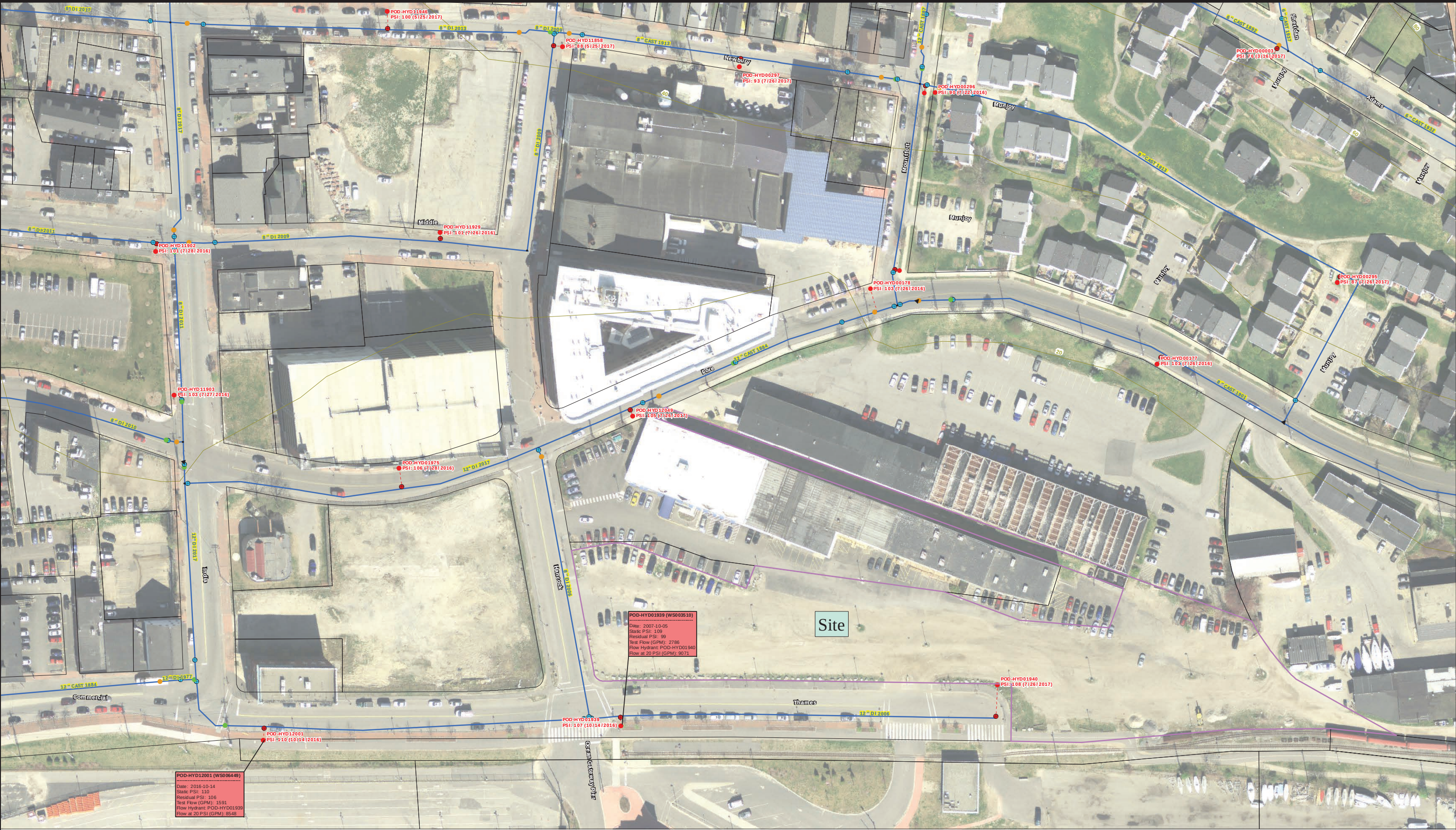
Subject: 398180-Hancock St, PO

Steve,

We received a request from your office for a capacity to serve the proposed project at the corner of Hancock and Thames. With all the current activity in the area, the expansion and renewal that is planned in the coming years, and the services to this large commercial building, I think it would be best to meet and discuss the project so that we are all on the same page with regards to scope and schedule, and timing of approvals from the City and the District. 10am August 2nd works best for us, does that work for you?

Robert Bartels, PE

Robert Bartels
Senior Project Engineer
Portland Water District
Phone: rbarrels@pwd.org
E-mail: rbarrels@pwd.org
<http://www.pwd.org>



SR #: 398180



1 inch = 50 feet

Pressure Zone: 267



PORTLAND WATER DISTRICT

225 Douglass Street

Portland, ME 04104

Asset Management and Planning Dept.

Legend

● Air Valve	● Connection	⊕ Combined Service	● Manhole
● Blow Off	● Attribute Change	⊕ Domestic Service	● CSO
● By Pass	▲ Reducer	⊕ Fire Service	→ Gravity
⊗ Distribution	● Hydrant	● Private Hydrants	→ Force
⊗ Transmission	● Hydrant Control	⊕ Meter Pits	→ Contours

Hydrant Flow Testing Data

Thames Street / Hancock Street

Portland



This map depicts flow testing and static pressure data for the selected hydrants from PWD's asset management system. If the data is out of date or insufficient for your needs, please contact the MEANS group to request a hydrant flow test and we will work with you to get more complete data.

Drawn By: BSJ

Scale: As Noted

Prepared For: Stephen Bushey Stantec

Date: July 27, 2017



Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 21, 2017

Mr. Mark Pelletier

Charter/Spectrum
118 Johnson Road
Portland, Maine 04102

**Subject: Proposed Land Development
Corner of Hancock and Thames Streets, Portland, Maine
Request for Ability to Serve Letter**

Dear Mr. Pelletier:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at the corner of Hancock and Thames Streets in Portland, Maine into a mixed-use building. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 14 according to the City of Portland Tax Assessor's Maps. The project will consist of the construction of a 100,000 SF four story mixed-use building on an approximately 1.1 acre parcel area.

We are in the process of completing the Preliminary Site Plan Application for a submission to the City Planning Staff and we would appreciate your confirmation of site conditions in a timely manner.

We look forward to your review of this request and a summary of your findings and any updated cost projections for the project you may be able to provide.

Please include in your assessment any costs that could be associated with the following:

- Upgrades to nearby Charter/Spectrum cable infrastructure;
- All onsite overhead and underground improvements;
- Impact fees or connection fees; and
- Charter/Spectrum engineering costs.

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen Bushey", with a stylized flourish underneath.

STANTEC CONSULTING SERVICES INC.

Stephen Bushey, PE
Associate, Senior Project Manager
Phone: (207) 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

v:\1953\active\195350450\civil\admin\utility contacts\abs_spectrum_pelletier_20170621.docx

From: [Pelletier, Mark](#)
To: [Daniell, Celina](#)
Subject: RE: Ability to Serve Request Thames and Hancock Street - Portland, ME
Date: Tuesday, July 25, 2017 11:20:49 AM

Celina, Sorry I thought I already replied to this one....

Spectrum Cable at this time has no cable plant on the area of Hancock and Thames St's. My cable current cable plant stops at Newbury and Hancock intersection and I have no cable plant on Thames St at all.

My cable plant in that area closest is on corner of India and Commercial St's and at intersection of Fore and Hancock St right in front of the Residence Inn.

Any construction costs (if any) would be discussed with the bldg or property owner when they call for services. Those construction costs would include our overhead and underground improvements, upgrades etc that we would need to do to provide them services and the level of services they are looking for. Construction lead times right now are at 7-8 weeks at a minimum. New and old pole applications would be needed if we are to attach to existing or new poles. Old pole applications/attachments can take 4-6 months with Fairpoint at their end. CMP takes 4-6 weeks.

If services are to be underground, then we require a 4 inch conduit from the riser pole to the demark, both ends swept up above the final grade. Pull rope required also.

Mark

From: Daniell, Celina [mailto:Celina.Daniell@stantec.com]
Sent: Wednesday, June 21, 2017 10:59 AM
To: Pelletier, Mark <Mark.Pelletier@charter.com>
Cc: Bushey, Stephen <Stephen.Bushey@stantec.com>
Subject: Ability to Serve Request Thames and Hancock Street - Portland, ME

Mark,

Attached please find an ability to serve the project for the above referenced site.

If you have any questions, please contact our office.

Thank you,

Celina Daniell

Senior Technical Assistant
Stantec

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

Phone: (207) 887-3469

Fax: (207) 879-0896

Celina.Daniell@stantec.com

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Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

June 21, 2017

Mr. Scott Carpenter

Unitil

1075 Forest Avenue

Portland, Maine 04103

Subject: Proposed Land Development

Corner of Hancock and Thames Streets, Portland, Maine

Request for Ability to Serve Letter

Dear Mr. Carpenter:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at the corner of Hancock and Thames Streets in Portland, Maine into a mixed-use building. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 14 according to the City of Portland Tax Assessor's Maps.

The project will consist of construction of a 100,000 SF four story mixed-use development on the 1.1-acre parcel area.

We are in the process of completing the Site Plan Application for a submission to the City Planning Staff and we are seeking to provide documentation indicating your confirmation of natural gas service availability to the project. We would like information on the existing systems in the site vicinity as well as an opinion as to the best service route for the building.

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen Bushey", with a stylized flourish at the end.

STANTEC CONSULTING SERVICES INC.

Stephen Bushey, PE

Associate, Senior Project Manager

Phone: (207) 887-3478

Fax: 207-883-3376

Stephen.Bushey@stantec.com



June 23, 2017

Celina Daniell
Stephen Bushey
Stantec
482 Payne Road
Scarborough, ME 04074

Re: Hancock and Thames St. Project, Portland, Maine

Dear Celina/Stephen:

Thank you for your interest in using natural gas for the above referenced project.

Unitil has natural gas in the street in the vicinity of the proposed building. Once you can provide us the load we can further verify the ability to service with more accuracy however I did have our engineering evaluate with a load of 6,000 CFH and they approved the building based on that amount.

If you have any further questions or require additional information, please contact me directly at (207) 541-2543 or at carpenters@unitil.com.

Sincerely,

Scott Carpenter

Scott Carpenter
Senior Business Development Representative
Unitil Corporation
(o) 207-541-2543 (f) 207-541-2593

ME GAS CUSTOMER ENERGY SOLUTIONS
1075 Forest Avenue
Portland, ME 04103-3586

T 207-541-2508 www.unitil.com



Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

July 31, 2017

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

**Subject: Proposed Land Development
Corner of Hancock and Thames Streets, Portland, Maine
Request for Ability to Serve Letter**

Dear Brad:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at the corner of Hancock and Thames Streets in Portland, Maine into a mixed-use building. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 14 according to the City of Portland Tax Assessor's Maps. On behalf of the owner/developer, we would like to verify the City's wastewater division has ability to provide wastewater capacity for the project and to determine any impact fees.

The project will consist of building demolition, renovation, and expansion with size and use summarized as follows:

Space	Use (SF)
Office Space	Assumed Space – 90,000
Retail	Retail – 10,000
Total	100,000

The projected water use using the Maine Subsurface Wastewater Disposal Rules and typical City of Portland flows information is as follows:

Building – Office/Retail Use	Design Flow (GPD)
Office – 650 Employees @ 15 gpd/Employee	9,750
Retail – 20 Employees @ 15 gpd/Employee	300
Total Retail	10,050



Mr. Brad Roland
July 31, 2017
Page 2

Based on this amount of flow, we trust that the existing sanitary sewer system has adequate capacity to serve this project. We understand there is an existing sewer service(s) exiting the existing building; however, the exact conditions, flows, and service conditions are unknown. We would like to review the City's records for the existing services so we may determine any necessary improvements. We are in the process of completing final submission materials and responses to City staff comments and we are seeking to provide documentation indicating the city's continued ability to provide sanitary sewer service to this project.

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen Bushey, PE
Associate, Senior Project Manager
Phone: (207) 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

Attachment: Wastewater Application

v:\1953\active\195350450\civil\admin\utility contacts\abs_portland_roland_20170731.docx

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: July 31, 2017

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

Site Address: Corner of Hancock and Thames Street

Chart Block Lot Number: Map 19/Block A/Lot 14

Proposed Use: Office Retail

Previous Use: Vacant

Existing Sanitary Flows: _____ GPD

Existing Process Flows: _____ GPD

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

Site Category	Commercial (see part 4 below)	☒
	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: _____ Phone: _____

Owner/Developer Name: Jonathan Cohen - 0 Hancock Street LLC

Owner/Developer Address: P.O. Box 910, Portland, ME 04098-0910

Phone: 207.776.0304 Fax: _____ E-mail: jcohen@a-d-w.biz

Engineering Consultant Name: Stephen R. Bushey, PE - Stantec

Engineering Consultant Address: 482 Payne Road - Scarborough, ME 04074

Phone: 207.887.3478 Fax: _____ E-mail: _____

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: 9,750 GPD

Peaking Factor/ Peak Times: x6

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: _____ N/A _____
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: _____ 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.

From: [Daniell, Celina](#)
To: [Keef, Sandi](#)
Subject: FW: Hancock and Thames Street - Ability to Serve Request
Date: Friday, August 11, 2017 11:03:57 AM

Celina Daniell

Stantec

Phone: 207-887-3469

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 Please consider the environment before printing this email.

From: Bradley Roland [mailto:brad@portlandmaine.gov]
Sent: Friday, August 11, 2017 10:19 AM
To: Bushey, Stephen <Stephen.Bushey@stantec.com>
Cc: Daniell, Celina <Celina.Daniell@stantec.com>
Subject: Re: Hancock and Thames Street - Ability to Serve Request

Thanks Steve

I will wait to look at it after vacation (return Aug 28).

And as usual dry weather capacity is rarely an issue.

But I will look at the numbers then.

Brad

Bradley A. Roland, P.E.
Senior Project Engineer
Portland Public Works
55 Portland Street
Portland, ME 04101
Tel: 207-874-8840
Fax: 207-874-8852
brad@portlandmaine.gov

On Fri, Aug 11, 2017 at 9:56 AM, Bushey, Stephen <Stephen.Bushey@stantec.com> wrote:

Brad,

It is likely to be 0 Hancock Street, however we are in the process of submitting a level III site plan application today so technically you will not find it yet in the system most likely. We are simply trying to affirm wastewater capacity at this point as part of the planning process. Once submitted the review process is likely to move quickly given the high project visibility and public interest.

Stephen Bushey

Associate, Senior Project Manager
Stantec
482 Payne Road Scarborough Court, Scarborough ME 04074-8929
Phone: [\(207\) 887-3478](tel:(207)887-3478)
Stephen.Bushey@stantec.com

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From: Bradley Roland [mailto:brad@portlandmaine.gov]
Sent: Friday, August 11, 2017 9:51 AM
To: Daniell, Celina <Celina.Daniell@stantec.com>
Cc: Bushey, Stephen <Stephen.Bushey@stantec.com>
Subject: Re: Hancock and Thames Street - Ability to Serve Request

Good Morning Celina and Steve
What is the street address of the project so I can find it in the city system
If it is not in the system yet I won't issue a wastewater capacity authorization.
Brad

Bradley A. Roland, P.E.
Senior Project Engineer
Portland Public Works
55 Portland Street
Portland, ME 04101
Tel: [207-874-8840](tel:207-874-8840)
Fax: [207-874-8852](tel:207-874-8852)
brad@portlandmaine.gov

On Mon, Jul 31, 2017 at 10:40 AM, Daniell, Celina <Celina.Daniell@stantec.com> wrote:

Brad,

Attached please find a request for Ability to Serve a proposed development at Hancock and Thames Street. If you have any questions, please contact our office.

Thank you,

Celina Daniell
Senior Technical Assistant
Stantec
482 Payne Road Scarborough Court, Scarborough ME 04074-8929
Phone: [\(207\) 887-3469](tel:(207)887-3469)
Celina.Daniell@stantec.com

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 Please consider the environment before printing this email.

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.

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. FIRE SAFETY

5.1 OVERVIEW

Stantec has completed the Fire Department checklist and will continue to perform ongoing coordination with Fire Department representatives and City Planning officials. The accompanying memorandum outlines our findings with respect to compliance with the City's Public Safety Standards as set forth in the City's Technical Manual, Section 3 – Public Safety Standards.

The building will be fully sprinkled and code compliant to current applicable standards.

Additional fire safety review and evidence of building related fire code compliance will be provided as part of the Building Permit process.

5.2 ATTACHMENTS

Attachment H – Portland Fire Department Site Review Checklist & NFPA 1 Review

ATTACHMENT H

Portland Fire Department Site Review Checklist & NFPA 1 Review



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

August 3, 2017

Mr. Keith Gautreau, Assistant Chief

City of Portland Fire Department
380 Congress Street
Portland, Maine 04101

**Subject: Corner of Thames and Hancock Street
Fire Safety Checklist**

Dear Assistant Chief Gautreau:

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 commercial office building site at the corner of Thames and Hancock Street. 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.*

0 Hancock Street LLC
Attn: Jonathan Cohen
PO Box 910
Portland, ME 04098-0910
207.776.0304

2. *Name, address, telephone number of architect.*

Archetype PA
Attn: Bill Hopkins
48 Union Wharf
Portland, ME 04101
207.772.6022

3. *Proposed uses of any structures (NFPA and IBC classification).*

Building	IBC Code	NFPA Code	Sprinkler
Office Building/Assembly Construction Type II-A (protected, noncombustible)	A-3, B	NFPA 101	Yes NFPA13

* Systems designed to meet NFPA



Keith Gautreau, Assistant Chief
August 3, 2017
Page 2

4. *Square footage of all structures (total and per story).*

Building	Footprint Area (SF)
First Floor	31,545
Second Floor	31,098
Third Floor	31,098
Fourth Floor	9,286
Total	103,027

5. *Elevation of all structures.*

The maximum building height is 55'-0" with finish floor elevation of 14.75. 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.*

Multiple fire hydrants are currently located on Hancock Street, Fore Street, and Thames Street opposite the project site less than 100 feet from the building.

8. *Water main(s) size and location.*

The site will be served by a 6" sprinkler service to be extended into the building off an existing 12" water main along Thames Street. A 4" domestic service will also be extended to the building. The building is expected to have internal sprinkler risers and a Siamese fire pump connection on the Thames Street side of the building.

9. *Access to all structures (min. 2 sides).*

The accompanying site plan depicts the site access conditions along Hancock Street and Thames Street.

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 site is located in a densely-developed area and is fronted by public streets. The following street widths are currently available:



Keith Gautreau, Assistant Chief
August 3, 2017
Page 3

Street	Width
Thames Street	38 feet
Hancock Street	30 feet

Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 ft. from a Fire Department access road.

City of Portland Technical Manual – Section 3 Public Safety

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).

Supporting Evidence: 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.

Supporting Evidence: As depicted on the Site Plan, the proposed building layout provides for a minimum two-sided access to the structure.

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 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.

Supporting Evidence: The building will be provided with exterior doors that will be within 50' of a Fire Department access route, namely Thames and Hancock Street.

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



Keith Gautreau, Assistant Chief
August 3, 2017
Page 4

Supporting Evidence: A minimum of 9 feet vertical clearance will be provided below any overhead signage or utilities entering the site.

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

Supporting Evidence: The elevators will be supplied to meet this requirement.

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 need any further information regarding this review, please contact our office.

Regards,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Tel: 207-887-3478
Stephen.bushey@stantec.com

Attachments

c: Captain David Petruccelli, Fire Department (via email)

V:\1953\active\195350450\civil\admin\permitting\local\City of Portland Levell III\ltr_gautreau_firedept_20170803.docx

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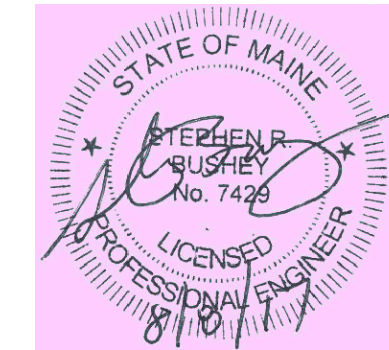
Consultants

Notes

17/08/08	SRB	17/08/02	SRB	17/07/11	YTM/DD
SRB	SRB	SRB	SRB	By	Appr.
3	FINAL SITE PLAN REVIEW	2	PRELIMINARY SITE PLAN REVIEW	1	PRELIMINARY SUBMISSION TO CITY
Revision					

File Name: 195350450_site	LA	DBS	SRB	17.07.10
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK LLC

THAMES STREET SITE
PORTLAND, MAINE

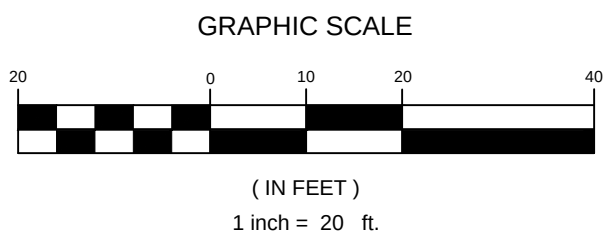
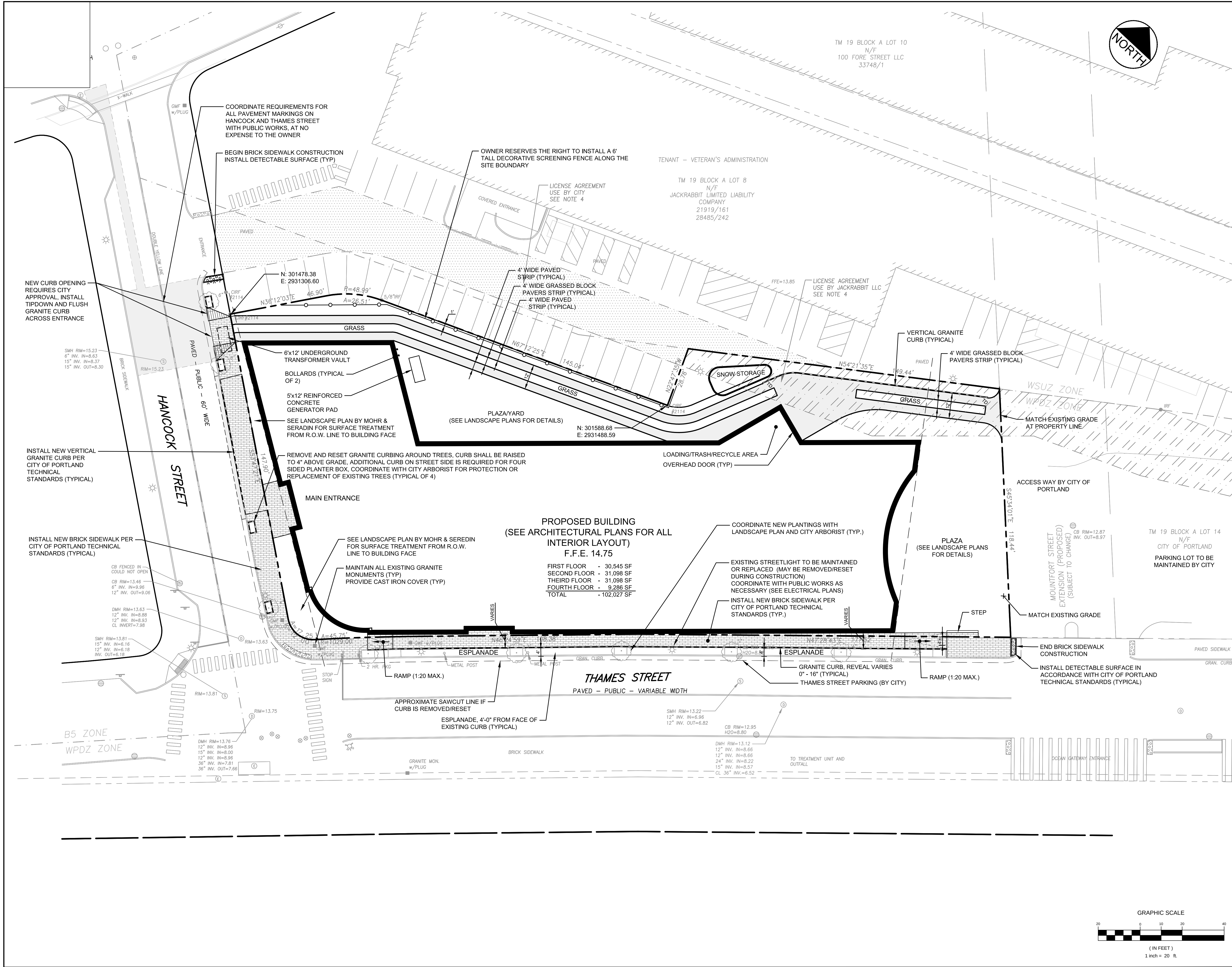
Title
SITE LAYOUT PLAN

Project No.
195350450

Scale
1" = 20'

Sheet

C-3.0

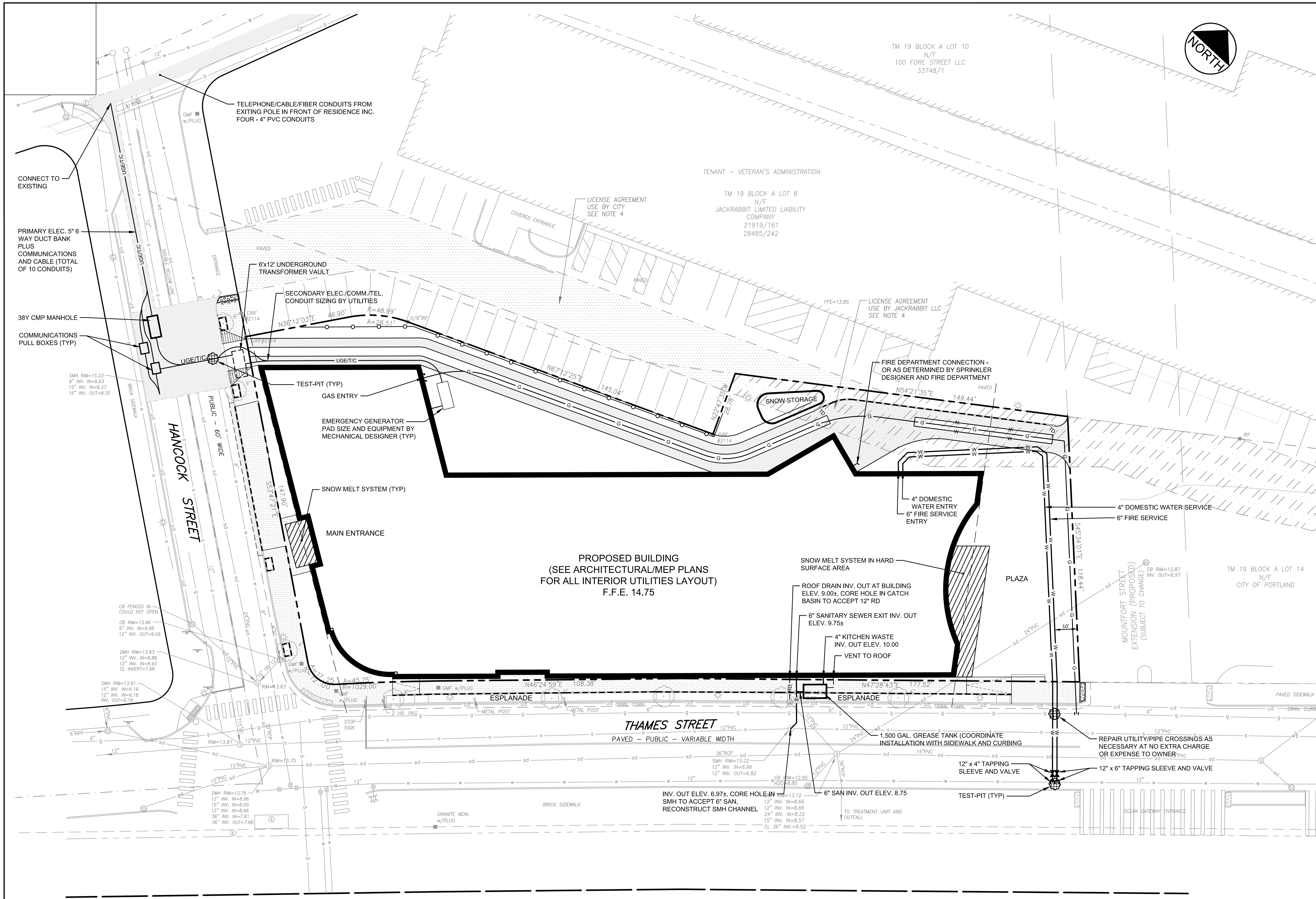


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Consultants

Notes

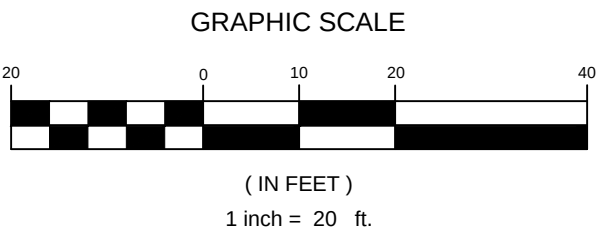


PLAN REFERENCE

CITY OF PORTLAND OCEAN GATEWAY PHASE 1 - MDOT PROJECT NO. 009215.00 BY WOODARD & CURRAN, RECORD PLAN DATED JANUARY 14, 2005, SHEETS 215-217, PROVIDED BY CITY OF PORTLAND ARCHITECT.

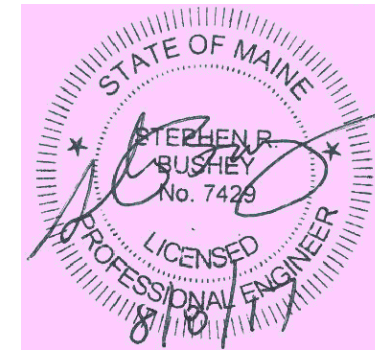
NOTES

- OWEN HASKELL, INC. TO CONFIRM ALL INVERT INFORMATION PRIOR TO THE PRODUCTION OF CONTRACT DOCUMENTS.
- CONTRACTOR SHALL PROVIDE RECORD TIE LOCATIONS FOR ALL UTILITIES TO THE OWNER PRIOR TO THE REQUEST FOR A CERTIFICATE OF OCCUPANCY.



File Name: 195350450_ufl	LA	DBS	SRB	17.07.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
UTILITY PLAN

Project No.
195350450
Scale
1" = 20'

Sheet

C-5.0

6. CONSTRUCTION MANAGEMENT PLAN

The following information is provided in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-527(g)(1).

6.1 CONSTRUCTION MANAGEMENT PLAN

The Applicant is seeking to commence construction during the Fall 2017 into 2018 and complete work by Summer 2019. The construction will involve mobilization, site work, and building construction. A Construction Management Plan accompanies this submission.

6.2 ATTACHMENTS

Attachment I – Construction Management Plan

ATTACHMENT I

Construction Management Plan

Construction Management Plan
WEX Corporate Headquarters Project
Cianbro Corporation

This document and its subsequent attachments comprise The Construction Management Plan being submitted to the City of Portland for the WEX Corporate Headquarters Project, located at 0 Hancock Street. This plan is being submitted by Cianbro Corporation on behalf of the Owner of the property, 0 Hancock Street LLC. The Construction Management plan contains information pertaining to the overall planning and coordination of the project.

The WEX Corporate Headquarters Project involves a new three and four level 100,000 square foot mixed use building located on the corner of Thames Street and Hancock Street. The majority of the building will be office spaced occupied by WEX Corporation, with two 5,000 square foot retail spaces located on the ground floor. The portion of the building which is three levels will have a roof top patio for usage by WEX.

A. Construction Management Principles

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

- The construction zone will be fully secured with hard barriers/fencing preventing any access into the site by the public.
- 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 off site queuing required. Cianbro 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 working hours to minimize sound impacts to the surrounding area.

B. Development Review of Construction Management Plan

Cianbro has developed a comprehensive logistics plan specific to this project. Please see **Exhibit A** of this document for the logistics plan.

Cianbro will also utilize a site specific safety program for all team members who work on the construction site. Each team member will complete a job specific orientation before starting work on the project 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.

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 public street openings for utility tie-ins. All required permits will be requested and granted by the Department of Public Works prior to any street openings occurring. Street openings will need to occur on both Thames and Hancock street. MUTCD plans will be submitted to and approved by the City of Portland for any traffic disruptions caused by street openings.

D. Construction Administration and Communication

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

Clay Maker: Assistant Project Manager
(207) 416-2959
Cmaker@cianbro.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 September of 2017 and runs through September of 2018.

- **Exhibit B** of this document is the current preliminary construction schedule.

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 **Exhibit A** for fencing and barriers to be used to isolate the construction site from the public. All gates into the project will 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.
- The existing fire alarm system in the parking garage attached to the new building will remain active 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

Construction Activity in Public Streets: This project will require street openings on both Hancock Street and Thames Street. These openings are required to tie the building into the electrical, water, sewer, and storm water systems. Prior to any of this work starting, permits will be submitted for and approved by the Street Opening Clerk at the Department of Public Works.

Sewer and Storm Water: This building will need to connect to the sewer and storm water systems on Thames Street. All required permits will be submitted for and approved by the Street Opening Clerk at the Department of Public Works.

Traffic Control Plans: There will be periods of time throughout the project where construction activity impacts the existing public street system. Prior to any interruptions and 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 Cianbro as regular site management and control activities:

- Construction site signage will be provided, installed, and maintained by Cianbro throughout the duration of the project.
- Access to the site will be controlled to ensure that the
- 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 Cianbro will coordinate the cleaning of any excess dirt that has resulted from construction activities.
- Onsite snow removal will be Cianbro'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 sacks and fences to protect the 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.

Please review **Exhibit C** of this document for the landscaping plan which will be maintained throughout the duration of the project.

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

J. Construction Staging Area

Exhibit A of this document is the site logistics plan for the project. This plan shows the location of the onsite staging area for materials. The logistics plan also depicts the onsite truck unloading/staging area. All trucks will be unloaded within the construction site's foot print to avoid and impacts on public traffic. An offsite marshalling area will not be required for this project.

K. Parking During Construction

Construction parking will be provided in the private parking lot of 104 Fore Street as well as at the Ocean Gateway Parking Garage.

Exhibit D is the truck route that will be followed by deliveries for the project.

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 WEX Corporate Headquarters Project and subsequent construction management plan.

Sincerely,

Clay Maker
Project Engineer
Building
CIANBRO
Direct (207) 992-9374
Mobile (207) 416-2959

EXHIBIT A
WEX CORPORATE HEADQUARTERS
0 HANCOCK STREET
PORTLAND, ME
SITE LOGISTICS PLAN
DATE: JUNE 21, 2017

**OCEAN GATEWAY
CAT SCHEDULE**

Reporting from Yarmouth, Nova Scotia to Portland, Maine

2017 DATES	DAYS	TRIPS (Approximate Time Zone)
MAY 31 - JUNE 28	MON, WED, FRI, SAT, SUN	8:30
JUNE 29 - JULY 7	MON, TUE, THU, FRI, SAT, SUN	8:30
JULY 28 - JULY 27	MON, TUE, THU, FRI, SAT, SUN	8:30
SEPT 18 - SEPT 15	MON, WED, THU, FRI, SAT	8:30
SEPT 16	SAT	7:00
SEPT 17 - OCT 1	MON, WED, THU, FRI, SAT	8:30
OCT 2	MON	7:00
OCT 3 - OCT 15	MON, FRI, SAT, SUN	8:30

Reporting from Portland, Maine to Yarmouth, Nova Scotia

2017 DATES	DAYS	TRIPS (Approximate Time Zone)
MAY 31 - JUNE 28	MON, WED, FRI, SAT, SUN	14:30
JUNE 29 - JULY 7	MON, TUE, THU, FRI, SAT, SUN	14:30
JULY 28 - JULY 27	MON, TUE, THU, FRI, SAT, SUN	14:30
SEPT 18 - SEPT 15	MON, WED, THU, FRI, SAT	14:30
SEPT 16	SAT	12:30
SEPT 17 - OCT 1	MON, WED, THU, FRI, SAT	14:30
OCT 2	MON	12:30
OCT 3 - OCT 15	MON, FRI, SAT, SUN	14:30

**OCEAN GATEWAY
CRUISE SCHEDULE**

AUGUST 2017

CRUISE NAME	ARRIVAL	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE
Independence	08/01/17	17:00	08/02/17	13:30	08/02/17	13:30
American	08/01/17	20:00	08/02/17	8:30	08/02/17	17:00
Continental	08/01/17	17:00	08/02/17	15:30	08/02/17	8:30
Victory 9	08/01/17	15:00	08/02/17	8:30	08/02/17	17:00
Independence	08/01/17	15:00	08/02/17	15:30	08/02/17	17:00
Victory 9	08/01/17	15:00	08/02/17	15:30	08/02/17	17:00
Independence	08/01/17	15:00	08/02/17	15:30	08/02/17	17:00
Tall Ships	08/01/17	15:00	08/02/17	15:30	08/02/17	17:00
American	08/01/17	20:00	08/02/17	8:30	08/02/17	17:00
Victory 9	08/01/17	15:00	08/02/17	15:30	08/02/17	17:00

SEPTEMBER 2017

CRUISE NAME	ARRIVAL	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE
Independence	09/01/17	17:00	09/02/17	13:30	09/02/17	13:30
American	09/01/17	20:00	09/02/17	8:30	09/02/17	17:00
Continental	09/01/17	17:00	09/02/17	15:30	09/02/17	8:30
Victory 9	09/01/17	15:00	09/02/17	8:30	09/02/17	17:00
Independence	09/01/17	15:00	09/02/17	15:30	09/02/17	17:00
Victory 9	09/01/17	15:00	09/02/17	15:30	09/02/17	17:00
Independence	09/01/17	15:00	09/02/17	15:30	09/02/17	17:00
Tall Ships	09/01/17	15:00	09/02/17	15:30	09/02/17	17:00
American	09/01/17	20:00	09/02/17	8:30	09/02/17	17:00
Victory 9	09/01/17	15:00	09/02/17	15:30	09/02/17	17:00

OCTOBER 2017

CRUISE NAME	ARRIVAL	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE
Independence	10/01/17	17:00	10/02/17	13:30	10/02/17	13:30
American	10/01/17	20:00	10/02/17	8:30	10/02/17	17:00
Continental	10/01/17	17:00	10/02/17	15:30	10/02/17	8:30
Victory 9	10/01/17	15:00	10/02/17	8:30	10/02/17	17:00
Independence	10/01/17	15:00	10/02/17	15:30	10/02/17	17:00
Victory 9	10/01/17	15:00	10/02/17	15:30	10/02/17	17:00
Independence	10/01/17	15:00	10/02/17	15:30	10/02/17	17:00
Tall Ships	10/01/17	15:00	10/02/17	15:30	10/02/17	17:00
American	10/01/17	20:00	10/02/17	8:30	10/02/17	17:00
Victory 9	10/01/17	15:00	10/02/17	15:30	10/02/17	17:00

NOVEMBER 2017

CRUISE NAME	ARRIVAL	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE	DEPARTURE
Independence	11/01/17	17:00	11/02/17	13:30	11/02/17	13:30
American	11/01/17	20:00				

Departing from Yarmouth, Nova Scotia to Portland, Maine

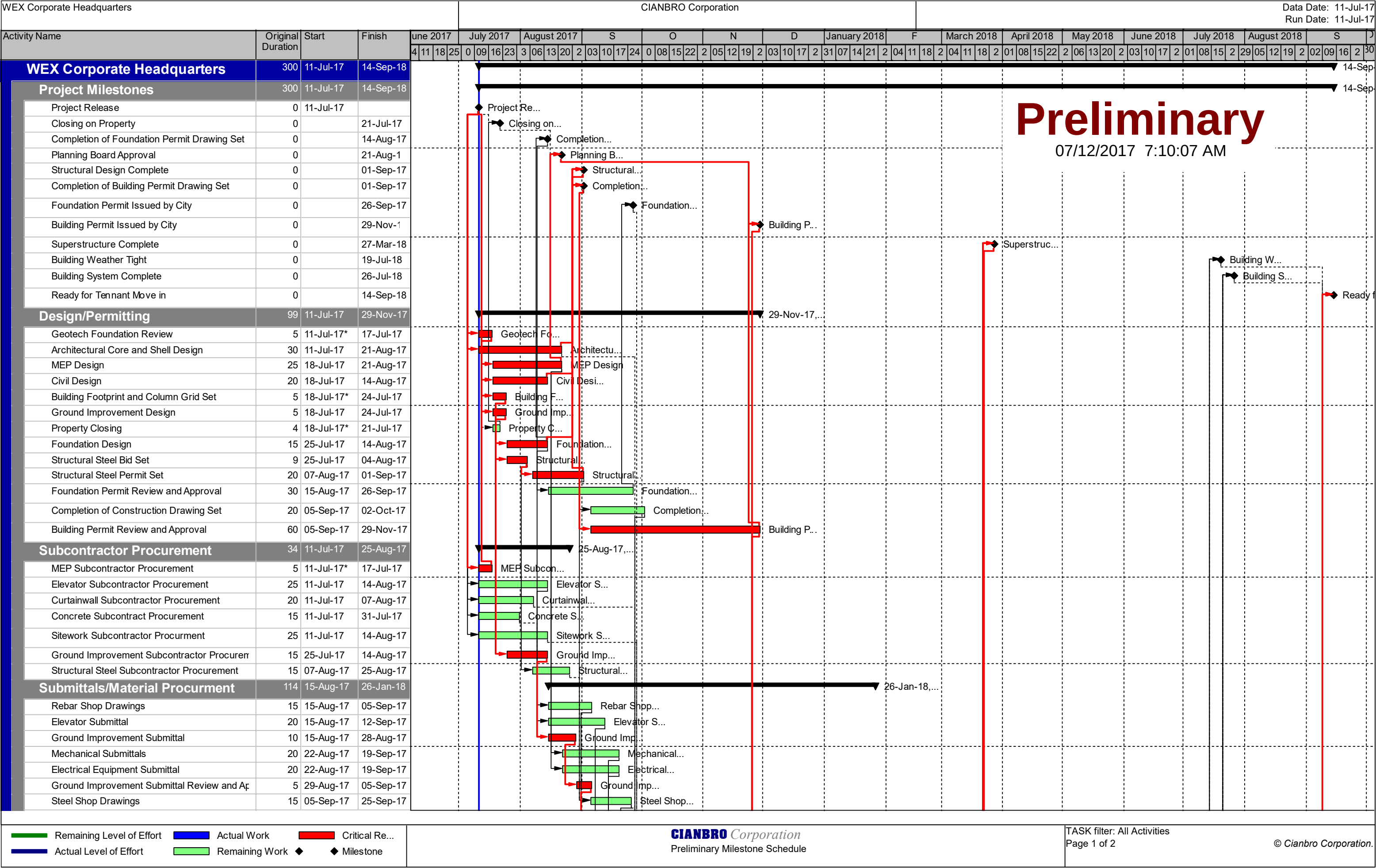
Departing from Portland, Maine to Yarmouth, Nova Scotia

AUGUST 2017SEPTEMBER 2017OCTOBER 2017NOVEMBER 2017

VESSEL NAME	ARRIVAL DATE	ARRIVAL TIME	DEPARTURE DATE	DEPARTURE TIME	PORT	PASSENGERS	CREW
Victory 1 (Foreign)	11/04/17	8:00	11/04/17	22:00	Ocean Gateway	330	90
Seven Seas Mariner	11/02/17	8:00	11/02/17	19:00	Portland Ocean Terminal	1280	800

- CONSTRUCTION ACCESS GATE
- JERSEY BARRIERS W/ FENCE PANELS
- JOBSITE ENTRANCE/EXIT ACCESS

EXHIBIT B



Preliminary

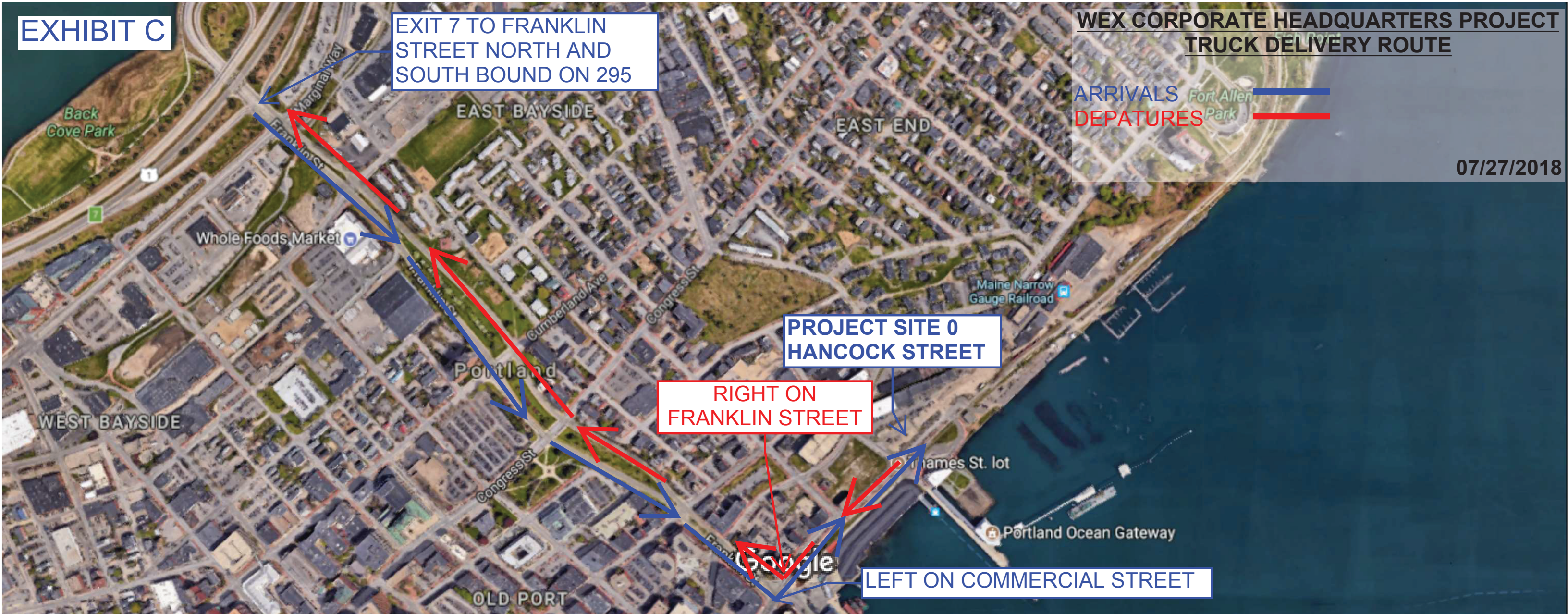
EXHIBIT C

EXIT 7 TO FRANKLIN STREET NORTH AND SOUTH BOUND ON 295

WEX CORPORATE HEADQUARTERS PROJECT TRUCK DELIVERY ROUTE

ARRIVALS
DEPARTURES

07/27/2018



7. SOLID WASTE

The following information is made in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-527(g)(8).

7.1 OVERVIEW

This section provides estimates of solid waste generation during construction and operation of the finished project. Procedures for the transport and disposal of generated wastes are described, as are measures to reduce waste loads through re-use and recycling.

The project will generate the following estimated volumes of solid waste during construction and operation:

- <300 cubic yards of waste asphalt material associated with existing pavement areas.
- <10 cubic yards of grubblings from existing vegetated areas.
- <200 cubic yards of construction and demolition debris (CDD) associated with building demolition and new construction work (excluding recycled materials).
- <20 cubic yards per week of municipal solid waste (MSW) per week during operation and an additional 10 cubic yards of recyclable materials.

7.2 SOLID WASTE GENERATED DURING THE CONSTRUCTION OF THE SITE

It is anticipated that approximately 200 cubic yards of demolition debris will be generated during the initial phase of the project. Waste generated during ongoing construction activities is estimated to be in the range of 10 cubic yards of mixed debris per week. The project is expected to take approximately 12-18 months to complete.

7.3 SOLID WASTE GENERATED FROM THE OPERATION OF THE SITE

Waste generated after occupancy is projected to consist of paper and regular waste to be handled within a loading area at the rear of the building. Weekly collection and removal will be performed under contract to a local waste hauler.

7.4 HAZARDOUS AND SPECIAL WASTES

The proposed use is not expected to generate hazardous, or special wastes after construction. Construction activities will be performed in accordance with Local and State requirements for the handling of hazardous or special wastes.

7.5 GRIT/SEDIMENT REMOVAL

The Applicant will be responsible for the maintenance of the minor storm drain systems including the roof drain filters on the site. They will be responsible for the long-term maintenance of the stormwater collection system and the associated structures, including removal of sediment from the roof drain filters. Given the limited nature of the on-site storm drainage system the quantities associated with this task are considered insignificant.

8. CONFORMITY WITH APPLICABLE DESIGN STANDARDS

The following statements are made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Article V Section 14-526 Site Plan Standards.

8.1 OVERVIEW

This project conforms with all the applicable design standards of Section 14-526 as demonstrated in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

The surrounding street system consists of Thames Street, Hancock Street, and Fore Street. The proposed building will involve limited vehicular access other than for support services such as solid waste pickup, etc. There will be no onsite parking. Parking for the development will be provided at the Gateway Garage located on Fore Street. The Garage has been in operation for at least 8 years therefore traffic patterns and access to that site have been well established and found to be acceptable. The proposed use is considered consistent with the zoning and objectives identified in various City reports; therefore, we believe it results in no significant impact to the surrounding street system.

2. Access and Circulation:

a. Site Access and Circulation.

- (i) The development provides access via a narrow service drive off Hancock Street that will connect to the remaining City land on the east side within the proposed Mountfort Street extension. Pedestrian access will be from fully developed sidewalk facilities off Thames and Hancock Streets.
- (ii) There are no new vehicular access and egress points to the site being constructed as part of this project.
- (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.

b. Loading and Servicing.

- (i) Adequate provisions are made at the site for periodic loading from panel trucks to service the proposed use. The site provides clear area in front of an at grade overhead door at the rear of the building for servicing and loading vehicles.

c. Sidewalks.

- (i) The project will provide new brick sidewalks along Hancock and Thames Streets.

3. Public Transit Access:

- a. The development site will continue to have superior access to public transit facilities including various Metro stops, and the East End Trail system among other pedestrian facilities. The nearest METRO stop is located at Casco Bay lines which is less than 1,000 feet distance from the site. The Applicant is requesting a waiver of the provision requiring a transit facility on the site.

4. Parking:

a. Location and Required Number of Vehicle Parking Spaces:

- (i) Off-street parking is provided within the Gateway Garage, which the Applicant also owns. The Applicant is proposing to provide 320 parking spaces within the garage and this amount exceeds the amount required under City code. The Applicant's tenant has indicated this parking supply will satisfy their need for parking based on their employee census and anticipated needs. In addition, the Applicant outlined prospective plans to construct additional parking in the nearby site vicinity on other properties under common ownership to aid with addressing any parking supply needs for this project and the area in general.
- (ii) The Applicant and WEX are currently working with Cushman Transportation Consulting on the preparation of a Transportation Demand Management (TDM) plan that will look to implement various strategies for reducing the project's overall parking needs and traffic impacts in general. An outline of the TDM objectives and strategies under consideration by WEX is contained in Attachment J.
- (iii) Not applicable see above.
- (iv) No onsite parking is proposed. All parking space dimensional requirements are satisfied in the Gateway Garage.

- (v) Not applicable.

b. Location and Required Number of Bicycle Parking Spaces:

- (i) The project provides seven racks, each with a capacity for two bicycles, providing a total of 14 bicycle parking spaces. The location of these racks will be off the Hancock Street entrance and at the rear of the building. Per Code Section 14-526 a.4.b (i) (b), the required number of bike spaces is 31 spaces, thus the Applicant is seeking a waiver of this required number of spaces, until the findings and full TDM plan are more fully developed with WEX.

c. Motorcycles and Scooter Parking:

- (i) N/A as there is no onsite parking. There are accommodations in the Gateway Garage for motorcycle parking.

d. Snow Storage:

- (i) Snow storage management will employ two strategies:

- a. Limited snow storage along the northerly perimeter of the site (this will suffice for small storm events and temporary storage only).
- b. Snow removal and off-site disposal.

5. Transportation Demand Management (TDM):

- a. A Transportation Demand Management (TDM) Plan will be prepared and submitted for Planning review within the upcoming application review period.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

- a. The site is currently developed as a parking lot, nearly 100% impervious, and contains no significant natural features.

2. Landscaping and Landscaping Preservation:

a. Landscape Preservation.

- (i) There are no existing landscape features or elements at the site. A substantial amount of new landscaping will be provided to the site.

b. Site Landscaping.

- (i) Landscaped Buffers:

- (a) The solid waste storage, HVAC, and loading area will be inside the building at the rear of the site.

- (b) Not applicable.

- (c) Not applicable.

- (d) Not applicable.

- (ii) Parking Lot Landscaping:

- a) Not applicable.

(iii) Street Trees:

- (a) The landscape plan includes 11± street trees along Hancock and Thames Streets.

3. Water Quality, Stormwater Management and Erosion Control:

- a. The project proposes the development of a new building covering nearly 64% of the site with additional plaza area covering another 20% of the site. The property is currently nearly 100% impervious. Redevelopment of the site will reduce the impervious cover and provide pervious landscaped surfaces that will reduce both the peak rate of runoff and the volume of runoff from the site under all storm conditions. The provision of landscaped green space will also enhance the quality of surface runoff from the site under all conditions. The site improvements will also include measures for meeting the MaineDEP Stormwater Chapter 500 Rules and the City of Portland Stormwater Management Standards. This will include the installation of roof drain water quality treatment devices within the building.
 - (i) The site is part of a larger area draining to the east and to an existing catch basin that will remain on the City property. A new onsite collection system including several new structures and conveyance pipe will be installed on the north side of the property to help capture any runoff draining from the adjacent property to the north and this system will be tied in to the existing City system.
 - (ii) See above. There will be no increase in the rate or volume of runoff from the site.
 - (iii) See above.
 - (iv) See above.
- b. The project will ultimately meet the General Standards under Chapter 500, Stormwater Law (City of Portland Technical Manual, Section 5 – Portland Stormwater Management and Maine DEP Ch. 500, 3 (e)). The Basic Standards will apply to this project and a detailed Soil Erosion and Sediment Control Plan has been developed to address this. One or more roof drain water quality units will be installed to treat runoff from the building roof and there will be an overall increase of pervious area including landscaping to aid with improving water quality, since the site is now nearly 100% covered with pavement or gravel parking lot.
- c. Not applicable.
- d. Not applicable.
- e. Construction at the site will be required to follow local, state and federal regulations and will be undertaken under the supervision of a suitably qualified

environmental professional. Post-construction activities at the site do not pose a risk of groundwater contamination.

- f. The project will be connected to the public sanitary sewer system which is adequately sized for the anticipated project flows.

(c) Public Infrastructure and Community Safety Standards.

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. Not applicable.

2. Public Safety and Fire Prevention:

- a. The site has been designed to promote a safe and welcoming mixed use development environment.
- b. The site provides access from Hancock Street and Thames Street for emergency vehicles.
- c. Fire hydrants are located adjacent to the property along the existing streets. The building will be fully sprinklered.

3. Availability and Adequate Capacity of Public Utilities:

- a. The Applicant has secured letters from the applicable utilities stating their ability to serve the site (we await the City of Portland Wastewater capacity response). The project will require new or updated electrical, gas, sewer, and water services to the site.
- b. All new electrical services to the site will be underground.
- c. All new utility infrastructures will meet the provisions of the Technical Manual.
- d. The project will utilize a new service connection to the public sewer system within Thames Street.
- e. All new sewer and stormwater infrastructure will meet City standards.
- f. A solid waste collection and storage area will be provided with adequate capacity for the needs of the development. The owner will contract with a waste removal vendor as part of the onsite management of waste collection and recycling.

(d) Site Design Standards.

1. Massing, Ventilation and Wind Impact:
 - a. The project proposes construction of a new multi-story building. The project will not result in any significant changes to the wind environment proximate to the site.
 - b. The project will not result in any significant impacts to abutting properties and is consistent with the Eastern Waterfront Master Plan and other zoning considerations.
 - c. HVAC venting, if necessary, will be directed through building roof top mounted units and will not impact any adjacent public spaces.
2. Shadows:
 - a. The project is in the B-6 Zone. The building will not cast shadows onto publicly accessible open space such as a garden area, sports field or similar. It will cast shadows onto nearby parking areas.
3. Snow and Ice Loading:
 - a. The building will be designed in such a way that accumulated snow does not impact adjacent properties or public ways as evidenced by the graphical representations of the building by Archetype PA.
4. View Corridors:
 - a. The project entails construction of a multistory building at the site in manner that is compliant with the Downtown Vision View Corridor protection plan and B6 Building Height Overlay and Building Envelopes plans and objectives.
5. Historic Resources:
 - a. The project is not located in a historic district, historic landscape district, or City designated landmark.
 - b. The project is not located adjacent to, or within 100 feet of, a historic district, historic landscape district, or City designated landmark.
 - c. There are no historical or archaeological resources on the project site.
6. Exterior Lighting:
 - a. Site Lighting
 - (i) All new exterior lighting at the site will be full cutoff with no light emitted above the horizontal plane, and in accordance with Section 12 of the Technical Manual. A photometric lighting plan will be developed demonstrating illumination levels throughout the site consistent with previously submitted plans.

7. Noise and Vibration:

- a. Project noise levels will be designed to meet the permitted standards within the zone. HVAC units will be located on the ground adjacent the building or on the roof top. Equipment cut sheets can be provided upon request.

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 has not yet been designed for the site and will be submitted in a separate application.
 - (iii) All street and wayfinding signage is designed to meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

9. Zoning Related Design Standards:

- a. The project satisfies the goals and objectives of the B6 zone.

8.2 ATTACHMENTS

Attachment J – Exploration of TDM Objectives and Strategies

ATTACHMENT J

Exploration of TDM Objectives and Strategies



Cushman Transportation Consulting, LLC

94 Beckett Street, 2nd Floor, Portland, ME 04101

(207) 200-1910 • sarah@sarahcushman.com • www.sarahcushman.com

8/13/2017 TDM Plan Update: as part of the Transportation Demand Management (TDM) plan requirement for City of Portland Level III site review, WEX is currently exploring the following TDM strategies.

Infrastructure - beyond required sidewalk & crossing improvements, bicycle parking and TDM kiosk

Bicycle and Pedestrian Facilities

	street lighting, wayfinding and general safety and attractiveness
	shower and locker facilities on-site
	covered and/or secured bicycle parking beyond city-required bicycle parking
	internal bikeshare at new site and/or work with Portland Bikeshare for dock near site (launch in 2018)

Incentives & Fringe Benefits

Parking

	Parking "Cash Out": for those employees who have parking paid for by the company, offer choice of receiving monetary payments in lieu of employer-provided parking
	Preferential parking for carpools, vanpools and bicycles
	Craft customized Transportation Network Company (TNC - e.g., Lyft & Uber) solutions for employees to access transit and/or underutilized or lower-cost parking located at some distance from the company headquarters

Transit

	Free or reduced-cost METRO, South Portland, Lakes Region Explorer, Shuttlebus-ZOOM and Casco Bay Ferry passes
	Continue to offer and promote federal transportation fringe benefits for transit, vanpool and bicycle commuters: e.g., offer employees the option to purchase a pre-tax monthly transit pass

Rideshare and Carshare

	Vanpool coordination via vRide/Enterprise
	Vanpool vouchers and/or federal vanpool fringe benefit
	Ridesharing matches via GO MAINE
	Sign up multi-modal employees with GO MAINE for rewards program and Emergency Ride Home
	Use of UhaulCarShare near Ferry Terminal for short trips or possible internal 1-2 vehicle carshare for site - for either commercial or personal trips through the work day

<i>Bicycle Commuting</i>	
	Federal bicycle commuting fringe benefit
	Reimbursement for Cycling Savvy and/or Bicycle Coalition of Maine Traffic Skills 101 courses
<i>Telecommuting/Alternate Work Arrangements</i>	
	Offer telecommute options - e.g. an employee may work from home 1 day per week
	Offer flexible working hours outside morning or evening peak travel times
	Offer four-day work weeks or other working hour arrangements that avoid morning or evening peak travel
<i>Other Incentives</i>	
	Provide stipend for TDM Coordinator to support work on behalf of the company to lead the ongoing development and implementation of TDM efforts.
	Offer thank-yous for company TDM champions – e.g., vacation hours or gift cards
	Run short-term incentive campaign(s): transit users, vanpoolers, carpoolers, walkers and bicyclists are entered into a monthly raffle for vacation hours, gift cards, movie passes, and other benefits.
<i>Internal & External Promotion - building company culture and leadership in community</i>	
	Vibrant TDM company website, social media and physical kiosk presence with transportation information and description of incentives/benefits.
	Employee commute surveys to identify barriers to using alternate transportation to work and to foster additional carpooling
	New-hire transportation orientation programs
	Lunch & Learn sessions regarding different transportation options
	Use of written commitment cards to try alternate modes
	Telework program set-up and support
	On-site Cycling Savvy and Bicycle Coalition of Maine Traffic Skills 101 courses
	WEX participation in GO MAINE B2B Commute Challenge, National Bike to Work Day, Park(ing) Day and World Car-Free Day
	Recognition of employees who reduce the traffic impact of the development through newsletter, email, bulletin board, or other announcements
	Form a company committee or sub-group of an existing company committee to advise the site's TDM work and develop peer-led campaigns that encourage active transportation and reduce the appeal of driving to work
	Support the development of - and WEX membership in - area non-profit Transportation Management Association (TMA) to benefit private sector employers. TMAs assist with TDM implementation and monitoring, advocate for transportation solutions for local business, and act as brokers for services such as: vanpools, TNC trips, etc.
	Support transit expansion: (A) between Portland Transportation Center and Waterfront (METRO and/or automated OLLI test-site bus) and (B) downtown circulator route specifically meant to transport riders between the Waterfront and Cumberland Ave./Congress St. to access transit and additional parking

9. VERIFICATION OF PROPOSED HVAC EQUIPMENT

9.1 OVERVIEW

See the attached statement from the Mechanical Designer, Johnson & Jordan, regarding compliance with applicable State and Federal Emissions requirements.

9.2 ATTACHMENTS

Attachment K – Letter from Johnson & Jordan

ATTACHMENT K

Correspondence from Johnson & Jordan



MECHANICAL CONTRACTORS

DATE: August 4, 2017

SUBJECT: Equipment Emissions Compliance
PROJECT: **0 Hancock St, Portland, ME**

City Application checklist requirement:

Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements

Response:

The proposed mechanical HVAC systems including the plumbing systems, are only expected to have one type of combustion equipment, the central boilers. The proposed high-efficiency, natural-gas fired condensing boilers are a commercially produced product that will comply with all state and federal emission requirements. Boiler manufacturer states that equipment meets the requirements of ANSI Z21.13 and CSA 4.9, as well as the latest efficiency requirements of ASHRAE 90.1 standard.

Jacob Martin, PE
Mechanical Engineer
207-883-8345

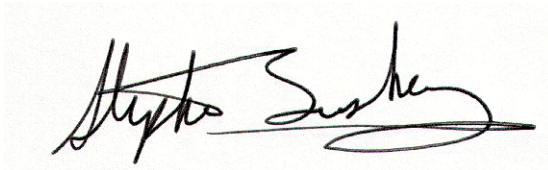


Neighborhood Meeting Certification

I, Stephen Bushey, of Stantec, hereby certify that a neighborhood meeting was held on September 5, 2017 at the development site at the corner of Hancock and Thames Streets at 5:00 pm EST. I also certify that on August 25, 2017, 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.
2. Residents on the "interested parties" list.
3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,

A handwritten signature in black ink, appearing to read "Stephen Bushey", is written over a light gray rectangular background.

(09.06.2017)

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes



Stantec Consulting Services Inc.

482 Payne Road Scarborough Court, Scarborough ME 04074-8929

August 25, 2017

Dear Neighbor:

Please join us for a Neighborhood Meeting to discuss our plans for the proposed construction of a commercial office and retail building at the corner of Thames and Hancock Streets in Portland, Maine. The project includes a 102,027 SF, 4-story mixed-use building with a portion of the first floor and all upper floors designated as corporate office space for WEX and 5,000 SF to 10,000 SF of the first floor as retail space.

Meeting Location: **Project Site – Existing Parking Lot***
0 Hancock Street (corner of Thames and Hancock Streets)
Portland, Maine

Meeting Date: **Tuesday, September 5, 2017**

Meeting Time: **5:00 PM**

*** In the event of inclement weather the meeting will be held at the same time across the street at the Gateway Garage**

The City Code requires that property owners within 500 feet (except notices must be sent to property owners within 1,000 feet for industrial zoning map amendments and industrial subdivisions) 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 feel free to contact Steve Bushey, P.E. at 207-883-3355.

Sincerely,

STANTEC CONSULTING SERVICES, INC.

A handwritten signature in black ink, appearing to read "Stephen R. Bushey", written over a light gray rectangular background.

Stephen R. Bushey, P.E.
Associate

V:\1953\active\195350450\civil\admin\permitting\local\Neighborhood Meeting\195350450_notice_neighborhood-meeting.docx

Note: Under Section 14-32(C) and 14-525 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 three weeks of submitting a preliminary application or two weeks of submitting a final site plan application, if a preliminary plan was 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

Design with community in mind

0 Hancock LLC Public Information meeting

[illegible]

INFCTR@THK.COM

Public Information meeting – 0 Hancock LLC - WEX195350450 / 2017.09.05 Meeting minutes

Date/Time: September 5, 2017 / 5:00 pm
Place: Corner of Thames and Hancock Street Parking lot
Next Meeting: N/A
Attendees: See attendees list
Absentees: Absentees
Distribution: See attached list

A public information meeting was held on September 5, 2017 at the development site for a 100,000 SF office building proposed by 0 Hancock Street LLC. The expected office tenant will be the WEX Corporation. There were 6 attendees from the general public and the development team was represented by Katherine Detmer and Mike Coyne of Archetype, Jonathan Cohen of 0 Hancock Street LLC,, Brian Larson of Cianbro and Steve Bushey of Stantec.

The initial few minutes of the meeting commenced with some general discussion amongst several attendees and Mr. Cohen. Mr. Bushey then formally introduced the project and provided an explanation of the meeting purpose as well as an overview of the development proposal. The basic project description includes:

- 48,000 SF land transfer from the City of Portland to the Developer
- Construction of a multi-story office building with nearly 90,000 SF of office and 10,000 SF of retail/restaurant space on the ground floor
- Pedestrian plaza space will be provided at the rear and east end of the building.
- No parking will be provided on site. All parking for the development will be provided in the Gateway Garage or within spaces to be provided at the 100 Fore Street property.

The majority of the discussion from attendees involved parking and how the existing garage and Fore street sites would work for meeting the expected parking demand. Mr. Cohen spoke at length about existing parking utilization and capacity at the garage and the prospect for a new parking structure at the 100 Fore Street Site. In general, attendees expressed skepticism about the project's parking approach. Discussion and questions also focused on traffic and the overall amount of development occurring in the area. Several of the attendees appeared to be residents of the Bay House development.

There were no specific comments about building architecture or height that the writer heard, although there were overlapping discussions occurring during the course of the 30 minute meeting.

Mr. Donovan attended the meeting to express his ideas on the site's pivotal role in future rail operations that may occur in the site vicinity, including passenger rail service to points north such as Lewiston-Auburn and beyond.

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.



September 5, 2017

Public Information meeting – 0 Hancock LLC - WEX
Page 2 of 2

Stantec Consulting Services Inc.

Stephen Bushey
Associate, Senior Project Manager
Phone: (207) 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

Attachment: Attachment

c. Cc List



Cushman Transportation Consulting, LLC

94 Beckett Street, 2nd Floor, Portland, ME 04101 · (207) 200-1910 · www.sarahcushman.com

WEX, Inc. Transportation Demand Management (TDM) Plan

September 29, 2017

A. Summary

0 Hancock Street LLC, having entered into a long-term agreement with WEX Inc., provides this Transportation Demand Management (TDM) Plan for WEX's global headquarters - to be housed in the proposed 102,000 square foot, 4-story mixed-use building at the corner of Hancock and Thames Street on Portland's Eastern Waterfront.

A portion of the building's first floor and all upper floors - 92,027 square feet - are designated as WEX office space and will house 450 employees. The remaining 10,000 square feet of the first floor will be used for three retail spaces: a restaurant, loan service office and gift shop.

The WEX 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 the site. The plan sets a 5% evening peak-hour vehicle trip-reduction target off of the baseline trips included in the project's Traffic Movement Permit – as well as a 5% reduction in parking demand, both over the first year. These targets will both be reassessed at the end of the first year after the site opens.

WEX Site

- 4-story mixed-use building on Eastern Waterfront
- Company site use: 450 employees, 92,027 ft²
- Trip reduction target: 5% over first year; 9 AM peak trips and 8 PM peak trips
- Parking reduction target: 5% over first year; 14 spaces
- Reassess trip and parking reduction targets at end of year 1

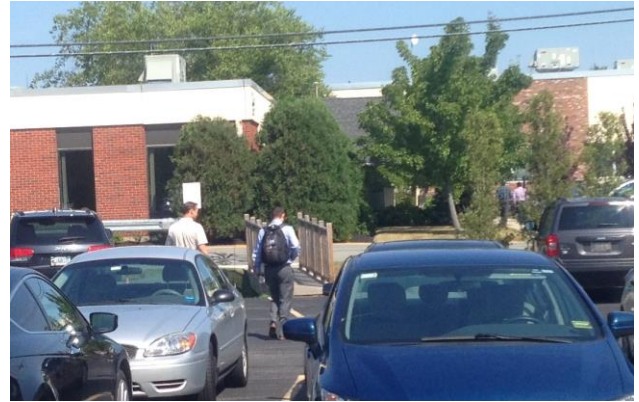
B. Company Overview & Commitment to TDM

WEX is a publicly traded company that facilitates corporate payments across borders and industries – including for fleets, travel and healthcare. The company was founded in Maine in 1983 and has grown in recent years to encompass 2,000 employees and services in the Americas, Europe, Australia, and Asia.



WEX provides fleet gas cards for UhaulCarShare in Portland and other areas around the country.

WEX is committed to Greater Portland and to serving as a good corporate citizen. The corporation also takes pride in being a good employer and offering valuable benefits to its employees. In addition, WEX has a history of reducing vehicle trips and supporting employee wellness by creating its own informal bikeshare on the South Portland campus, to encourage bicycling the half a mile between the Gorham Road and Darling Avenue buildings. And as part of the company's community work, WEX donated \$25,000 this year to the Eastern Trail Alliance's effort to complete a 1.6-mile segment in Scarborough.



WEX has also created walking connectivity between South Portland campus parcels.

The corporation views this TDM plan as a long-term initiative, understanding that moving from a suburban industrial park context to the downtown will not by itself bring a change in commuting habits overnight. However, WEX 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, taking the bus enables workers to relax or catch up on email via mobile devices. Walking or carpooling also improve well-being by getting outside or problem-solving complex work situations with colleagues. In addition, reducing the number of company-sponsored parking spaces over time will result in many thousands of dollars of annual savings for WEX's bottom line.



Eight hundred employees work at the current corporate campus in South Portland. WEX will transfer approximately 350 of these positions to the new downtown Portland headquarters – although it has not been determined which staff specifically will make this move. The company will utilize the site as a recruitment tool for new talent for the remaining 100 positions.

It's 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 WEX salaries will enable them to afford living closer to work.

...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

They also 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 WEX TDM program that follows.

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. WEX brings a new generation of commercial vibrancy to a parcel that was once part of a thriving railyard and that has lain relatively dormant for a number of years as an unsurfaced parking lot.

This unique segment of the waterfront, nestled between the Old Port commercial district and East End residential neighborhoods, is located in the B-6 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, hotels and restaurants. The WEX project supports the mixed-use, urban form, and multi-modal objectives of Portland's *Master Plan for the*



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*



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

Redevelopment of the Eastern Waterfront (2002, amended 2006) and the 2017 Comprehensive Plan, *Portland's Plan 2030*.

The site is pedestrian and bicycle-friendly, located within the strong sidewalk network and lower-speed street grid of the Eastern Waterfront and 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 WEX employees who live on the Portland peninsula will be within comfortable walking distance of the company's headquarters. 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 Route 7 to and from Falmouth, the crosstown Routes 9A and 9B to off-peninsula neighborhoods and the Breez with service to Yarmouth, Freeport and Brunswick. The site is also within walking distance of all South Portland Bus routes 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 WEX employees.

Two recent examples offering transit improvement recommendations for the waterfront are the 2015 *Portland "Hub Link" Feasibility Study* and the draft 2017 *City of Portland Parking Study for the Eastern Waterfront & Downtown*. City management has also expressed interest in serving as

We recommend continued pursuance of the following goals:

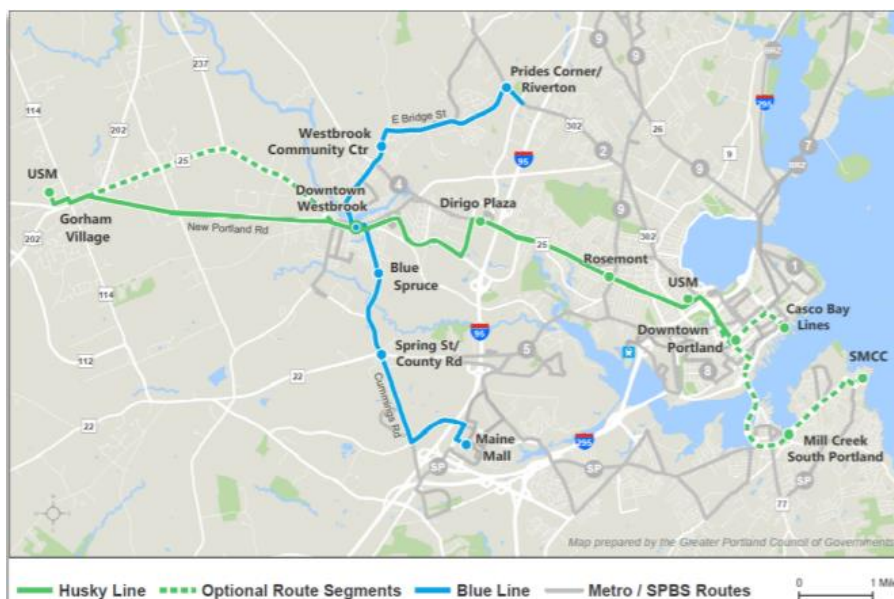
- *Increase the peak period frequency of key Peninsula routes to 10-20 min headways*
- *Provide a direct link between the Portland Transportation Center and Downtown/ Waterfront. As development on the Eastern Waterfront progresses, service should extend there as well.*
- *Use signal prioritization and 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 Ave in a loop.

- Draft 2017 City of Portland Parking Study for the Eastern Waterfront & Downtown

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, 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 Route 1 up to Munjoy Hill. WEX plans to join these discussions with METRO as well, to benefit improved public transportation options for its employees and the general public.

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. And commuters from Gorham and Westbrook are eyeing the 2018 launch of the METRO Husky Line and improved frequency of service on Brighton Avenue as a good option.



In addition, affordable housing issues are prompting the move of many workers into outlying areas. From discussions with Shuttlebus-ZOOM, it appears that office workers from Portland who have moved to Saco and Biddeford are informing developers of their interest in using transit to get to work and their frustration with a lack of a timely downtown Saco-Biddeford connector to the ZOOM stop at the Maine Turnpike exit – in order to access express service into Portland. The transit provider is now looking at commuter shuttle connections to the ZOOM.

Meanwhile, amenities near the WEX site 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 are ways WEX employees' travel behavior is likely to change with their move from a suburban campus to this new urban setting. These "internally captured" trips represent no net new trip generation or parking demand beyond the original trip to work.



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.

WEX has designated Safet Cobaj, Vice President of Real Estate, as its TDM Coordinator, charged with coordinating the TDM plan implementation, monitoring and any needed changes. The company will provide the TDM Coordinator with a stipend to support this work to lead WEX's ongoing TDM efforts. Acknowledging that roles and responsibilities change over time in any position, the organization has enumerated the TDM Coordinator's responsibilities in detail for any other staff to uphold the responsibility of the position. The Coordinator's contact information is: Safet Cobaj, 123 Darling Avenue, South Portland, ME 04106, (207) 523-6186, Safet.Cobaj@wexinco.com

Day-to-day operations and monitoring of the TDM plan will be conducted in-house by the appointed WEX TDM

The WEX TDM coordinator is responsible for the following:

- Strategic parking management to reduce company payments for accessory parking (see Section F)
- Encouraging greater use of preferred modes through social media, website, on-site kiosk and company-wide promotion (Section G)
- Coordinating company policies, subsidies and incentives (Section F)
- Overseeing comprehensive surveying of staff (Section H)
- Monitoring of employee parking usage and the effectiveness of TDM strategies (Section H)
- Filing annual reports and updating the plan with the City (Section H)
- Exploration of additional TDM strategies, if needed

Coordinator; however, WEX 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

WEX is committed to reducing drive-alone employee automobile trips, improving multi-modal safety, and easing traffic congestion and area parking demand.

Projected Trip & Parking Generation

On behalf of WEX, Traffic Solutions and Cushman Transportation Consulting, LLC have developed ITE and census-based trip generation and parking demand projections to establish the impact of the new WEX headquarters. These numbers are preliminary and subsequent employee origination data will likely enhance these calculations.

Accordingly, the company is expected to generate a total of 180 vehicle trips during the morning peak hour and 160 trips during the evening peak hour. The parking demand projection is for 284 spaces for WEX employees and another 29 spaces shared between the three retail establishments on the first floor of the building.

Trip Reduction Target

WEX will use the first full year of operations to confirm a more consistent number of drive-alone trips to the site and use of other transportation modes, recognizing that time is required for the cultural shift from a suburban campus to an urban core setting. Combining these updated numbers with the multi-modal accessibility of the new site and also robust company parking management and financial incentives for preferred modes of travel, an achievable trip reduction target for employees is 5% for the first year after WEX opens its new headquarters – so 9 morning peak trips and 8 evening peak trips. This trip reduction target will be re-visited after the first year of implementation.

Parking Reduction Target

Similar to the trip reduction target, the primary goal of the initial year will be to ascertain the actual parking demand number for the new site. Based on the above parking demand projections - and understanding that assertive parking management is key to transportation behavior change and helps fund increased employee transportation choice - an achievable

Projections & Targets

- Site trip generation: 180 AM peak, 160 PM peak
- WEX parking demand: 284 spaces
- Trip reduction target: 5% over first year
- Parking reduction target: 5% over first year
- Reassess trip and parking reduction targets at end of year 1

parking demand reduction is 5% over the first year of the site occupancy; this is 14 spaces. The parking demand target will also be re-visited after the first year of implementation.

WEX plans to work with a local TDM consultant to continue creating and achieving goals for shifting modes and to closely monitor existing trends to attain a reasonable mode-shift goal over time.

F. Trip/Parking Reduction Strategies & Incentives

WEX proposes a number of best-practice and sensible parking and trip reduction strategies for its plan. These include:

- Strategic parking management
- Subsidizing and facilitating transit use, van and carpooling, bicycling and walking
- Subsidizing carshare and bikeshare
- Supporting alternate work arrangements
- Infrastructure support, such as: secure bicycle parking, showers and lockers
- Marketing preferred modes of travel through company communications and incentive campaigns
- Funding the company's alternate, preferred transportation modes programming and services through reduction in parking costs
- Exploring partnerships with the City of Portland and METRO for transit and infrastructure improvements - for expanded transit service and walking and bicycling routes to the Eastern Waterfront
- Supporting and participating in potential Transportation Management Association

Parking Management

WEX understands that strategic parking management produces the strongest results for reducing single-occupancy vehicle employee trips. The city Land Use Code continues to have minimum off-street parking requirements and requires 230 spaces for the 92,027 square feet of WEX office space. Initially, WEX has forecasted leasing up to 320 parking spaces for

Parking

- Unbundled parking
- New hires pay for parking on daily basis (only when used)
- Relocated employees offered stipend for use for parking or multi-modal pass/voucher
- Provide occasional parking for primarily multi-modal staff
- Preferential parking for carpools
- Reassess parking needs every 6 months

its employees at the Ocean Gateway Garage. It plans to reduce the need for that number before it occupies the site.

The company proposes the following parking management strategies to help ensure that there are enough parking spaces to support functioning of the headquarters, while not providing more parking than necessary:

- Maintain this unbundled parking (leased separately) from its office space for the length of WEX's lease at O Hancock Street.
- Provide stipend for relocated employees at least initially, as part of the relocation package; stipend can be used for parking, monthly transit pass, carpool/vanpool voucher, bikeshare membership, etc.
- Charge newly hired employees for parking on a daily basis; employees only pay for parking when they use spaces. Per this national best-practice, WEX will charge \$15 per day for the first 10 days of the \$150 monthly rate for parking at the Gateway Garage.
- Provide preferential parking spaces for carpools and vanpools at the Gateway Garage, conveniently located near the WEX site. This program is available through GO MAINE, the statewide commuter assistance program. GO MAINE administers the program and provides registered participants with the Preferential Parking Agreements and Passes.
- Provide occasional parking for primarily multi-modal staff; e.g., for a carpooler or bicycle commuter who occasionally needs to drive to work
- Reassess the number of spaces needed for company employees twice annually



Public Transit

WEX will provide a free monthly transit pass or multi-ride ticket to each employee for any area transit provider (METRO, South Portland, Lakes Region Explorer, Shuttlebus-ZOOM, Amtrak and Casco Bay Ferry). This benefit will be offered to employees upon hire and at least once annually. WEX will also explore whether new fare media that METRO has planned for 2018 could enable the company to be billed for individual trips taken by employees who are part-time transit users.

Transit

- Free monthly transit pass or multi-ride ticket
- Exploration of METRO expansion to Eastern Waterfront
- Possible interim Lyft/Uber connection to peninsula transit

WEX will also work with the Greater Portland Transit District (METRO) on expansion of transit to the Eastern Waterfront. The company knows about local interest in expanding bus service to its location and other area developments, such as 58 Fore Street. WEX is also cognizant of the mitigation of traffic impacts through site support of transit improvements, such as the annual transit subsidy the non-profit St. Lawrence Arts Center will provide for increased Route 1 service to the East End. Any potential partnership with METRO would not only serve WEX staff, but also all city residents and visitors.

In addition, peninsula transit improvements are a potential use of the City of Portland's Downtown Transit-Oriented Development Tax Increment Financing (TIF) revenue, approved in 2015 and activated in 2016. A possible WEX and 58 Fore Street partnership with METRO could be joined with TIF revenue to support even broader and more consequential transit improvements. By growing ridership and diversifying the transit system's revenue base, a partnership can also improve METRO's competitiveness for obtaining new federal grant funds for further expansion.

In the meantime, WEX may explore a customized Transportation Network Company (TNC - e.g., Lyft & Uber) solution for employees to access transit routes elsewhere on the peninsula.

Rideshare

Some WEX staff do carpool currently and WEX has a number of employees who are registered users of GO MAINE, the statewide commuter assistance program.

On par with its transit incentive, WEX will offer up to \$90 per month for carpool and vanpool vouchers for employees who use these modes of travel. The company will also offer one-time gift card incentives for employees who start new carpools or vanpools and who recruit additional employees to share rides. WEX will facilitate carpool matching through GO MAINE and sign up all staff who walk, bicycle, use carpools or vanpools and/or public transit for GO MAINE services, which include:

- the Emergency Ride Home benefit
- GO MAINE trip rewards
- Preferential Parking program

Rideshare

- Offer financial incentives for formation of carpools and vRide/Enterprise vanpools
- Offer monthly voucher for carpool/vanpool on par with transit pass
- Register multi-modal staff with GO MAINE
- Do cluster analysis with vRide/Enterprise



WEX will also engage vRide (now owned by Enterprise) to do a zip code cluster analysis of relocated and new employees at the site. This will facilitate the formation of carpools and vanpools of 7 or more people, when a number of staff originate from a particular municipality.

Alternate Work Arrangements

WEX will enact a policy offering those employees with flexible office hours the option to telecommute a portion of the work week, condense their work hours into larger shifts (such as four 10-hour days), and/or arrive and leave on a flexible schedule. Staff will be encouraged to arrive at the site outside of the morning peak hour (by 7am or after 9:30am) and leave outside the evening peak period (before 4pm or after 6pm).

Alternate Work Arrangements

- Written policy for flextime, telecommuting, and condensed shifts
- Encourage all possible staff to avoid AM and PM peak travel

Walking, Bicycling and Bikeshare

WEX will provide secured bicycle parking (bike lockers) for employees at the Ocean Gateway Garage and have showers and lockers available on-site for walk and bike commuters. This is in addition to sidewalk and crosswalk improvements and city-required bicycle parking the site developer will provide. WEX is committed to meeting a higher demand for bike parking if needed and intends to continue to work with City of Portland to further enhance safe and convenient pedestrian and bicycle access to the Eastern Waterfront.

To encourage bicycle commuting and improve traffic safety, WEX will also reimburse employees for completing Cycling Savvy and/or League of American Bicyclists' Traffic Skills 101 courses; both are offered locally. In addition, the company will purchase Bicycle Benefits memberships for bicycle commuting staff (one-time \$5 helmet sticker - www.bicyclebenefits.org). This national program is active in Portland and local businesses offer rewards for patrons who arrive at their establishments by bicycle.

Walk/Bike Commute & Bikeshare

- Showers & lockers
- Federal bicycle commuting benefit
- Reimburse bike safety classes
- Bicycle Benefits memberships for bike commuters
- Work with Portland Bikeshare for nearby dock
- Monthly bikeshare passes
- Company account with Portland Bikeshare for daytime trips
- Consider informal company bikeshare in meantime

For shorter staff trips during the work day and to promote additional bicycle commuting, WEX will work with Portland Bikeshare to secure a bicycle dock near the company's site (Portland Bikeshare launches in 2018). On par with its transit and rideshare subsidy, WEX will offer monthly bikeshare passes to interested employees. The company will also offer the federal bicycle commuter benefit to staff who ride their own bicycles to work.



In the meantime, similar to WEX's program at its South Portland campus, WEX could maintain one or more shared bicycles and associated gear such as helmets and locks - available for daytime use.

Family and Islander TDM Amenities

Employees with children and island residents are more able to walk, bicycle and carpool to work if they have on-site, secure storage for larger commuting gear that generally doesn't fit in shower lockers or standard bicycle lockers, such as those located at Ocean Gateway Garage. Examples of this equipment are: car seats, strollers, handcarts, bicycle trailers and cargo bicycles or other large bicycle set-ups like tag-alongs. WEX will investigate whether it's possible to provide such a storage location with ground-floor access to its employees. If there is high enough demand, WEX will consider replacing some standard shower lockers with ones for car seat, stroller, or hand-cart storage with a useable interior space that is at least 35 inches high, 25 inches wide and 30 inches deep.

Family & Islander Amenities

- Secure on-site storage for equipment that enables preferred commutes: e.g., car seats, hand carts, bicycle trailers, cargo bikes

Near-site Carshare

WEX will set up an account with UhaulCarShare so that employees can access a vehicle for trips required during the work day. The company will pay for business-related car use.

Carshare

- Company account with UhaulCarShare for daytime trips
- Negotiate with Uhaul for additional vehicle(s) if needed

UhaulCarShare is available in Portland and South Portland, currently providing access to a total of nine vehicles on an hourly or daily basis. One of these is located at 30 Commercial Street, just two blocks from the WEX site near the Casco Bay Ferry Terminal. At one time there were two carshare vehicles at this location and, if the demand is strong enough, WEX can negotiate with Uhaul for additional available vehicles.



Short-term Incentive Campaigns

To help build employee awareness of WEX's TDM efforts and encourage a cultural change in transportation habits, the company plans to implement a monthly incentive campaign for the first year after opening, entering staff who use transit, carpool/vanpool, walk or bike or use alternate work arrangements into an ongoing raffle for gift cards, vacation time, or other benefits.

Thereafter, WEX plans to run one or two short-term incentive campaigns each year, preferably tied in with local and national multi-modal campaigns, such as: the Way 2 GO MAINE Business to Business Commuter Challenge, the National Bike Challenge and National Bike to Work Day, Park(ing) Day and World Car-Free Day. Similar to the monthly raffle of the first year, employees who use preferred modes of transportation will be entered to win various rewards. WEX sees this experiment with encouragement campaigns as part of the dynamic nature of the plan and exploring what works.

Incentive Campaigns

- 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 and offering similar rewards

Transportation Management Association

Portland Area Comprehensive Transportation System (PACTS) has recently convened a process to reexamine the need for an area Transportation Management Association (TMA) to benefit private sector employers. TMAs are non-profit entities that assist employers like WEX with TDM implementation and monitoring, advocating for improved transit and other transportation solutions for local business, and acting as brokers for services such as: vanpools, customized Transportation Network Company trips, etc. WEX is interested in this development and plans to support the development of a TMA, if found to be feasible, and participate as a member.

Support for TMA

- Support the development of area TMA, if found feasible
- Participate as member

G. Marketing

Another critical component for the success of WEX's TDM Plan is a carefully thought-out marketing plan that regularly engages employees regarding preferred modes of transportation, provides easily accessible information and builds company culture and leadership in the community. WEX has begun designing a marketing strategy that complements other area Portland TDM work to promote walking, bicycling, rideshare, the use of public transit and alternate work arrangements.

WEX's initial marketing plan:

- Ensure all relocated WEX employees and new hires receive:
 - a transportation orientation and welcome packet, with tailored marketing information about sustainable transportation options to access the site and alternate work arrangements, including specific choices for major commute origins
 - the opportunity for a one-on-one consultation about their commute options;
 - a written commitment card for those willing to try alternate modes – signing has shown to have a strong impact on behavior change
- Design and actively maintain an "Optimize Your Commute" employee web page that is clearly posted. The page will include:
 - A clear and compelling company culture statement citing the positive impacts of multi-modal transportation for employees, WEX and the community - emphasis on ease and positive utility of preferred transportation methods.
 - How to access the subsidies, benefits and incentives available to use preferred modes of transportation; emphasizing these options over travelling alone by automobile
 - Instructions for using local public transit options, GO MAINE carpool matching, vRide/Enterprise vanpools, bikeshare and carshare; to include links to various programs and web tools, including the Google Maps (Transit) trip planner and Southern Maine Transit Tracker
 - A multi-modal map identifying:
 - transit stops and routes
 - the walk zone, common walk routes and bike lanes and trails, bicycle parking, links to Google Maps walking and bicycling trip planners and

Marketing

- Transportation orientation for relocated & new employees
- Commute coaching
- *Optimize Your Commute* employee web page & multi-modal map
- Transit screen & TDM kiosk
- Employee recognition
- TDM committee or subcommittee
- Pursue Best Workplaces for Commuters status

Portland Trails; estimated walk and bike times will be provided to emphasize ease and swiftness to encourage these preferred transportation options

- Information on alternate work arrangements and other company TDM policies
- Story sharing, such as employee commuter profiles and the results of staff transportation surveys
- Physically posted information:
 - Broadcast real-time METRO and South Portland bus arrival information – as well as information about other mode options - on a transit screen in the WEX lobby
 - Provide a highly visible and well-maintained travel information kiosk in the lobby with the same content as the employee web page
- Partner with Go Maine and the Bicycle Coalition of Maine to offer all employees “commute coaching” at least once annually
- Regularly recognize employees who use preferred modes through company social media, email, newsletter, bulletin board or other announcements
- Form a company committee or sub-group of an existing company committee – such as a Wellness or Green Team - to advise the site’s TDM work and help with peer-led campaigns that encourage active transportation to work
- Consider pursuing Best Workplaces for Commuters status – a national qualification that no Maine business has yet attained



H. Surveying & Monitoring

Recognizing that the implementation of a TDM Plan is a dynamic process, WEX’s TDM Coordinator will monitor the TDM Plan’s components to assess whether the company is achieving the trip and parking reduction targets listed above. The company will evaluate the value of various subsidies for preferred modes and make improvements. Another important piece will be to determine the flexibility of employees to utilize various travel modes to access the site.

This evaluation will be conducted twice annually during the first two years after WEX opens its new headquarters and once annually thereafter. The data collection and surveys will produce comparable data from year to year and be available

Surveying & Monitoring

- Twice annual surveying & monitoring for 1st two years; once annually thereafter
- Employee surveys
- Parking usage
- Employee use of multi-modal subsidies

for compilation with other sites' travel data by a third party, such as the city. Based upon the results of the monitoring, WEX will update the TDM Plan and submit a draft to the city's TDM Manager for review and comments. The following will be included in the monitoring assessment.

Employee Surveys

The survey will be developed in consultation with the city's TDM manager and conform to overall city TDM modeling and planning. It will include:

- Mode of travel to and from work
- Frequency of use (if any) of alternate work arrangements
- Preferences, barriers or concerns with modes of travel

Parking Usage

WEX will work with Ocean Gateway Garage to produce a summary of monthly parking leases and daily parking usage. This will also be used to assess whether the company can choose to lease fewer spaces.

Transit/Carpool/Vanpool/Bikeshare/Carshare Usage

WEX will track the number of employees utilizing monthly transit passes and multi-ride tickets, carpool and vanpool vouchers, monthly bikeshare memberships (when Portland Bikeshare launches), and usage of company UhaulCarShare account.

I. Project-Specific Infrastructure Improvements

General Contribution to Area Transportation Improvements

Through the state Traffic Movement Permit process, the developer of the WEX site will contribute \$650 per peak morning drive-alone trip to the city for transportation improvements within the commute shed of the project.

Sidewalk Improvements

The developer of the WEX site will rebuild the sidewalks immediately adjacent to the site on Hancock and Thames Streets.

Crossing Improvements

The developer will also make ADA and other improvements to the existing crosswalks at Hancock/Thames and the Ocean Gateway Terminal.



Bicycle Parking

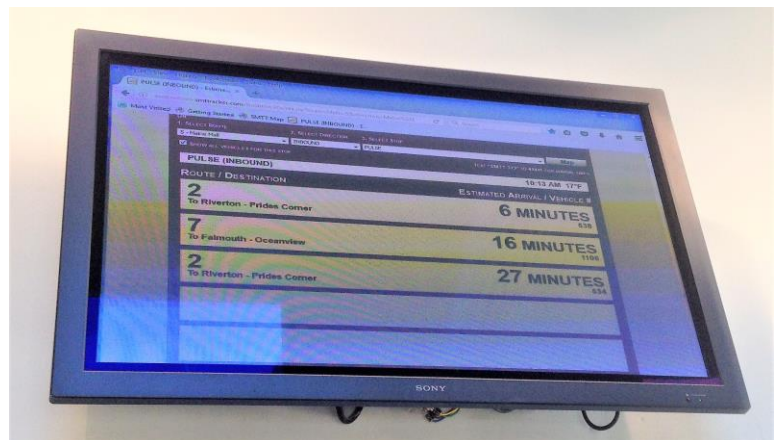
As part of WEX's site plan, eight bicycle racks will be placed near the WEX entry on Hancock Street and six racks will be available on the rear plaza - for a total of 28 bicycles. The company will also lease 6 bike storage lockers at Ocean Gateway garage. In addition, WEX is working to provide secure storage inside the building for larger bicycles and other multi-modal commuting equipment, such as hand carts, car seats, strollers and bike trailers. If demand warrants additional bike parking, WEX will provide it, including exploring additional locker space in the garage.



Bike lockers on 1st floor of Ocean Gateway Garage

Transit Screen & TDM Kiosk

WEX will install a display screen in its downstairs lobby with Southern Maine Transit Tracker information and other transportation options. This will include live bus arrival information for routes near the site – for example, the METRO Crosstown 9A and 9B and Breez stop at India and Congress Street and the three South Portland routes that stop at Fore and Temple. Also in the lobby, and mirroring WEX's transportation web page and marketing via social media, the venue will erect a highly visible and well-maintained travel information kiosk.



Portland, Maine



Yes. Life's good here.

Date: September 28, 2017

Re: Wastewater Capacity Authorization

Address: 0 Thames Street - WEX

Applicant: 0 Hancock Street LLC

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
Existing flow to be removed				
Vacant				0
Proposed flow				
Employees at place of employment with showers – Office	# Employees	450	20 GPD/Employee	9000
Employees at place of employment with no showers – Retail	# Employees	20	12 GPD/Employee	240
Employees at place of employment with no showers – Small Office	# Employees	10	12 GPD/Employee	120
Eating Places - Specialty Food Stand	Square Feet	2500	50 GPD/ 100 SF	1250
Net Change				+ 10,610
*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.

Other comments associated with the design of the project are being presented as part of the development review process.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,
CITY OF PORTLAND

A handwritten signature in dark ink, reading "Bradley A. Roland", is displayed on a light gray rectangular background.

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

Kathi Earley, City Engineer/Engineering Manager, Portland Department of Public Works

Keith Gray, Senior Project Engineer, Portland Department of Public Works

Nancy Gallinaro, Water Resources Manager, Portland Department of Public Works

Rachel Smith, Industrial Pretreatment 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

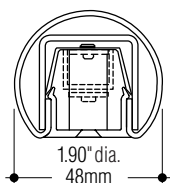
JOB NAME _____

TYPE _____

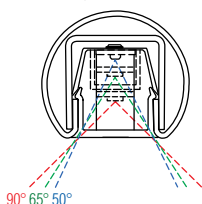
CATALOG NUMBER _____

Formed Stainless Steel

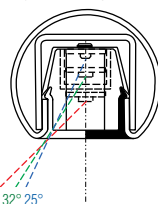
1.90"



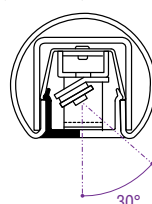
Symmetric



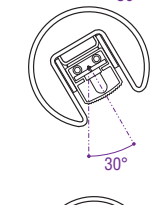
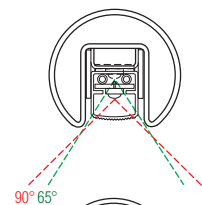
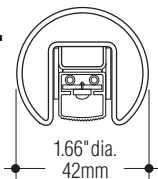
Asymmetric (-ASYM)



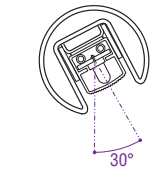
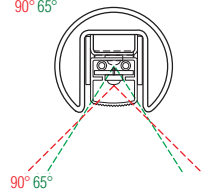
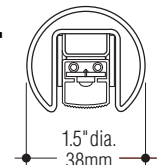
Asymmetric (-ASYM/30°)



1.66"

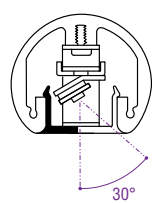
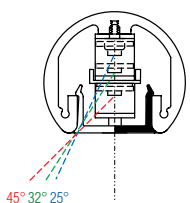
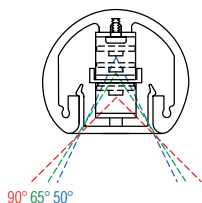
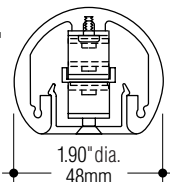


1.50"

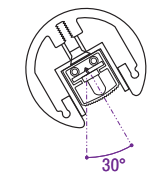
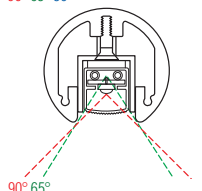
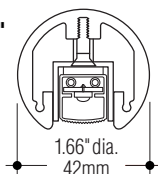


Extruded Aluminum

1.90"



1.66"



Lightrail - LR5

Att. O

Construction

- Available in formed stainless steel with welded and blended joints for a seamless appearance or extruded aluminum
- A high impact extruded acrylic lens snaps into place and is further retained by fasteners at each end
- The flat lens design minimizes visible brightness at sides and is available in clear or frosted
- Each rail is tailored to fit existing stairs, ramps, and walkways
- Aluminum rails supplied with a powder coat or anodized finish
- Stainless steel rails supplied with a #4 satin finish, passivated

Electrical

- LED modules are 24 VDC constant voltage at 2.5 watts and 205 lumens per foot. Available in 3000°K or 4000°K color temperatures. Beam spreads in 50°, 65°, and 90° patterns
- LEDs are configured to allow uninterrupted illumination
- Electrical feed locations are pre-determined at time of submittal
- Universal voltage LED drivers may be integral in the posts or railing (120V only), or may be remote if required
- Dimmable drivers are available upon request

How to Specify

Every Lightrail is custom designed and fabricated to your specific project conditions. Drawings will be submitted on each project requesting specific dimensions to assure proper fit. Plans and elevation drawings are required for pricing and submittal drawing production.

1. Submit catalog number, options, and voltage; (example: LR5P-LED-SS/1.9-INT-RE-277).
2. Add special features and requirements necessary to complete specification.

Catalog Number	Stainless Steel (-SS)	Aluminum (-AL)
Post mounted, integral driver	☐ LR5P-LED-SS/*-INT	☐ LR5P-LED-AL/*-INT
Post mounted, remote driver	☐ LR5P-LED-SS/*-REM	☐ LR5P-LED-AL/*-REM
Wall mounted, integral driver**	☐ LR5W-LED-SS/1.9-INT	☐ LR5W-LED-AL/1.9-INT
Wall mounted, remote driver	☐ LR5W-LED-SS/*-REM	☐ LR5W-LED-AL/*-REM

* Insert choice of rail diameter after slash, 1.9", 1.66" or 1.5"

** Limited driver capacity allows for only 1.9" rail choice.

Options

Ends: Add suffix. Radius ☐ -RE. Loop ☐ -LE.

Miter ☐ -ME. Stub ☐ -SE.

Baseplate: 5" x 5" x 3/8" (Aluminum)

5" x 5" x 3/16" (Stainless Steel) baseplate with four 5/8" holes. Add suffix ☐ -BP.

Escutcheon: Add suffix ☐ -ES.

Frosted lens: (clear diffuser std.). Add suffix ☐ -FL.

Curved rail: Consult with factory. Add suffix ☐ -CRV.

Emergency battery: Provides up to 90 min. operation for both LED and fluorescent models (remote only). Add suffix ☐ -EM.

Asymmetric distribution: One side blocked (not available on Prolume models). Add suffix ☐ -ASYM. 30° tilt. Add suffix ☐ -ASYM/30°

4000°K Color temperature: (3000°K std.).

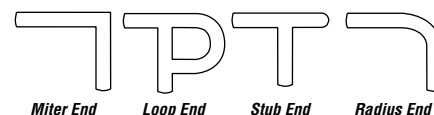
Add suffix ☐ -4K.

Beam spread: (90° std.). 65°, Add suffix ☐ -65. 50°, Add suffix ☐ -50. (1.9" rails only)

Dimming: Universal voltage 0-10V driver. Add suffix ☐ -DIM.

Color: FWC Turtle compliant, 590 nm, Amber. Add suffix ☐ -AMB.

End Treatments

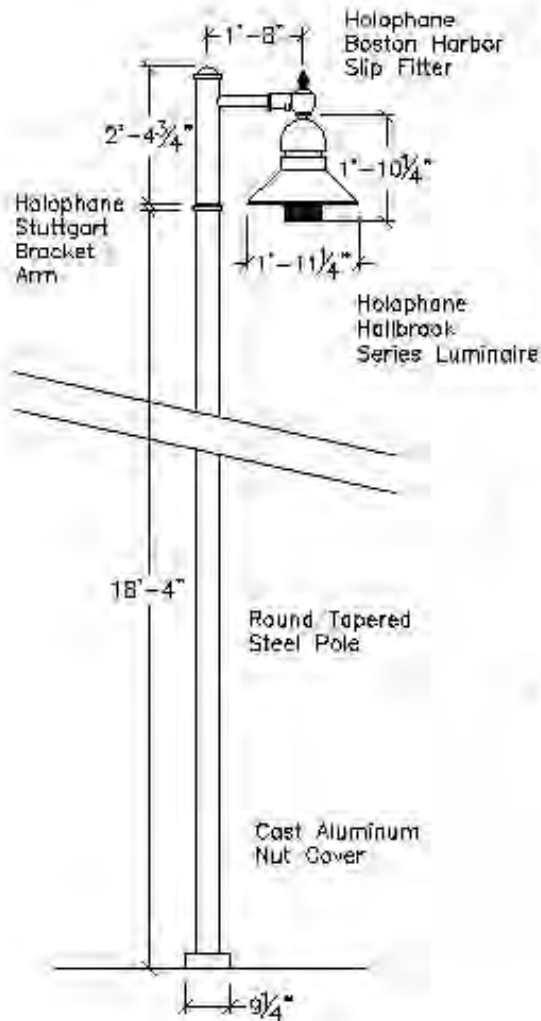


COLE
Lighting

www.colelighting.com

C.W. Cole & Company, Inc.
2560 N. Rosemead Blvd.
South El Monte, CA
91733-1593

T: (626) 443-2473
F: (626) 443-9253

**LUMINAIRE**

Halophane Lighting model 180430505ST4
Luminaire shall be furnished and installed by The Central Maine Power Company under the municipal lease agreement for street lighting.
Luminaire shall black.

LAMP

Halophane Lighting model S-M250/U 84457
Vertical mounted, 250 watt mogul base clear metal halide lamp.

TOP BRACKET ARM

Valmont model 1HT9QH30X30" LONG 317RB405
Steel Crossarm with a post-top fitting for a 2-3/8" by 6" tenon.
Bracket arm shall be black.

SLIP FITTER

Halophane Lighting model BHLF/200-SCA/BK
2-3/8" O.D. with swivel cast fitter.
Slip fitter shall be black.

LIGHTING POLE

Valmont model 1804-30505T4-BK
Tapered steel pole shaft rated for a 90mph wind load with a 1.3 gust factor. Provide four hot-dipped galvanized steel L-type anchor bolts.
Lighting pole shall be hot dipped galvanized prior powder coat paint, black.

APPLICATION

Street/Sidewalk lighting for two-way streets with parking on both sides.
Suggested layout:

90-125 ft on center (one side only)
175-225 ft on center (staggered pattern both sides)

LED**City of Portland, Maine**

Street & Sidewalk Lighting
COMMERCIAL STREET DISTRICT
Street Lighting Pole

Sheet 1 of 1

10/26/05

DATE:
AUGUST 2009

CITY OF PORTLAND, MAINE
TECHNICAL STANDARDS MANUAL

**MUNICIPAL STREET
LIGHTING STANDARDS**
SECTION X

FIGURE:

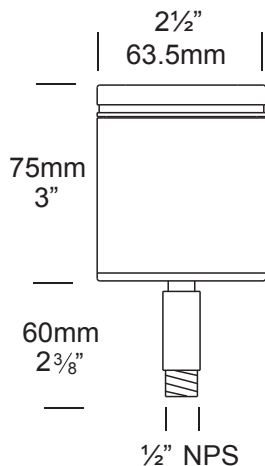
REVISED:

**COMMERCIAL STREET DISTRICT LIGHTING
POLE- W. COMMERCIAL ST**

X-6B

NPS Spot PURE LED

Cat. No. NPS/L



PURE LED
Pure Performance

The NPS Spot PURE LED is ideal for illuminating bushes and trees from ground level. The luminaire has been designed with a threaded 1/2" NPS base which can be easily fixed to a Hunza Super Spike ground stake, Hunza Tree Mount Kit or any 1/2" NPS fitting. It has a fully adjustable head allowing 360° rotation and 0-90° elevation.

The luminaire is machined from a choice of 10mm solid aluminium with a UV stable powder coated finish, solid copper or 316 stainless steel with a clear, tempered, flush glass lens and high temperature silicon gaskets.

The Hunza PURE LED system uses Cree MTG-2 chip for maximum performance and long life. Power supply options include a choice of 12 volt integral or a remote (series connection) driver. The PURE LED system incorporates HUNZA's Plug-and-Play system for easy replacement of either the LED engine or integral driver in the field. Four beam angles, and a choice of a Warm or Cool White colour temperatures are available.

*At 700mA this fitting is the equivalent of a 35w halogen fitting.

*At 1050mA this fitting is the equivalent of a 50w halogen fitting.

Ordering Information

Luminaire	Driver mA	Beam Angle	Colour Temp	Accessories	Material/Finish
NPS/L	S - Series D3 - 12v/350mA D7 - 12v/700mA D10 - 12v/1050mA	15 - 15° TIR Lens 25 - 25° TIR Lens 38 - 38° Reflector 60 - 60° Reflector	2 - 2700K 3 - 3000K 4 - 4000K 39 - 3000K (90+ CRI)	STEPF - Frosted Lens GG - Glare Guard HCL - Hex Cell Louvre SSP/ G - Hunza Super Spike SSP/T - Hunza Tree Mount Kit SSP/TS - Hunza Tree Mount Rubber Strap Kit	BK - Black BZ - Bronze GRN - Green STAR - Silver Star WH - White WB - White Birch DG - Dark Grey OG - Olive Green RG - Beige PR - Primrose COP - Copper SS - 316 Stainless

Ordering Example: NPS/L S 15 3 CJK150 BK

HUNZA™ PURE
OUTDOOR
LIGHTING

HUNZA FACTORY
130 Felton Mathew Ave
Saint Johns
Auckland 1072
New Zealand

Ph: 64-9-528 9471
Fax: 64-9-528 9361
hunza@hunza.co.nz
www.hunza.co.nz

INTERNATIONAL CONTACTS:
www.hunza.co.nz/contacts.php

Specifications may change without notice.
Manufactured in New Zealand.
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Luminaire Construction

CNC machined from one of the following metals:

High corrosion resistant 63.5mm (2½") x 10mm (25/64") aluminium. End cap - solid aluminium 63.5mm (2½") rod, with chromate substrate and high UV resistant polyester powder coat

Colours Black, Bronze, Green, Silver Star, White, Birch, Dark Green, Olive Green, Beige, Primrose.

Copper 63.5mm (2½") x 10mm (13/32"). End cap - solid copper 63.5mm (2½") rod.

316 Stainless Steel 9mm (11/32"). End cap - solid 316 stainless steel 63.5mm (2½") rod.

Luminaire Weight

Alum .450kg (15oz)

Cop 1.250kg (2lb 12oz)

SS .960kg (2lb 1oz)

Luminaire Features

Lens:

10mm (3/8") thick frosted Borosilicate dome glass. Lifetime Warranty.

Gaskets:

Silicone, iron impregnated 220°C (428°F).

Accessories:

Frosted Lens (Cat. STEPF) Glare Guard (Cat. GG)

Hex Cell Louvre (Cat. HCL)

Hunza Super Spike (Cat. SSP/G)

Hunza Tree Mount Kit

(Cat. SSP/T)

Hunza Tree Mount Kit Rubber Strap (Cat. SSP/TS)

Swivel:

Aluminium and Copper luminaires - 360° rotation and 0-90° elevation, solid brass with anti rust spring.

Stainless Steel luminaires - 360° rotation and 0-90° elevation, full stainless steel construction.

Technical Information

Standards

AS/NZS 61046

IP67 UL 1838

LED

Cree MTG-2 Plug and Play, field replaceable LED board.

Lumen Output: 600 at 1050mA

Lumens Per watt: 100 lm at 6W

CRI Warm White (3000k): 85+

Colour Temp: 2700K, 3000K and 4000K

High CRI Option (3000K): 90+ (lumen output decreases by 15%)

Power Supply

Series (External) Driver

Constant current driver

Output: 6vdc at 1050mA maximum

Integral 12 Volt Driver

Hunza™ Plug and Play Driver

Input: 12vac, 7 watt total

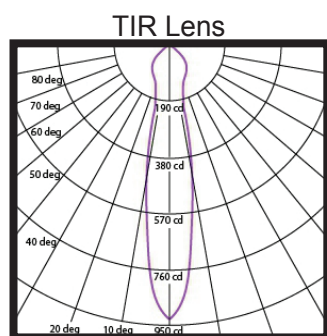
Output: 6vdc nominal, 350 / 700 / 1005mA (1050mA limited ≤ 40°

Ambient temperature in Stainless Steel)

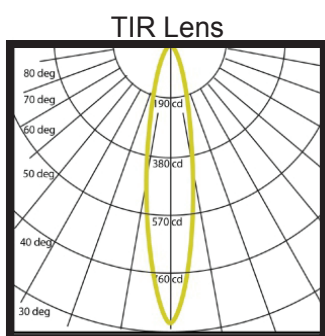
Transformer

Hunza™ Wall Mount Transformer for use with integral 12 volt driver

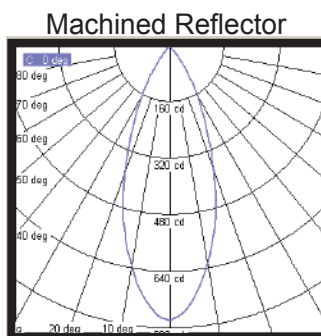
Reflector Beam Angles



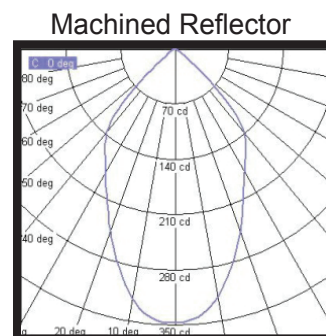
15° Angle
3000 K



25° Angle
3000 K



38° Angle
3000 K



60° Angle
3000 K

Type:
Job:
Catalog number:

Approvals:

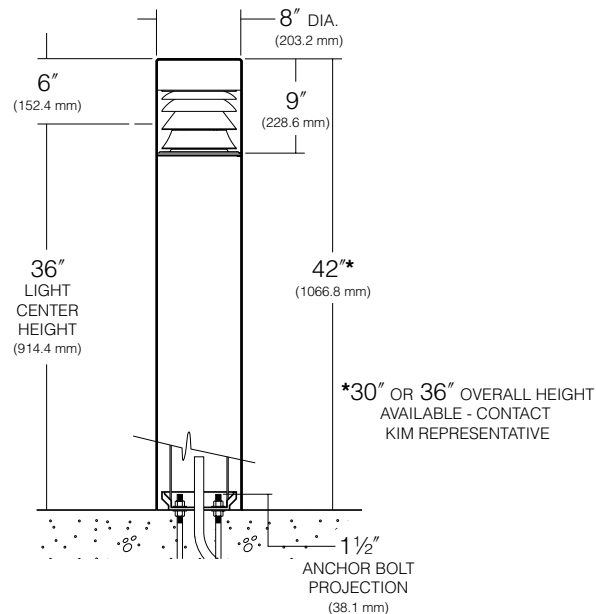
B30	/	/	/
Fixture	Electrical Module	Top Cap and Shaft Finish	Options
See page 2		See page 3	

Date:
Page: 1 of 4

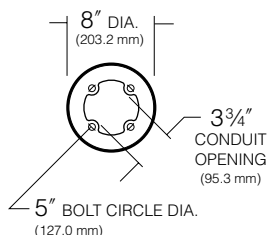
Specifications

B30 LED

Maximum weight: 30 lb.



BASE PLAN B30



Top Cap: One-piece heavy gauge spun aluminum retained by two countersunk captive socket head fasteners, braced at outer edges by optical assembly. 3/4" thick insulation provided above lamp.

Plastic Enclosure: High grade, high temperature acrylic, optically clear, 1/4" nominal wall, one-piece injection molded retained in an unstressed position by internal support through reflector assembly.

Optical Assembly: Precision hydroformed optical louvers with specular Alzak® finish, removable as a one-piece self-contained unit.

Shaft: One-piece, extruded, wall thickness, .125" with heavy cast aluminum twist-lock anchor base concealed within post. Post locks to base with (2) 3/8" stainless steel cone point set screws.

Gasketing: Fixture is silicone gasketed for weathertight operation.

Electronic Module: All electrical components are either UL or ETL recognized, mounted on a single plate and factory prewired with quick disconnect plugs. Driver is rated for -40°F starting and has a 0-10V dimming interface for multi-level illumination options.

Optical Module: Each LED equipped with a directional optic for maximum beam angle projecting through louver stack spacings. LED boards to be mounted to an anodized inter-locking heat sink extrusion. 20-LED total. Available in 580nm Amber, 3000K, 4200K and 5100K color temperatures.

Anchor Bolts: Four 3/8" x 10" + 2" zinc electro-plated L-hook anchor bolts, each with two nuts and washers and a rigid pressboard template.

Finish: Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat finish. Standard colors include (BL) Black, (DB) Dark Bronze, (WH) White, (PS) Platinum Silver, (SG) Stealth Gray, (LG) Light Gray, and (CC) Custom Color (Include RAL#).

Listed to: UL 1598 Standard for Luminaires - UL 8750 Standard for Safety for Light Emitting Diode (LED) Equipment for use in Lighting Products and CSA C22.2#250.0 Luminaires. RoHS compliant. Meets Buy American provisions within ARRA.

Warranty: Kim Lighting warrants Bollard LED products sold by Kim Lighting to be free from defects in material and workmanship for (i) a period of five (5) years for metal parts, (ii) a period of five (5) years for exterior housing paint finish(s), (iii) a period of five (5) years for LED Light Engines and, (iv) a period of five (5) years for LED power components (driver, surge protector and LifeShield® device), from the date of sale of such goods to the buyer as specified in Kim Lighting shipment documents for each product.

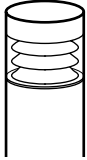
CAUTION: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

KIM LIGHTING RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE

Type:

Job:

Page: 2 of 4



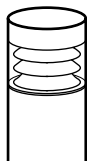
Standard Features

Fixture	Cat. No. B30 High Performance Bollard, 8" Round
Electrical Module LED = Light Emitting Diode	Cat. Nos. for LED Electrical Modules available: xL Source: ☐ 10L = 10 LED (IES Type I) ☐ 15L = 15 LED (IES Type III) ☐ 20L = 20 LED (IES Type V) xK Color Temperature: ☐ 2K = 580nm - Amber ☐ 3K = 3000K ☐ 4K = 4200K ☐ 5K = 5100K UV Voltage: ☐ UV Universal Voltage shall range from 120V-277V
Luminaire Finish TGIC powder coat paint on fixture and shaft.	Color: Black Dark Bronze Light Gray Stealth Gray Platinum Silver White Custom Color Cat. No.: ☐ BL ☐ DB ☐ LG ☐ SG ☐ PS ☐ WH ☐ CC *Custom colors subject to additional charges, minimum quantities and extended lead times. Consult representative. Custom color description: _____
0-10V Dimming Interface	Driver has a 0-10V dimming interface with a dimming range of 10-100%. Is compatible with most control systems including Hubbell Building Automation wiHUBB™. Approved dimmers include Lutron Diva AVTV, Lutron Nova NFTV and NTFTV. Note: Not compatible with current sourcing dimmers. Controls compatible via Gray and Purple dimming lead. Standard Input Black (+) White (-) Green (GND) Gray Dimming Lead (-) Purple Dimming Lead (+) ← 30 mA Max

Type:

Job:

Page: 3 of 4

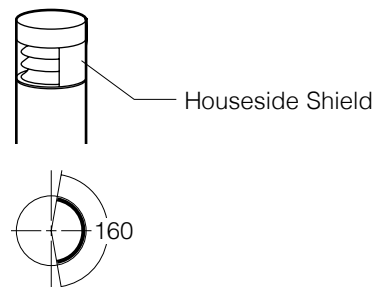


Optional Features

Houseside Shield

 Cat. No. ☐ **HS**
☐ **No Option**

Eliminates backlight in unwanted areas such as adjacent property, or wherever an asymmetric light distribution is desired. Constructed of sheet aluminum covering a 160° arc. Finished to match the fixture. Shield is fully adjustable about a 360° rotation. Consult Kim representative.



Polycarbonate Enclosure

 Cat. No. ☐ **LC**
☐ **No Option**

Clear Polycarbonate

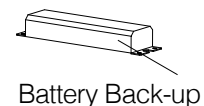
CAUTION: Use only when vandalism is anticipated to be high. Useful life is limited due to yellowing caused by UV from sunlight.



Battery Back-up

 Cat. No. ☐ **EM**
☐ **No Option**

Internal battery pack provides 90 minutes of supplemental light at 50% of initial lamp lumens.



Optional Duplex Receptacle

 Cat. No. ☐ **DR**
☐ **DR-GFI**
☐ **No Option**

Mounted 18" from bottom of shaft, in a cast aluminum box that is internally welded and sealed with a gasketed While-In-Use cover with locking tab. Painted to match bollard.

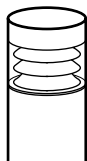
DR weather proof duplex receptacle rated 20A, 125V.

DR-GFI weather proof duplex receptacle with ground fault circuit interrupter rated 20A, 125V.

Type:

Job:

Page: 4 of 4



Lumen Data

Spectroradiometric			
	3000K Average	4200K Average	5100K Average
Correlated Color Temp. CCT (K)	2800K - 3175K	3800K - 4600K	4600K - 5600K
Color Rendering Index (CRI)	≥75	≥70	≥65
Power Factor	>.90	>.90	>.90

Projected Lumen Maintenance		
mA	50,000 hrs	100,000 hrs
350mA	N/A	N/A

Based on 20LED version.

Electrical Drive Current - @350mA						
Volts - AC	Type 1		Type 3		Type 5	
	Amps - AC	System Watts	Amps - AC	System Watts	Amps - AC	System Watts
120	0.11	13	0.16	19	0.21	25
208	0.06	13	0.09	19	0.12	25
240	0.05	13	0.08	19	0.10	25
277	0.05	13	0.07	19	0.09	25

B.U.G. Rating (TM15) in Lumens where B = Backlight, U = Uplight, G = Glare			
Temperature	TYPE 1	TYPE 3	TYPE 5
3000K	B0 U2 G1	B0 U2 G1	B1 U2 G1
4200K	B0 U2 G1	B0 U2 G1	B1 U2 G1
5100K	B0 U2 G1	B0 U2 G1	B1 U2 G1

Absolute Lumens			
Temperature	TYPE 1	TYPE 3	TYPE 5
3000K	344	506	708
4200K	425	625	873
5100K	467	686	959

LED performance and lumen output continues to improve at a rapid pace. Log onto www.kimlighting.com to download the most current photometric files from Kim Lighting's IES File Library. For custom optics and color temperature configurations, contact factory.

VIPER S SERIES

SMALL VIPER LUMINAIRE

Cat.#

Job

Type

Approvals



SPECIFICATIONS

Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

Construction:

- Manufactured with die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

Electrical:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is $\geq .90$ at full load.
- All electrical components are rated at 50,000 hours at full load and 25°C ambient conditions per MIL- 217F Notice 2.
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher.
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.
- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- The housing is designed for an optional twist lock photo control receptacle.
- Ambient operating temperature -40°C to 40°C
- Surge protection - 20KA.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night (see www.beaconproducts.com/products/energeni).
- In addition, Viper can be specified with SiteSync™ wireless control system for reduction in energy and maintenance cost while optimizing light quality 24/7. See ordering information or visit www.hubbelllighting.com/sitesync for more details.

Installation:

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included.

Finish:

- IFS polyester powder-coat electro-statically applied and thermocured.
- IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermosetsuper TGIC polyester powder coat finish.
- The finish meets the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

Listings:

- DesignLights Consortium (DLC) qualified, consult DLC website for more details: <http://www.designlights.org/QPL>
- Certified to UL 1598 and CSA C22.2 No.250.0
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: <http://www.beaconproducts.com/products/vipersmall>

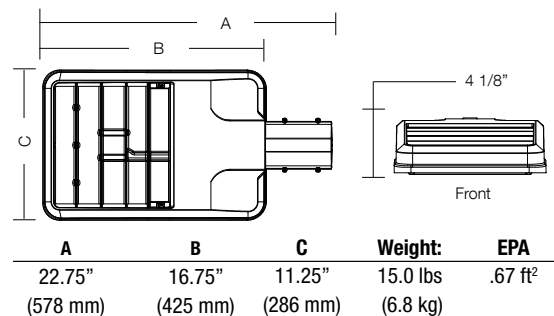
Warranty:

Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

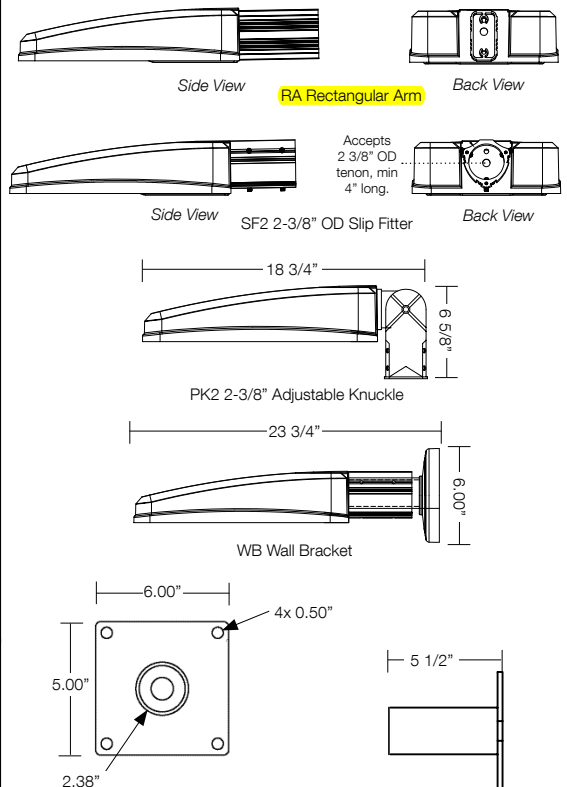
PRODUCT IMAGE(S)



DIMENSIONS



MOUNTING OPTIONS



CERTIFICATIONS/LISTINGS



*3000K and warmer CCTs only



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ORDERING INFORMATION ORDERING EXAMPLE: VPS/36NB-80/5K/T4/UNV/PCR-TL/SWP/BLC/RA/BBT

VPS									
SERIES	ENGINE-WATTS	LED COLOR ³	VOLTAGE	ELECTRICAL OPTIONS	HOUSE SIDE SHIELD OPTIONS	FINISH			
VPS viper-small	24NB-55 55W, LED array	3K 3000K	UNV 120-277V	PCR-TL Twist lock receptacle with photo control	BLC³ backlight control	BBT basic black textured			
	30NB-70⁹ 70W, LED array	4K 4000K	347V 347V	PCR-SC Twist lock receptacle with shorting cap		BMT black matte textured			
	36NB-80 80W, LED array	5K 5000K	480V 480V	PCR-U Twist lock receptacle	BIRD DETERRENT BSP bird spike	WHT white textured			
	48NB-110 110W, LED array			2PF⁷ dual power feed		MBT metallic bronze textured			
	60NB-136 136W, LED array					BZT bronze textured			
						DBT dark bronze textured			
						GYS gray smooth			
						DPS dark platinum smooth			
						GNT green textured			
						MST metallic silver textured			
						MTT metallic titanium textured			
						OWI old world iron			
						RAL _____			

Pole mounted fixtures. Mounting height 12 feet.

¹ Must specify group and zone information at time of order. See www.hubbellighting.com/controls/sitesync for further details.
² Specify time delay, dimming level and mounting height.
³ T4 optic only.
⁴ To rotate optics Left or right 90 degrees, specify L or R after the optical distribution example T4L.
⁵ Not available with other wireless control or sensor options.
⁶ When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.
⁷ Not available for 347V or 480V input.
⁸ This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Viper_Small_LED_turtle_spec_sheet.pdf
⁹ Not available with SWP and SWPM SiteSync options

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.HubbellLighting.com/products/sitesync or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-S/24NB-55/5K/T3/UNV/SWP/RA/DBT SiteSync only
 VP-S/24NB-55/5K/T3/UNV/SWPM-20F/RA/DBT SiteSync with Motion Control

MDD ORDERING INFORMATION: When ordering a fixture with the motion detection option (MDD), please specify the appropriate information. These settings are specified in the ordering as shown in the example below.

VP-S/24NB-55/5K/T3/UNV/MDD - 1 to 30 min. - 33% or 50% - ?? / RA/DBT
 High to Dim Delay Low Level Mounting Height (ft.)

Accessories and Services (Ordered Separately)

Catalog Number	Description
SWUSB*	SiteSync loaded on USB flash drive (Windows based only)
SWTAB*	SiteSync Windows Tablet
SWBRG*	SiteSync Wireless Bridge Node

*When ordering with SiteSync, one of the following interface options must be chosen and ordered separately. Each option contains the SiteSync License, GUI and Bridge Node.
 + If needed, an additional Bridge Node can be ordered.



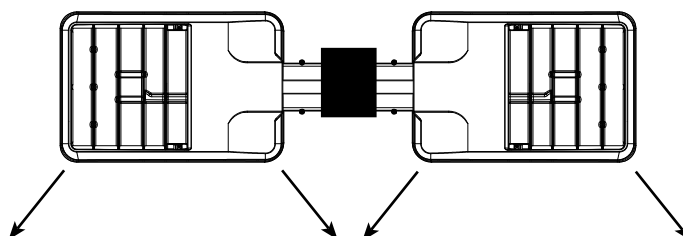
DesignLights Consortium qualified.
 Consult DLC website for more details:
<http://www.designlights.org/QPL>



SiteSync Lighting Control is available from our most popular brands in a broad range of award-winning product families.

LEFT ROTATED OPTIC

RIGHT ROTATED OPTIC



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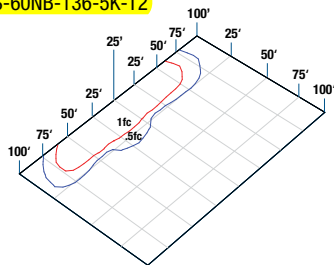
PERFORMANCE DATA

# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G
24	700 mA	55 W	FR/T1	6339	114	1	0	1	6276	112	1	0	1	5389	97	1	0	1
			T2	5666	102	2	0	2	5610	101	2	0	2	4816	86	1	0	2
			T3	5610	101	1	0	2	5554	100	1	0	2	4784	86	1	0	2
			T4	6171	111	1	0	2	6110	109	1	0	2	5245	94	1	0	2
			T5R	6283	113	3	0	3	6221	111	3	0	3	5341	96	3	0	3
			T5QM	6171	111	3	0	1	6110	109	3	0	1	5245	94	2	0	1
			T5W	6087	109	3	0	1	6027	108	3	0	1	5201	93	3	0	1
30	700 mA	70 W	FR/T1	8096	113	1	0	1	8016	112	1	0	1	6882	96	1	0	1
			T2	7204	101	2	0	2	7133	100	2	0	2	6123	86	2	0	2
			T3	7743	108	2	0	2	7666	107	2	0	2	6659	93	2	0	2
			T4	7896	111	1	0	2	7817	110	1	0	2	6791	95	1	0	2
			T5R	8035	112	3	0	3	7954	111	3	0	3	6829	95	3	0	3
			T5QM	7846	110	3	0	1	7768	109	3	0	1	6669	93	3	0	1
			T5W	8305	116	3	0	2	8222	115	3	0	2	7142	100	3	0	2
36	700 mA	80 W	FR/T1	9515	114	1	0	1	9414	112	1	0	1	8083	96	1	0	1
			T2	8505	101	2	0	3	8415	100	2	0	3	7224	87	2	0	2
			T3	8415	100	2	0	2	8331	99	2	0	2	7175	86	2	0	2
			T4	9256	110	1	0	3	9164	109	1	0	3	7868	94	1	0	3
			T5R	9425	112	3	0	3	9331	111	3	0	3	8011	96	3	0	3
			T5QM	9257	110	3	0	1	9164	109	3	0	1	7868	94	3	0	1
			T5W	9131	109	3	0	2	9040	108	3	0	2	7801	93	3	0	2
48	700 mA	110 W	FR/T1	12679	114	2	0	1	15522	113	2	0	1	10777	97	1	0	1
			T2	11332	102	3	0	3	11220	101	3	0	3	9633	87	2	0	3
			T3	11220	101	2	0	3	11108	100	2	0	3	9567	86	2	0	3
			T4	12342	111	2	0	3	12219	110	2	0	3	10491	95	2	0	3
			T5R	12567	113	4	0	4	12441	112	4	0	4	10682	96	3	0	3
			T5QM	12342	111	3	0	2	12219	111	3	0	2	10491	95	3	0	2
			T5W	12175	110	4	0	2	12053	109	4	0	2	10402	94	4	0	2
60	700 mA	136 W	FR/T1	15848	116	2	0	1	15690	115	2	0	1	13471	98	2	0	1
			T2	14165	103	3	0	3	14025	102	3	0	3	12041	88	3	0	3
			T3	14025	102	3	0	3	13885	101	3	0	3	11959	87	3	0	3
			T4	15427	113	2	0	3	15274	111	2	0	3	13114	96	2	0	3
			T5R	15708	115	4	0	4	15259	111	4	0	4	13352	97	4	0	4
			T5QM	15427	113	4	0	2	15274	111	4	0	2	13314	96	3	0	2
			T5W	15218	111	4	0	2	15066	111	4	0	2	13002	95	4	0	2

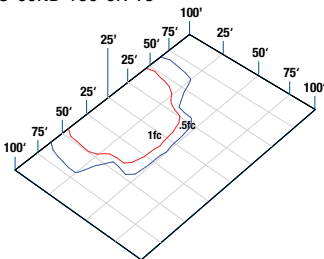
¹Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

PHOTOMETRICS

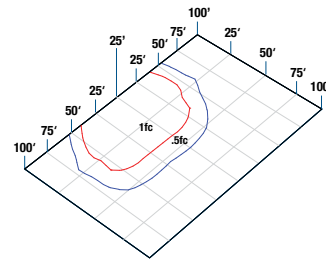
Type II
VP-S-60NB-136-5K-T2



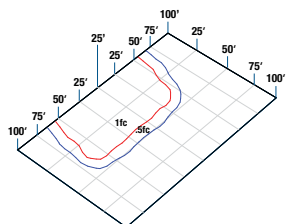
Type III
VP-S-60NB-136-5K-T3



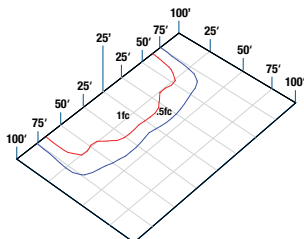
Type IV
VP-S-60NB-136-5K-T4



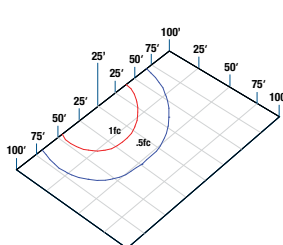
Type V Square Medium
VP-S-60NB-136-5K-T5QM



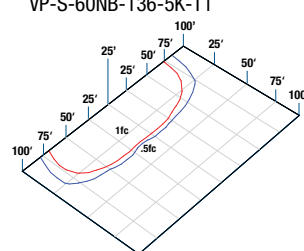
Type V Rectangular
VP-S-60NB-136-5K-T5R



Type V Round Wide
VP-S-60NB-136-5K-T5W



Front Row Auto Optic / Type I
VP-S-60NB-136-5K-FR
VP-S-60NB-136-5K-T1



ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	2	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
			120		0.6
30	2	700 mA	277	70	0.3
			347		0.2
			480		0.1
			120		0.7
			277		0.3
36	1	700 mA	347	80	0.2
			480		0.2
			120		0.9
			277		0.4
			347		0.3
48	1	700 mA	480	110	0.2
			120		1.1
			277		0.5
			347		0.4
			480		0.3
60	1	700 mA	120	136	0.5
			277		0.4
			347		0.4
			480		0.3

PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.95	0.92	>470,000

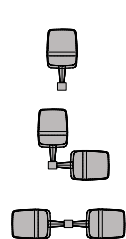
¹ Projected per IESNA TM-21-11

Data references the extrapolated performance projections for the base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

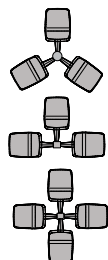
AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	0.98
40°C	104°F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

EPA

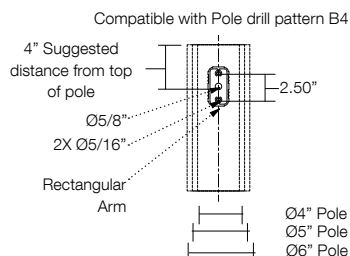


Config.	EPA
1	.67
2 @ 90°	1.06
2 @ 180°	1.34



Config.	EPA
3 @ 120°	1.68
3 @ 90°	1.73
4 @ 90°	2.12

DRILL PATTERN



ID+ 3.5"

LED DOWNLIGHT



clear diffuse



warm diffuse



white painted
flange



black painted



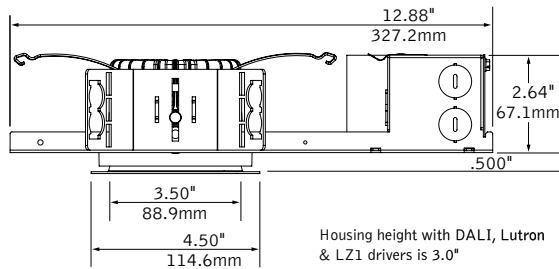
white painted



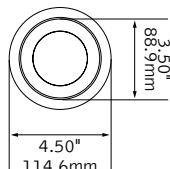
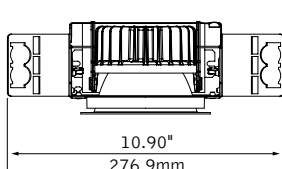
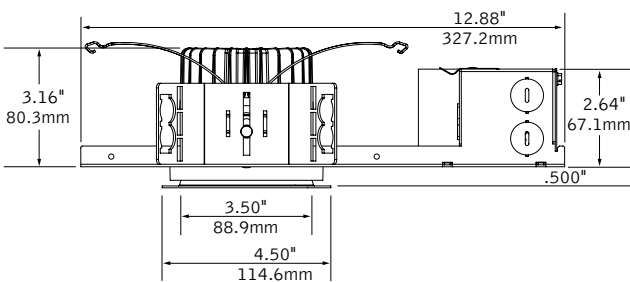
trimless
companion

DIMENSIONAL DATA

60° cut-off reflector



50° cut-off reflector



FEATURES

Less than 2.64" low profile housing available.

ChromaSure: Color consistency resulting in a 2-step MacAdam ellipse across the entire ID+ product line.

Field adjustability of ceiling thickness from 0.5" - 1.5".

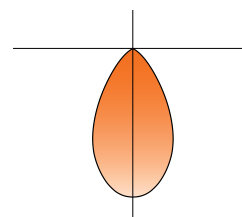
50° cut-off and 60° cut-off reflector options available.

Selection of dimming drivers available.

PERFORMANCE

PRODUCT OVERVIEW

Lumen Output:	700-1500Lm
Wattage:	8-19W
LPW:	78-87
SDCM:	2



Short 60° Cut-off, Narrow
Flood, White Reflector,
3500K

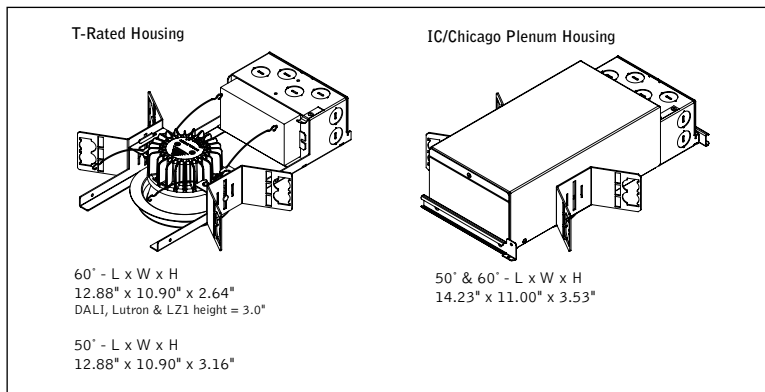
Delivered Lumens: 1500lm
Total System Watts: 19W

Photometric performance is measured in accordance with IESNA LM-79.
Visit focalpointlights.com for complete photometric data. Visit energystar.gov for model specifics.

fixture:

project:

HOUSING DETAILS



HOUSING SPECIFICATIONS

Construction

Thermally protected housing for new construction applications. Insulation to be kept 3" away from housing. Type IC inherently protected, suitable for direct contact with insulation. Restrictive airflow per ASTM-E283. Butterfly brackets allow mounting to ½ emt. Order bar hangers as an accessory. Die-cast aluminum heat sink designed for maximum thermal dissipation. Die-formed housing and integral junction box with (7) ½" pry outs. Accommodates ceiling thicknesses up to 0.5" standard, field adjustable up to 1.5" thickness. For thicker ceiling consult factory. Fixture will not exceed 5 lb.

Electrical

Choice of constant current dimming drivers. Power factor > .9 typical.

Emergency

Emergency Battery Pack: Bodine BSL17C-C2. Emergency output —7W for 90 minutes. Maximum mounting height: 21.4ft.

Labels

UL and cUL listed. Suitable for Dry, Damp or Wet Locations, indoor use only.

Lumen Maintenance

Reported: L70 at >55,000 hours Calculated: L70 at 420,000 hours
L90 at >55,000 hours L90 at 109,000 hours

Derived from EPA TM-21 calculator. Based on typical conditions, consult factory for additional data.

Reliability

At Focal Point, our products are designed to stand the test of time. Each luminaire is engineered using superior components, manufactured with the utmost care and rigorously tested. Contact us for reliability data.

Warranty

LED System rated for operation in ambient environments up to 25°C. 5-year limited warranty.

TRIM & LED SPECIFICATIONS

LED System

Proprietary array incorporates premium LEDs on a robust platform. May be specified in 2700K, 3000K, 3500K or 4000K, CRI>80 or >90. Color accuracy within 2 SDCM. Aluminum heat sink provides appropriate thermal management.

Aesthetics

Parabolic reflector cone ensures glare free optics. Reflector is .050 spun aluminum. Trims are self-flanged. Non-painted trim matches reflector finish. Painted flange may also be specified.

Optics

50-degree or 60-degree cut-off to light source and its image.

PERFORMANCE CHART—SHORT 60° CUT-OFF

Delivered Lumens	System Watts	LPW
700	8	83
900	10	86
1100	13	87
1300	16	81
1500	19	78

Based on Trimless, 3500K, 80CRI, Wide Flood, Clear Diffuse. See page 3 for lumen performance multipliers. Lumen output may vary +/- 5%. Actual wattage may vary +/- 5%.

HOUSING ORDERING

Housing Series	FLC3D
ID+ 3.5" Round	FLC3D
Trim Type	RO
Round Overlap	RO
Lumen Output	
700 Lumen	700L
900 Lumen	900L
1100 Lumen	1100L
1300 Lumen	1300L
1500 Lumen	1500L
Voltage	
120V	120
277V	277
Control System & Dimming Level	
0-10V - 0% Dimming	LZ1
0-10V - 1% Dimming	L11
0-10V - 10% Dimming	LD1
Forward Phase	LFP
(120V only. 900 & 1300 Lumens only.)	
Lutron Hi-Lume EcoSystem (LDE1) - 1% Dimming	LH1
(700 & 1500 lumens not available.)	
Lutron 5-Series EcoSystem (LDE5) - 5% Dimming	LU5
(1300 Lumens only)	
Lutron Hi-Lume - Forward Phase - 1% Dimming	LTE
(120V only. 1500 lumens not available.)	
DALI - 0% Dimming	DZ1
DALI - 1% Dimming	D11
Housing Type	
IC Rated / Airtight	IC
(Available options: L11 & LD1: 700, 900 & 1100 Lumens. LFP: 900 & 1300 Lumens.)	
Thermally Protected, Non-IC	T
(Housing height = 3.0" for LZ1, L3D, LH1, LTE, LU5, D11 & DZ1)	
Factory Options	
Bar Hangers	BH
Chicago Plenum	CP
Emergency Battery with Remote test switch	EMR
(T-rated housing only. Not available with CP or AT. Above Ceiling Access.)	
TRIM & LED MODULE	
Aperture	LC3
3.5" Round Reflector	LC3
Trim Type	RO
Round Overlap	RO
Lumen Output	
(Trim & housing output must match)	
700 Lumen	700L
900 Lumen	900L
1100 Lumen	1100L
1300 Lumen	1300L
1500 Lumen	1500L
Color Temperature	
2700K, 80+ CRI	27K
2700K, 90+ CRI	927K
3000K, 80+ CRI	30K
3000K, 90+ CRI	930K
3500K, 80+ CRI	35K
3500K, 90+ CRI	935K
4000K, 80+ CRI	40K
4000K, 90+ CRI	940K
Optic	
Tall Cone with 50° cut-off	DNT
Short Cone with 60° cut-off	DNS
Distribution	
Narrow Flood	NFL
Flood	FL
Wide Flood	WFL
Color	
Clear Diffuse	CD
Warm Diffuse	WD
Black	BK
(Black painted flange only)	
White	WH
(White painted flange only)	
Flange Finish	
Non-Painted	NP
(Clear and warm diffuse only)	
Black Painted	BP
White Painted	WP



Options in orange qualify for the Quickship program. 5-day up to 100 pieces. Refer to Quickship Guide for complete details.

LUMEN PERFORMANCE MULTIPLIER CHART - ROUND DOWNLIGHT

Option	Description	Ordering Code	Multiplier
Trim Type	Round Trimless	RT	1.01
	Round Overlap	RO	0.98
Color Temperature	2700K, 80+ CRI	27K	0.93
	2700K, 90+ CRI	927K	0.75
	3000K, 80+ CRI	30K	1.00
	3000K, 90+ CRI	930K	0.81
	3500K, 80+ CRI	35K	1.00
	3500K, 90+ CRI	935K	0.87
	4000K, 80+ CRI	40K	1.00
	4000K, 90+ CRI	940K	0.87
Optic	Tall Cone with 50° cut-off	DNT	0.94
	Short Cone with 60° cut-off	DNS	1.00
Distribution	Narrow Flood	NFL	1.04
	Flood	FL	1.00
	Wide Flood	WFL	1.00
Color	Clear Diffuse	CD	1.00
	Warm Diffuse	WD	0.94
	White	WH	1.13
	Black	BK	0.56

ID+ 3.5"

LED DOWNLIGHT

FLC3D-RO-1100L-120-L11-T/LC3-RO-1100L-35K-DNS-WFL-CD

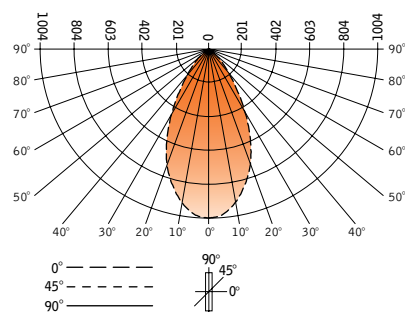
Filename: FLC3DRO1100LRO27KDNSWFLCD.IES

Lumens: 1004lm

System Watts: 11W

LPW: 88

CANDLEPOWER DISTRIBUTION



Vertical Angle	Horizontal Angle	Zonal Lumens
0°	0°	
0°	1096	
5°	1075	101
15°	912	254
25°	644	292
35°	325	205
45°	133	104
55°	43	39
65°	5	7
75°	1	1
85°	0	0
90°	0	0

FOOTCANDLE VALUES

0° aiming angle - horizontal surface

Distance from source	Beam Diameter	Center Beam (FC)
4'	4.3'	68
6'	6.4'	30
8'	8.5'	17
10'	10.6'	11

LUMEN SUMMARY

Zone	Lumens	% Fixture
0-30°	647	64.5
0-40°	852	84.9
0-60°	996	99.2
0-90°	1004	100.0
Total Luminaire	1004	100.0

LUMINANCE DATA (CD/M²)

Vertical Angle	Horizontal Angle
45°	30146
55°	11952
65°	1776
75°	757
85°	374

CO-EFFICIENTS OF UTILIZATION

Floor	80	70	20	30	10	00
Ceiling	50	50	50	50	50	50
Wall	10	10	10	10	10	10
RCR	0	1	2	3	4	5
0	119	119	119	119	119	119
1	113	110	108	105	111	108
2	107	102	98	94	105	100
3	101	94	89	85	99	93
4	96	88	82	77	94	87
5	90	82	75	71	89	81
6	86	76	70	65	84	75
7	81	71	65	61	80	71
8	77	67	61	56	76	66
9	73	63	57	53	72	62
10	70	59	53	49	69	59

Numbers indicate percentage values of reflectivity.

Footcandle results based on AGI32; Reflectances=0/0/0; LLF=1

Go to www.focalpointlights.com for additional photometric data.

ID+ 3.5" x 3.5"

LED WALL WASH



clear diffuse



warm diffuse



titanium silver
flange



black flange



white flange



die-cast black



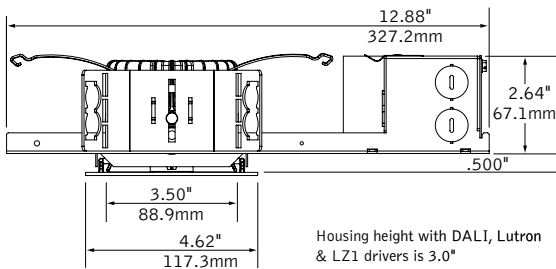
die-cast white



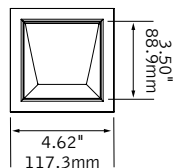
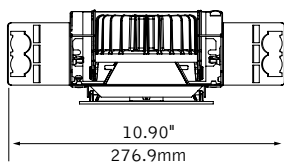
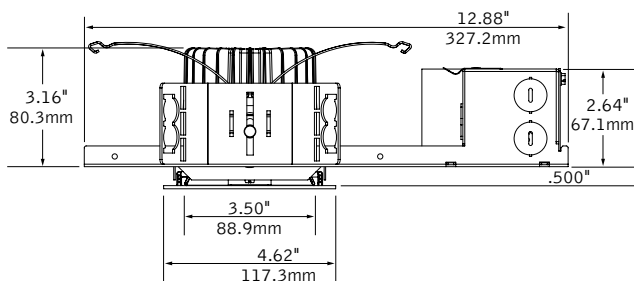
trimless
companion

DIMENSIONAL DATA

60° cut-off reflector



50° cut-off reflector



FEATURES

Less than 2.64" low profile housing available.

ChromaSure: Color consistency resulting in a 2-step MacAdam ellipse across the entire ID+ product line.

Field adjustability of ceiling thickness from 0.5" - 1.5".

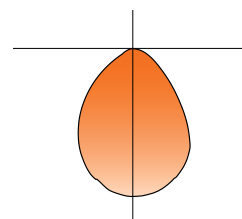
50° cut-off and 60° cut-off reflector options available.

Selection of dimming drivers available.

PERFORMANCE

PRODUCT OVERVIEW

Lumen Output:	700-1500lm
Wattage:	8-17W
LPW:	85-92
SDCM:	2



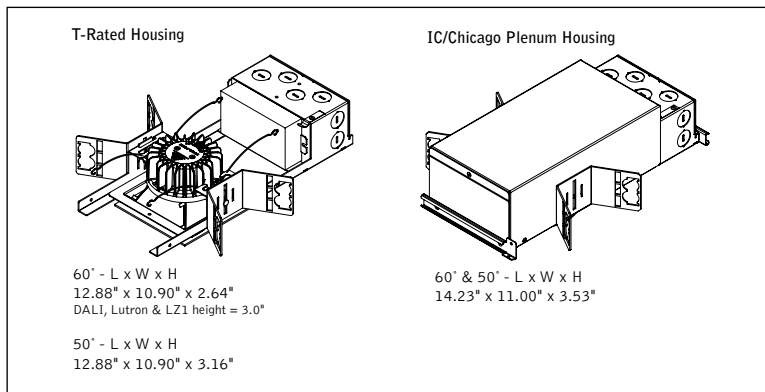
Short 60° Cut-off,
White Reflector, 3500K
Delivered Lumens: 1500lm
Total System Watts: 17W

Photometric performance is measured in accordance with IESNA LM-79.
Visit focalpointlights.com for complete photometric data. Visit energystar.gov for model specifics.

fixture:

project:

HOUSING DETAILS



HOUSING SPECIFICATIONS

Construction

Thermally protected housing for new construction applications. Insulation to be kept 3" away from housing. Type IC inherently protected, suitable for direct contact with insulation. Restrictive airflow per ASTM-E283. Butterfly brackets allow mounting to ½ emt. Order bar hangers as an accessory. Die-cast aluminum heat sink designed for maximum thermal dissipation. Die-formed housing and integral junction box with (7) 1/2" pry outs. Accommodates ceiling thicknesses up to 0.5" standard, field adjustable up to 1.5" thickness. For thicker ceiling consult factory. Fixture will not exceed 5 lb.

Electrical

Choice of constant current dimming drivers. Power factor > .9 typical.

Labels

UL and cUL listed. Suitable for Dry, Damp or Wet Locations, indoor use only.

Lumen Maintenance

Reported: L70 at >55,000 hours Calculated: L70 at 420,000 hours
L90 at >55,000 hours L90 at 109,000 hours
Derived from EPA TM-21 calculator. Based on typical conditions, consult factory for additional data.

Reliability

At Focal Point, our products are designed to stand the test of time. Each luminaire is engineered using superior components, manufactured with the utmost care and rigorously tested. Contact us for reliability data.

Warranty

LED System rated for operation in ambient environments up to 25°C. 5-year limited warranty.

TRIM & LED SPECIFICATIONS

LED System

Proprietary array incorporates premium LEDs on a robust platform. May be specified in 2700K, 3000K, 3500K or 4000K, CRI>80 or >90. Color accuracy within 2 SDCM. Aluminum heat sink provides appropriate thermal management.

Aesthetics

Die-formed aluminum reflector ensures glare free optics. Reflector attaches to die-cast, seamless flange and may be removed for field painting. Full die-cast painted reflectors also available. Torsion springs pull trim tight to the ceiling with no visible fasteners within the trim.

Optics

50-degree or 60-degree cut-off to light source and its image. Wall wash features acrylic diffuser to provide smooth illumination down the wall.

PERFORMANCE CHART—SHORT 60° CUT-OFF

Delivered Lumens	System Watts	LPW
700	8	88
900	10	90
1100	12	92
1300	15	85
1500	17	87

Based on Die-Cast Trimless, 3500K, 80CRI, Wide Flood, White. See page 3 for lumen performance multipliers. Lumen output may vary +/- 5%. Actual wattage may vary +/- 5%.

HOUSING ORDERING

Housing Series	FLC33W
ID+ 3.5" Square	FLC33W
Trim Type	SO
Square Overlap	SO
Lumen Output	
700 Lumen	700L
900 Lumen	900L
1100 Lumen	1100L
1300 Lumen	1300L
1500 Lumen	1500L
Voltage	
120V	120
277V	277
Control System & Dimming Level	
0-10V - 0% Dimming	LZ1
0-10V - 1% Dimming	L11
0-10V - 10% Dimming	LD1
Forward Phase	LFP
(120V only, 900 & 1300 Lumens only.)	
Lutron Hi-Lume EcoSystem (LDE1) - 1% Dimming	LH1
(700 & 1500 lumens not available.)	
Lutron 5-Series EcoSystem (LDE5) - 5% Dimming	LU5
(1300 Lumens only)	
Lutron Hi-Lume - Forward Phase - 1% Dimming	LTE
(120V only, 1500 lumens not available.)	
DALI - 0% Dimming	DZ1
DALI - 1% Dimming	D11
Housing Type	
IC Rated / Airtight	IC
(Available options: L11 & LD1: 700, 900 & 1100 Lumens. LFP: 900 & 1300 Lumens.)	
Thermally Protected, Non-IC	T
(Housing height = 3.0" for LZ1, L3D, LH1, LTE, LU5, D11 & DZ1)	
Factory Options	
Bar Hangers	BH
Chicago Plenum	CP
TRIM & LED MODULE	LC33
Aperture	
3.5" Square Reflector	LC33
Trim Type	
Square Overlap	SO
Square Die-Cast Overlap	SDO
(Die-cast trim available in Black/Black or White/White finishes only)	
Lumen Output	
(Trim & housing output must match)	
700 Lumen	700L
900 Lumen	900L
1100 Lumen	1100L
1300 Lumen	1300L
1500 Lumen	1500L
Color Temperature	
2700K, 80+ CRI	27K
2700K, 90+ CRI	927K
3000K, 80+ CRI	30K
3000K, 90+ CRI	930K
3500K, 80+ CRI	35K
3500K, 90+ CRI	935K
4000K, 80+ CRI	40K
4000K, 90+ CRI	940K
Optic	
Tall Cone with 50° cut-off	WWT
(Not available with Die-Cast trims.)	
Short Cone with 60° cut-off	WWS
Color	
Clear Diffuse	CD
Warm Diffuse	WD
Black	BK
White	WH
Flange Finish	
Black Painted	BK
White Painted	WH
Titanium Silver	TS



Options in orange qualify for the Quickship program. 5-day up to 30 pieces. Refer to Quickship Guide for complete details.

LUMEN PERFORMANCE MULTIPLIER CHART - SQUARE WALL WASH

Option	Description	Ordering Code	Multiplier
Trim Type	Square Trimless	ST	0.84
	Square Overlap	SO	0.79
	Square Die-Cast Trimless	SDT	0.93
	Square Die-Cast Overlap	SDO	0.92
Color Temperature	2700K, 80+ CRI	27K	0.93
	2700K, 90+ CRI	927K	0.75
	3000K, 80+ CRI	30K	1.00
	3000K, 90+ CRI	930K	0.81
	3500K, 80+ CRI	35K	1.00
	3500K, 90+ CRI	935K	0.87
	4000K, 80+ CRI	40K	1.00
	4000K, 90+ CRI	940K	0.87
Optic	Tall Cone with 50° cut-off	WWT	0.92
	Short Cone with 60° cut-off	WWS	1.00
Color	Clear Diffuse	CD	1.00
	Warm Diffuse	WD	0.85
	White Non-Die-Cast	WH	1.13
	White Die-Cast	WH	1.00
	Black	BK	0.56

LED WALL WASH

Filename: FL33DSO1300LSO35KWWSWFLWH.IES

Lumens: 1201lm

System Watts: 15W

LPW: 80

Vertical Angle	Horizontal Angle					Zonal Lumens
0°	22.5°	45°	67.5°	90°		
0°	739	739	739	739	739	
5°	735	732	733	732	733	69
15°	693	684	684	680	680	193
25°	613	601	584	555	543	266
35°	452	454	442	351	313	258
45°	268	277	257	185	165	190
55°	152	155	134	111	99	119
65°	89	85	75	61	54	64
75°	47	41	34	27	24	32
85°	10	7	6	5	5	8
90°	0	1	1	1	1	0

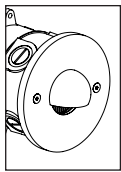
Zone	Lumens	Fixture
0-30°	528	44.0
0-40°	786	65.5
0-60°	1096	91.3
0-90°	1201	100.0
0-180°	1201	100.0

Vertical Angle	Horizontal		
	0°	45°	90°
45°	44717	42897	27541
55°	31147	27564	20433
65°	24735	20837	14998
75°	21406	15454	11050
85°	12935	8719	6992

Floor Ceiling Wall	80			70			20 50		30		10		00		
	R	C	W	R	C	W	R	C	R	C	R	C	W		
RCR	0	119	119	119	119	116	116	116	111	111	106	106	102	102	100
	1	111	107	104	101	109	105	99	101	96	97	93	94	91	89
	2	103	97	91	87	101	95	86	91	84	88	82	85	80	78
	3	96	87	81	75	94	86	75	83	73	80	72	78	71	69
	4	89	79	72	66	87	78	66	76	65	74	64	72	64	62
	5	83	72	65	59	81	71	59	69	58	67	58	66	57	55
	6	78	66	59	53	76	65	53	64	53	62	52	61	52	50
	7	73	61	53	48	71	60	48	59	48	58	47	56	47	45
	8	68	56	49	44	67	56	44	55	44	53	43	52	43	41
	9	64	52	45	40	63	52	40	51	40	50	40	49	40	38
	10	61	49	42	37	59	48	37	47	37	47	37	46	37	35

Numbers indicate percentage values of reflectivity.

Go to www.focalpointlights.com for additional photometric data.



BKSSL
SOLID STATE LIGHTING

the power of
dimming



STEP STAR™

PROJECT:

TYPE:

CATALOG
NUMBER:

SOURCE:

NOTES:

CATALOG NUMBER LOGIC

Example: **B** - **SS** - **LED** - **e101** - **A6** - **MAC** - **A**

Material

Blank - Aluminum
B - Brass

Series

SS - Step Star™

Source

LED - 'e' Technology with Integral Dimming Driver (See Specifications for Dimming)
Designed for use with remote 12VAC BKSSL® transformers. Requires magnetic Low Voltage dimmer.

LED Type

e100 - 5WLED/2.7K
e101 - 5WLED/3K

e102 - 5WLED/4K
e103 - 5WLED/Amber

Adjust-e-Lume® Output Intensity (Choose factory setting)

A9 (Standard), **A8**, **A7**, **A6**, **A5**, **A4**, **A3**, **A2**, **A1**

Finish

Aluminum Finish

Powder Coat Color	Satin	Wrinkle
Bronze	BZP	BZW
Black	BLP	BLW
White (Gloss)	WHP	WHW
Aluminum	SAP	—
Verde	—	VER

Brass Finish

Machined	MAC
Polished	POL
Mitique™	MIT

Premium Finish

ABP Antique Brass Powder	CMG Cascade Mountain Granite	RMG Rocky Mountain Granite
AMG Aleutian Mountain Granite	CRI Cracked Ice	SDS Sonoran Desert Sandstone
AQW Antique White	CRM Cream	SMG Sierra Mountain Granite
BCM Black Chrome	HUG Hunter Green	TXF Textured Forest
BGE Beige	MDS Mojave Desert Sandstone	WCP Weathered Copper
BPP Brown Patina Powder	NBP Natural Brass Powder	WIR Weathered Iron
CAP Clear Anodized Powder	OCP Old Copper	Also available in RAL Finishes See submittal SUB-1439-00

Cutoff

A - 68° Cutoff (Short)
B - 90° Cutoff (Long)

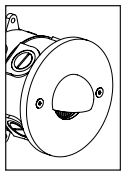
B-K LIGHTING

40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.5800 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com

RELEASED
05-17-17

DRAWING NUMBER
SUB000938

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BKSSL
SOLID STATE LIGHTING

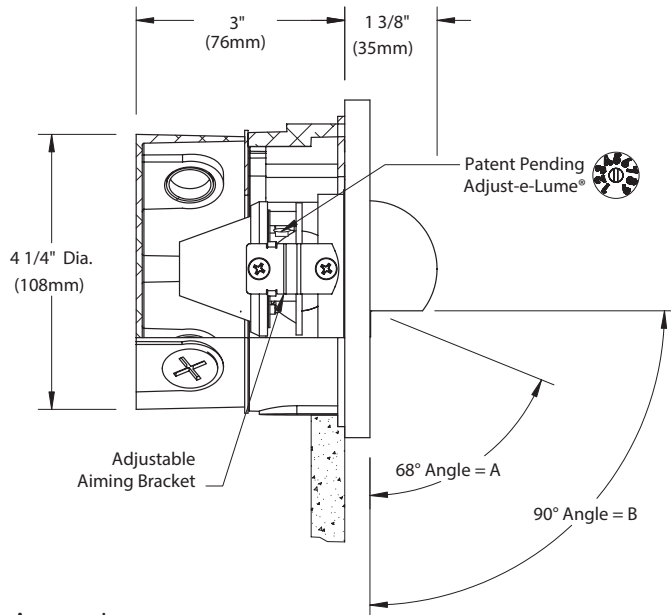
the power of
dimming. with **adjust-e-lume®**
TECHNOLOGY

STEP STAR™

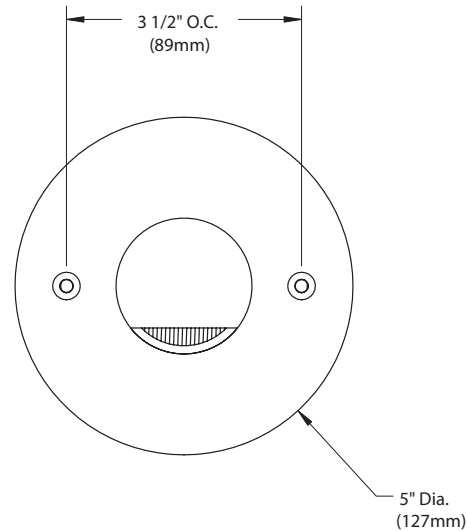
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TYPE:

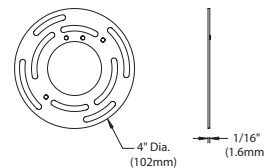
SIDE VIEW



FACEPLATE DETAIL



UNIVERSAL RING



Accessories (Configure separately)

Remote options:



TR Series



UPMRM™

All dimensions indicated on this submittal are nominal.
Contact Technical Sales if you require more stringent specifications.

SPECIFICATIONS

GreenSource Initiative™

Metal and packaging components are made from recycled materials. Manufactured using renewable solar energy, produced on site. Returnable to manufacturer at end of life to ensure cradle-to-cradle handling. Packaging contains no chlorofluorocarbons (CFC's). Use of this product may qualify for GreenSource efficacy and recycling rebate(s). Consult www.bklighting.com/greensource for program requirements.

Materials

Furnished in Copper-Free Aluminum (Type 360) or Brass (Type 360).

Backbox

Round, 4-1/4" dia. x 3-1/8" deep construction with [2] mounting tabs. Front access for wire connection and inspection. Provided with [5] 1/2" NPS tapped holes and [4] plugs. Suitable for concrete pour.

Faceplate

Cast construction with machined finish. Countersunk holes provide for flush hardware mounting with [2] tamper-resistant, stainless steel mounting screws. Stainless steel universal mounting ring for faceplate adjustment and 1/8" thick HT-805A silicone foam gasket with acrylic adhesive for water-tight seal.

Lens

Shock resistant, tempered, glass lens is factory adhered to faceplate.

BKSSL®

Integrated solid state system with 'e' technology is scalable for field upgrade. Modular design with electrical quick disconnects permit field maintenance. High power, forward throw source complies with ANSI C78.377 binning requirements. Exceeds ENERGY STAR® lumen maintenance requirements. LM-80 certified components.

Integral, constant current driver. 12VAC/VDC input. 50/60Hz. Proprietary input control scheme achieves power factor correction and eliminates inrush current. Output, over-voltage, open-circuit, and short circuit protected. Inrush current limited to <1A (non-dimming). Conforms to Safety Std. C22.2 No. 250.13-12.

Dimming

Line voltage dimmable via magnetic low voltage dimmer. For use with low voltage dimmer with dedicated neutral conductor. For purposes of dimming: Remote magnetic transformer with BKSSL® Power of 'e' technology loads should be loaded to 25% of the transformer VA (watts) rated value.

Optics

Rectilinear design provides wide lateral distribution and long forward throw.

Adjust-e-Lume® (Pat. Pending)

Integral electronics allows dynamic lumen response at the individual fixture. Indexed (100% to 25% nom.) lumen output. Maintains output at desired level or may be changed as conditions require. Specify factory preset output intensity.

Cutoff and Aiming

Choice of 90° or 68° optical cutoff for mounting heights well below typical visual glare angles. Adjustable optical bracket provides up to 24° vertical aiming.

Remote Transformer

For use with 12VAC BKSSL remote transformer or magnetic transformers only. B-K Lighting cannot guarantee performance with third party manufacturers' transformers.

Wiring

Teflon® coated, 18AWG, 600V, 250° C rated and certified to UL 1659 standard.

Hardware

Tamper-resistant, stainless steel hardware. Faceplate screws are additionally black oxide treated for additional corrosion resistance.

Finish

StarGuard®, our exclusive RoHS compliant, 15 stage chromate-free process cleans and conversion coats aluminum components prior to application of Class 'A' TGIC polyester powder coating. Brass components are available in powder coat or handcrafted metal finish.

Warranty

5 year limited warranty.

Certification and Listing

ITL tested to IESNA LM-79. UL Listed. Certified to CAN/CSA/ANSI Standards. RoHS compliant. Suitable for indoor or outdoor use. Suitable for installation in combustible materials (Type Non-IC). Suitable for use in wet locations. Suitable for installation within 4' of the ground. IP65 Rated. Made in USA.



*Teflon is a registered trademark of DuPont Corporation.

*Energy Star is a registered trademark of the United States Environmental Protection Agency.

B-K LIGHTING

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RELEASED
05-17-17

DRAWING NUMBER
SUB000938

DRIVER DATA	Input Volts	InRush Current	Operating	Dimmable	Operation Ambient Temperature
	12VAC/DC 50/60Hz	<250mA (non-dimmed)	500mA	Magnetic Low Voltage Dimmer	-22°F-194°F (-30°C - 90°C)

LM79 DATA				L70 DATA	OPTICAL DATA	
BK No.	CCT (Typ.)	CRI (Typ.)	Input Watts (Typ.)	Minimum Rated Life (hrs.) 70% of initial lumens (L70)	Louver Angle	Delivered Lumens
e100	2700K	80	5	50,000	C-30°	59
	2700K	80	5	50,000		
e101	3000K	80	5	50,000	C-30°	60
	3000K	80	5	50,000		
e102	4000K	80	5	50,000	C-30°	68
	4000K	80	5	50,000		
e103	Amber (590nm)	~	5	50,000	~	~

ARCHITECTURAL EGRESS

Vandal Resistant

AEL Full Cut-Off LED



WALL MOUNT
LED

Fixture Type

Date

August 11,

Job Name

Approved By

Catalog Number

- - - - DP - -

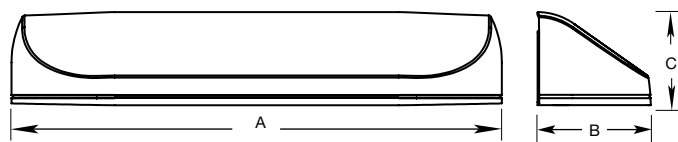
SPECIFICATIONS

- Description** The Architectural Egress Luminaire combines a unique, patented design shaped with high performance, full cut-off optics to achieve completely unobtrusive illumination of a space or path of egress. When mounted over a doorway, the fixture is perceived as an element of the building structure and, additionally, provides water protection in the form of a drip cap over the doorway. Multiple lengths are available to match a given door opening and our unique quick mount system facilitates installation and maintenance.
- Housing** Marine grade heat treated extruded aluminum.
Chemically primed and finished with robotically applied polyester powder coat.
- Wall Mount** Marine grade heat treated extruded aluminum. Chemically primed and finished with robotically applied polyester powder coat. Designed to provide quick mounting to housing and secured with (2) captive stainless steel TORX® head screws.
- Lens Frame** Marine grade heat treated extruded aluminum, clear anodized. Secured to fixture via integral concealed hinge and (3) captive stainless steel TORX® head screws.
- Lens** UV stabilized diffused extruded polycarbonate.
- End Caps** Die-cast marine grade aluminum continuously welded to housing. All welds ground smooth.
- Reflector** Electrostatically brightened anodized aluminum PVD coated and absolutely color-free of iridescence. Shaped to provide full cutoff, LED point dispersion and maximum efficiency.
- Drivers** Constant current drivers at 350mA. High output version utilizes 700mA.
- LED** Samsung LM561B+ Series @ 3000K, 3500K, 4000K, or 5000K and 82 CRI wired in parallel-series. L₇₀ projected life of 130,000 hours at 50°C. Tested in accordance with LM-80. Ten year warranty on LED boards against operational defects.
- Gaskets** Closed cell self-adhesive neoprene to provide watertight seal between fixture and wall and between fixture and lens frame.
- UL Listing** U.L., C.U.L., Wet standard.
- Lifetime Warranty** Luminaire LED Incorporated will repair or replace any fixture damaged due to vandalism for the lifetime of the installation.



DIMENSIONAL DATA

	A	B	C
AEL 12	20.79	5.40	3.60
AEL 24	32.04	5.40	3.60
AEL 36	43.29	5.40	3.60
AEL 48	54.75	5.40	3.60
AEL 72	78.75	5.40	3.60



www.luminaireled.net

5 Sutton Place
P.O. Box 2162
Edison, NJ 08818

P. 732.549.0056
F. 732.549.9737



Luminaire LED Incorporated products are manufactured in the USA with components purchased from USA suppliers, and meet the Buy American requirements under the ARRA. Content of specification sheets is subject to change; please consult our website for current product information.

Rev: 06/17+

ARCHITECTURAL EGRESS

Vandal Resistant

Fixture Type

AEL Full Cut-Off LED

ORDERING INFORMATION

SERIES	LED	CCT	VOLTS	LENS	COLOR	OPTIONS		TX/SD
DP								
								TX/SD
AEL 12	12" - 10W	3000K	120-277	DP	BKH	☐ DIM	☐ EMBDA	
AEL 24	24" - 10W	3500K	347		BZH	☐ A/B	☐ EMB310	
AEL 36	24" - 20W	4000K			SVH	☐ 2B	☐ EMB310ST	
AEL 48	36" - 15W	5000K			WOP	☐ PC	☐ EMB20R	
AEL 72	36" - 30W				PCP	☐ GLR	☐ EMB125R	
	48" - 20W				CUST	☐ OCC	☐ EMB250R	
	48" - 35W					☐ OCC50	☐ ST/SC	
	72" - 30W							
	72" - 55W							

OPTIONS

LENS	DP = Diffused Polycarbonate.
COLORS	BKH = Black (Hammertone) BZH = Bronze (Hammertone) SVH = Silver (Hammertone) WOP = White (Textured White) PCP = Black (Prime Coat Paintable) CUST = Custom Color (Consult Factory)
DIM	0-10V dimming driver. 10% at lowest level. (N/A with AEL12)
A/B	Aluminum surface back box. Finished with polyester powder coat to match the fixture.
PC	Photoelectric switch.
2B	(2) LED drivers for independent LED board operation. (N/A with AEL12, N/A with the OCC option)
GLR	Fuse and fuse holder.
OCC	Passive infrared sensor mounted in machine hole in end cap. Maximum coverage of 10' radius from 8' height.
OCC50	Passive infrared sensor mounted in machine hole in end cap. 50% of LED's constantly on and 50% sensed. (N/A with AEL12)
EMB310	1000 lumen self-contained, 90 minute emergency battery pack. 0°C (32°F) to 55°C (131°F). Not available in 347V. (Available for AEL 36, AEL48, and AEL72 lengths only)
EMB310ST	1000 lumen self-testing, self-contained, 90 minute emergency battery pack. 0°C (32°F) to 55°C (131°F). Not available in 347V. (Available for AEL 36, AEL48, and AEL72 lengths only)
EMB20R	Remote mounted micro inverter that will operate a 25W maximum load for 90 minutes. 0°C (32°F) to 45°C (113°F).
EMB125R	Remote inverter that will operate a 125W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMB250R	Remote inverter that will operate a 250W maximum load for 90 minutes. 20°C (68°F) to 30°C (86°F). Not available in 347V.
EMBDA	Two drivers and two emergency battery packs self-contained within fixture for independent light engine operation. Each battery pack will operate each light engine for a minimum of 90 minutes. Not available in 347V. (Available in the 72" length only)
ST/SC	Slotted screws instead of TORX® head.
TX/SD	TORX® head bit.



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Luminaire LED Incorporated products are manufactured in the USA with components purchased from USA suppliers, and meet the Buy American requirements under the ARRA. Content of specification sheets is subject to change; please consult our website for current product information.

Rev: 06/17+

ARCHITECTURAL EGRESS

Vandal Resistant

Fixture Type

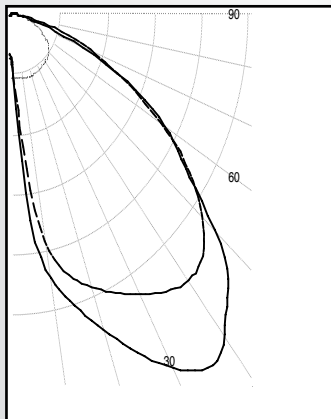
AEL Full Cut-Off LED

PHOTOMETRIC DATA

Model	Watts	Input Watts		Delivered Lumens						
				3000K		3500K		4000K		5000K
AEL 12	10W	10.8W		747		760		784		807
AEL 24	10W	9.4W		832		847		873		899
AEL 24	20W	17.6W		1557		1585		1634		1682
AEL 36	15W	14.9W		1248		1271		1310		1348
AEL 36	30W	26.3W		2995		3049		3143		3237
AEL 48	20W	18.8W		1935		1969		2030		2090
AEL 48	35W	35.2W		3616		3682		3796		3909
AEL 72	30W	27.9W		3162		3217		3317		3417
AEL 72	55W	52.2W		5911		6017		6203		6389

MODEL AEL12-10W-4000K

Delivered Lumens: 726 Lumens



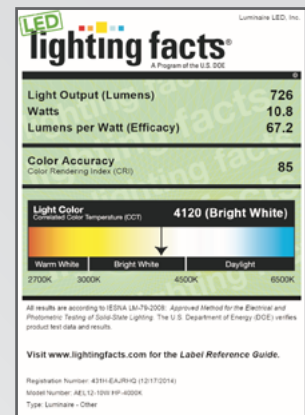
IES FILE: AEL12-10W-4000K

Total Power: 10.8W

Testing was performed in accordance with IES LM-79-08

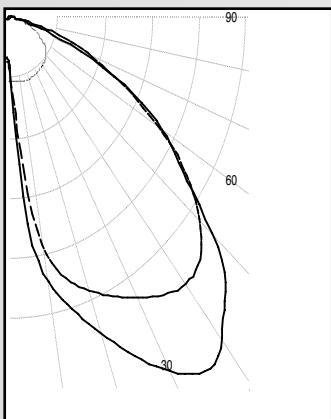
Bug Rating: B0U0G0

Zone	Lumens	% Lamps
0 - 30	153	21.1
0 - 40	287	39.5
0 - 60	585	80.6
60 - 90	726	100.0
0 - 90	439	60.5
90 -180	0	0.0
0 - 180	726	100.0



MODEL AEL36-15W-4000K

Delivered Lumens: 1213 Lumens



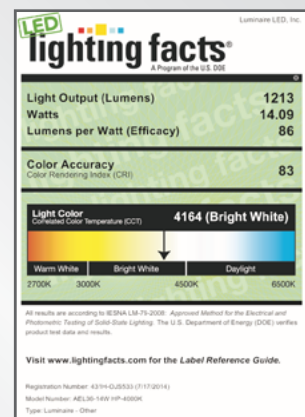
IES FILE: AEL36-15W-4000K

Total Power: 14.09W

Testing was performed in accordance with IES LM-79-08

Bug Rating: B0U1G0

Zone	Lumens	% Lamps
0 - 30	381	31.4
0 - 40	635	52.3
0 - 60	1063	87.7
60 - 90	150	12.3
0 - 90	1213	100.0
90 -180	0	0.0
0 - 180	1213	100.0



ARCHITECTURAL EGRESS

Vandal Resistant

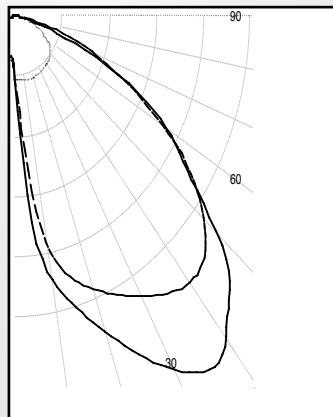
Fixture Type

AEL Full Cut-Off LED

PHOTOMETRIC DATA

MODEL AEL36-30W-4000K

Delivered Lumens: 2911 Lumens



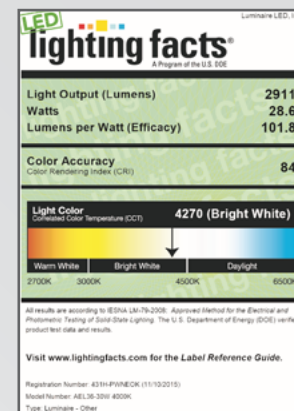
IES FILE: AEL36-30W-4000K

Total Power: 28.6W

Testing was performed in accordance with IES LM-79-08

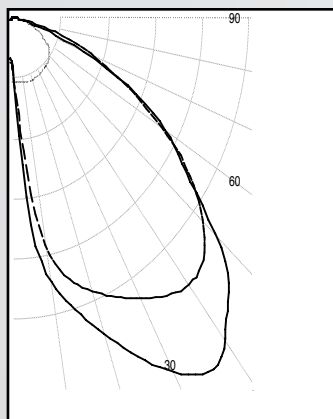
Bug Rating: B0U0G0

Zone	Lumens	% Lamps
0 - 30	754	25.9
0 - 40	1308	44.9
0 - 60	2417	83.0
60 - 90	494	17.0
0 - 90	2911	100.0
90 -180	0	0.0
0 - 180	2911	100.0



MODEL AEL72-30W-4000K

Delivered Lumens: 3072 Lumens



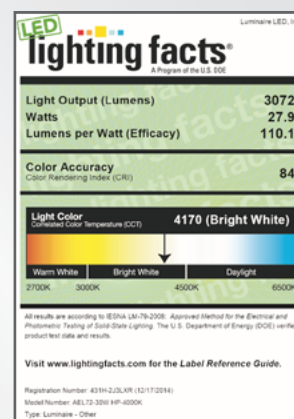
IES FILE: AEL72-30W-4000K

Total Power: 27.09W

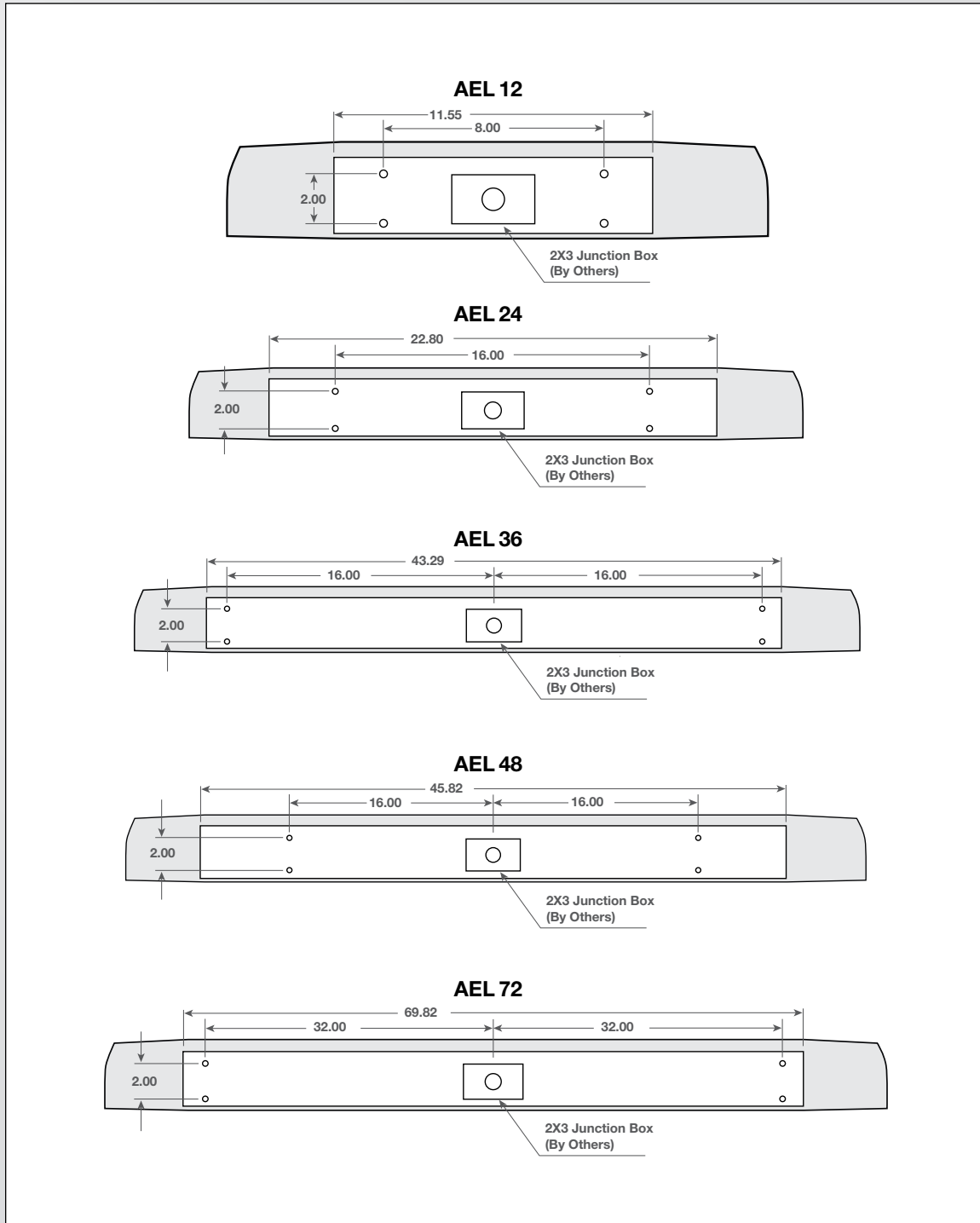
Testing was performed in accordance with IES LM-79-08

Bug Rating: B1U0G1

Zone	Lumens	% Lamps
0 - 30	771	25.1
0 - 40	1353	44.1
0 - 60	2529	82.3
60 - 90	3072	100.0
0 - 90	1718	17.7
90 -180	542	0.0
0 - 180	3072	100.0



MOUNTING PLATE DETAILS



ARCHITECTURAL EGRESS

Vandal Resistant

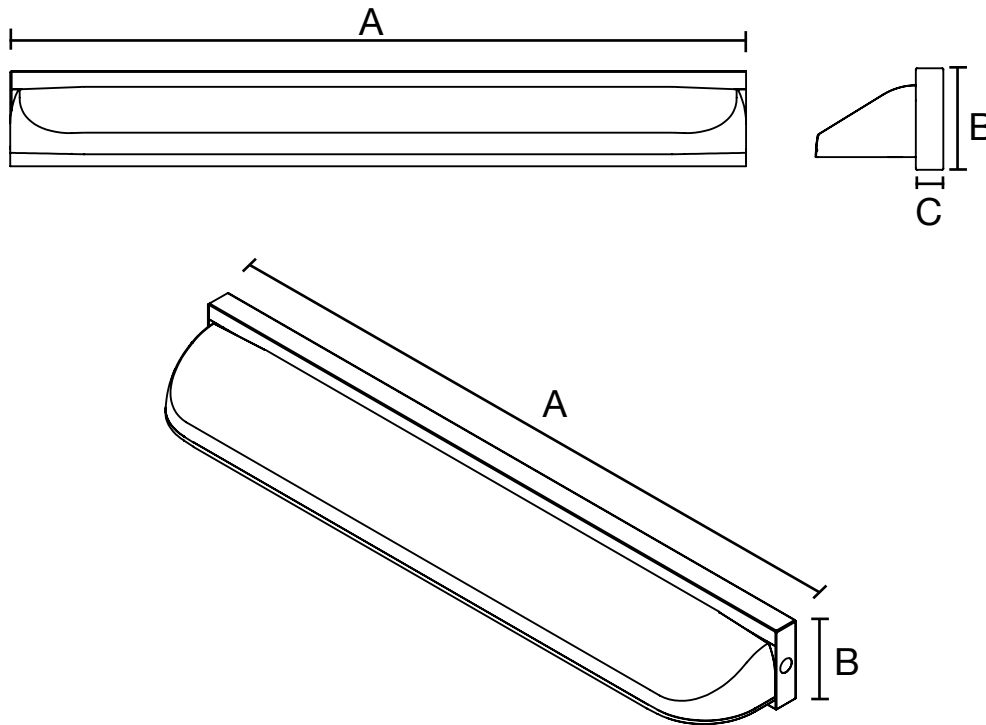
Fixture Type

AEL Full Cut-Off LED

ALUMINUM BACKBOX DETAIL

A/B Detail

	A	B	C
AEL 12 Backbox	20.80	5.20	1.50
AEL 24 Backbox	31.48	5.20	1.50
AEL 36 Backbox	43.30	5.20	1.50
AEL 48 Backbox	54.75	5.20	1.50
AEL 72 Backbox	78.75	5.20	1.50





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

September 26, 2017

Ms. Caitlin Cameron, Urban Designer

Planning & Urban Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

**Subject: Application for Level III Site Plan Approval
Commercial Office at the Corner of Thames and Hancock Streets
WEX Headquarters
Letter of Response #1 to Planning Staff Review Comments**

Dear Caitlin:

On behalf of 0 Hancock Street LLC, our office has received and reviewed Planning Staff review comments contained within the September 7, 2017 Planning Board Memorandum as well as Staff comments forwarded via your email message of September 21, 2017 regarding the Level III Site Plan Application for the Thames Street Property. We offer the following responses to these comments and also providing additional information related to the new plan upload that accompanies this response letter. For ease of reference, we have repeated the comments in *italics* followed by our responses in **bold**.

COMMENTS TAKEN FROM THE SEPTEMBER 7, 2017 PB MEMORANDUM

Bruce Hyman, Transportation Planner Comments

Sidewalks

- *The site plan needs to reflect what will be the existing conditions at the NW corner of Hancock-Thames Streets per the AC Hotel approved site plan. Two curb ramps are to be provided at the Hancock-Thames NE corner for the crossing of both streets. Further discussion is needed regarding the curb design and curb extensions at this corner. The one curb ramp, as shown on their site plan, is inadequate.*

Response:

The latest plans include information associated with the proposed Hancock Street sidewalk conditions related to the AC Hotel project. Based on the recent meetings between Steve Mohr and City Staff, we have updated the sidewalk designs to better satisfy the staff objectives on proposed widths and related features. See the latest plans for the modifications now proposed. These include dual curb ramps at the corner of Hancock and Thames to match those on the Hotel side.



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- *The site plan needs to similarly reflect the SW corner of Fore-Hancock in the AC Hotel approved site plan.*

Response:

The site plans have been updated to better conform with the AC Hotel's proposed conditions. The applicant is seeking to reconstruct the Hancock Street sidewalk in front of their site. Additional sidewalk reconstruction to Fore Street is subject to further discussion with City officials.

- *Staff has concerns that the 4' continuous esplanade-5' sidewalk is the correct streetscape concept for this section of Thames Street. Alternative approaches could mimic similar (but maybe not exact) treatments to the AC Hotel and such west of Hancock St as urban hardscape. Even eliminating the 4' esplanade for a 10' sidewalk may be inadequate considering the number of new developments on the street and nearby increasing pedestrian traffic. The board could consider strategies that could provide a wider sidewalk on Thames Street. I'd suggest a minimum width of 12' for the sidewalk is what we'd want due to the likely raised granite tree wells within the sidewalk area.*

Response:

The accompanying plans depict the proposed sidewalk along Hancock and Thames Street. The Hancock Street sidewalk will be a minimum of 12' width with flush tree planter/grates to better preserve the pedestrian space. The Thames Street sidewalk treatment may consist of one of two options; the first option involves a narrow esplanade and raised curb treatment, resulting in a narrower sidewalk, but addresses the opening/closing of vehicle doors for parallel parked cars. The second option is a raised granite wall along the curb line that serves to overcome the 6" to 21" grade differential but also result in a wider overall sidewalk condition. We look forward to discussing these options further with staff and the Board.

- *The proposed 10' sidewalk width on Hancock is likely undersized and should be 12' minimum, accounting for adequately sized tree wells, reducing the size of the planters and landscaped areas as necessary to achieve this width. The building is set back from the property line. If sidewalks are less than 12' we should switch to in-sidewalk tree grates.*

Response:

The Hancock Street sidewalk will be a minimum of 12' wide. The raised planters have been eliminated to make way for a wider sidewalk condition.



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Bicycle Parking

- *The space provided on the site plan for the bike parking is inadequate (too close to the wall, shown 36" I believe scaled to the drawing - the detail on sheet C 6.0 looks correct though) a minimum of 48" is required, with 60" preferred. The spacing shown, 36", does meet minimum spacing between the racks (48" preferred). If they were to be placed parallel to the building (instead of perpendicular as shown), the racks can be placed as close as 30" (36" preferred) to the wall with a minimum of 72" separation on center (96" preferred) between the racks. Adequate maneuvering room is needed for the end racks (48" min, 60" preferred).*

Response:

The latest Landscape Plan contains adjustments to the positioning of the bike racks to satisfy these comments.

- *Also, recent development on the potential for bike share locations should be examined.*

Response:

We look forward to discussing these needs further with staff and perhaps the proposed tenant (WEX).

Tom Errico, Traffic Engineer Comments

Parking

- *Updated report of the capacity and parking management for Ocean Gateway Garage and 100 Fore Street.*

Response:

The project traffic and TDM consultants, Traffic Solutions and Cushman Transportation Consulting, LLC, continue to coordinate with Tom Errico for the presentation of parking data associated with the Gateway Garage and 100 Fore Street properties. A Traffic Scoping Meeting was held on September 25, 2017. A summary memorandum related to the parking conditions will be uploaded to ePlan within a day or two following the Scoping Meeting. At this time, we understand that the processing/review of the Traffic Movement Permit and TDM plan may be a condition of approval, given the overall timing of the project. We suggest consideration be given to this condition as subject to the issuance of a certificate of occupancy.



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- *Clarification on the proposed use of 100 Fore Street for parking.*

Response:

It is the Applicant's intention to also provide parking from their property at 100 Fore Street. Jonathan Cohen is the principal owner associated with each property. Further background on these parking conditions is currently being collected by Traffic Solutions for review by Mr. Errico and City staff.

- *Clarification on the impacts to the parking and vehicle circulation for the neighboring property which is built according to an approved Site Plan. The City lot lines appear to cross and impede the parking circulation in several locations.*

Response:

The proposed site plan has been adjusted to maintain the license conditions associated with the Jackrabbitt LLC property to the north. The proposed pavement will transition to match existing pavement limits and the license area to the northeast corner of the property will be constructed to maintain accessibility to the adjoining property.

- *Indication of where office and retail visitors will park.*

Response:

Tenants and visitors to the site will have parking available at the Ocean Gateway Garage, 100 Fore Street surface parking lot and on-street parking in the nearby project vicinity.

Misc. Staff Comments

Landscape Preservation/Site Landscaping and Screening/Street Trees

- *Staff are concerned about the three steps from the public sidewalk to the plaza area and whether this can be made more accessible.*

Response:

See the attached updated plans reflecting modifications to the access and elimination of the steps at the east side plaza. A ramp will be provided for access to the Plaza space.



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WOODARD & CURRAN COMMENTS

Lauren Swett, Peer Reviewer Comments

Water Quality, Stormwater Management and Erosion Control

1. *The Applicant has noted that the project does not require any additional Federal or State level environmental site permits. The lot was originally part of the Ocean Gateway Site Location of Development, and there may be additional permits associated with Ocean Gateway that encompass this site. We anticipate that the City or the Applicant will need to work with the original permitting agencies to determine what needs to be done to remove the site from the original permits in association with the sale of the property. We also anticipate that the Notice of Intent to Comply with the Maine Construction General Permit will be required for the project.*

Response:

The project site is part of an original Maine Department of Environmental Protection Permit Order #L-7866-26-E-N and L-7866-4E-F-N, dated August 20, 2004 related to the Ocean Gateway terminal development by the City of Portland. The applicant will submit a Transfer Order request to the MaineDEP to reassign the permit coverage for the 48,000 SF lot to 0 Hancock Street LLC. This transfer request is expected to be submitted within the next week, however it is likely to not be approved prior to the October 4, 2017 Planning Board meeting, thus the applicant is amenable to a condition of approval required the completion of the MaineDEP transfer prior to the issuance of a certificate of occupancy.

- *The site is completely within the area that was considered for Ocean Gateway, and capacity calculations at the time included this area as a parking lot, so capacity of the outfall installed for Ocean Gateway should not be an issue due to this project.*

Response:

We concur with this finding and trust that the overall reduction in the site's level of imperviousness will only benefit the overall stormwater management regime in the site vicinity.

2. *In accordance with Section 5 of the City of Portland Technical Manual, a 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:*



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- a) *Basic Standard: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. Sedimentation barrier should be installed downgradient of proposed construction activities.*

Response:

The latest plans include measures such as silt fencing to be placed along the downgradient side of the construction zone. A stabilized construction entrance will be provided at all times, and nearby streets will be routinely swept to avoid sediment tracking etc.

- b) *General Standard: It appears that the project may result in redevelopment of over 5,000 square feet of non-roof impervious area. In accordance with the City of Portland Technical Manual, the project is required to provide water quality treatment for no less than 50% of the redeveloped non- roof impervious area. Additional information on development areas should be provided, as well as discussion and calculations to show how the project will meet the General Standard.*

Response:

The proposed development site is approximately 48,000 SF in size and currently is used as a gravel parking lot throughout its entirety. The site currently contains no measures for water quality treatment of stormwater runoff, although the site is tributary to a City drainage system that ultimately discharges into a hydrodynamic separator prior to discharge into the Fore River. This system serves to provide some amount of solids and sediment removal from the runoff flow stream prior to discharge into the river. The proposed activity includes the following breakdown of areas:

Description	Area
Overall Site Size	48,000 SF
Roof	30,624 SF
Hardscape Area	11,446 SF
Grass Area	5,930 SF

The proposed development does not include any onsite parking areas, therefore the stormwater runoff from non-roof impervious area is generally considered to be more pollutant free than perhaps a vehicle parking lot. Further, the site will be relatively more stable than the current gravel conditions, in our opinion. The project's roof area is considerably larger than the hardscape areas, therefore the applicant is requesting a waiver of the requirement to install water quality treatment measures, treating at least 50% of the non-roof impervious, and instead we simply propose to install a roof drain filter system within the building to help treat roof related runoff. We note also that the plans do include a small amount of roof top garden vegetation that is expected to provide water quality benefits by addressing shading/temperature impacts among other things.



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- c) *Flooding Standard: No additional impervious surface is being added as a result of the project. The site discharges to the Fore River, and the area was accounted for as part of the original outfall design. The project is not anticipated to increase flow to the site.*

Response

We concur with this finding and offer no further evidence.

3. *Additional clarifications should be provided for the roof drain connection on Thames Street. On the utility plan, the RD connection is shown directly to an existing catch basin within the City ROW. This type of connection is not allowed. The grading and drainage plan shows the connection to a new manhole, as would be anticipated for a 12-inch pipe connection. The Applicant should clarify the storm drain piping.*

Response:

The roof drain connection has been modified to show it connecting to a new storm drain manhole to be installed along the Thames Street frontage. The drainage leader will not be connected to the existing catch basin.

4. *A stormwater inspection and maintenance plan developed in accordance with and in reference to MaineDEP Chapter 500 guidelines and Chapter 32 of the City of Portland Code of Ordinances should be provided.*

Response:

A Stormwater Maintenance Manual and a Draft Maintenance Agreement have been uploaded to ePlan for continued staff review.

5. *In accordance with The City of Portland Technical Manual sanitary sewer laterals shall be connected to main sanitary sewer lines for sanitary building laterals under 8 inches in diameter. The connection is currently proposed directly to the existing manhole in Thames Street. Acceptability of this type of connection should be confirmed with the Department of Public Works.*

Response:

The plans currently continue to show a connection to the existing sanitary sewer manhole in Thames Street. We are amenable to changing the connection to the main line sewer pipe if so desired by the Public Works Department. A note has been added to the plan indicating that the contractor is to confirm the tie in conditions prior to start of the work.



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6. *The Applicant has noted a snow storage location behind the proposed building however, the size does not appear to be adequate for the proposed site and may restrict travel ways for the adjacent properties. Please provide additional information regarding snow removal.*

Response:

A limited area for snow piling will likely require snow to be removed from the site. The applicant currently retains similar services for their properties at the Gateway Garage and 100 Fore Street, therefore they are familiar with the requirement for snow handling in the wintertime.

ADDITIONAL PLANNING STAFF COMMENTS

Jeff Tarling Comments dated September 8, 2017

Mr. Tarling's comments are not repeated in this letter, however we are providing as an attachment the landscape narrative prepared by Mohr & Seredin Landscape Architects, Inc. which offers a summary of the approach taken as part of the overall landscape architecture design. See their letter in Attachment A to this letter.

Caitlin Cameron Comments dated September 5, 2017

The following comments were identified in the September 5, 2017 memorandum. Archetype PA has provided a written narrative that discusses in more detail the architectural objectives of the design.

A. Streets

3. *Sidewalks: Staff continue to work with the applicant on the sidewalk design. Appropriate to the urban context, staff recommend wider sidewalks and not placing landscape planters between the sidewalk and the building. The street tree and street lighting design will be consistent with other developments on Thames Street to provide a consistent streetscape.*
8. *Bicycle Safety: Staff continue to work with the applicant on the bicycle facilities proposed.*

B. Buildings and Architecture

1. Contextual Design: *New buildings should be designed in response to their context and should be compatible with surrounding neighborhoods.*

The site should be considered to have a unique context when it comes to the architectural approach. Staff recognizes that this site has little historic context to relate to. Where there is visual connection on Hancock Street to the India Street



neighborhood context, the building employs a height, façade treatment, and massing that are sensitive to and relate to that more traditional context. On Thames Street and facing the water, the Ocean Gateway terminal, waterfront, and future Amethyst Lot park are contemporary designs that create the most immediate context for the 0 Hancock Street project and the contemporary design reflects that – the project proposes a new vision for contemporary development on the waterfront.

There is one general area of criticism which has to do with how the building relates to its urban setting – some details of the sidewalk and building design cause the building to sit apart from the streetscape similar to a suburban office park design. Staff comments below suggest specific revisions to engage the building with the pedestrian and urban environment.

The signs shown in the application do not necessarily reflect an approved sign plan that meets the sign ordinance.

2. Building Composition:

- a. Placement: The building is placed to comply with the B6 overlay envelope on Hancock Street. The building facing Thames Street is close to the property line to help create a consistent street wall with the surrounding blocks currently under development. The primary office entrance is oriented to the street – retail entrances should be provided on Thames but are currently not indicated in the plan.
- e. Articulation: The project uses a combination articulation elements such as material changes, canopies, and plane changes. Interest is also provided by the roof design and massing changes. The long length of Thames Street façade is broken down to a human scale with the fenestration pattern, material placement, and the ground level design. Staff recommend that the curved corner be better integrated into the design through articulation of the building's regulating lines (either horizontal or vertical or both).
- f. Materials: The proposal conveys a contemporary approach similar to other contemporary buildings nearby such as the Ocean Gateway terminal. Where the project faces the India Street neighborhood, the material placement is more traditional. Where the project faces the waterfront, curtainwall is used – staff does have concern about the further detail and specification of the curtain wall in terms of reflectivity and tint as well as sun shading.

3. Pedestrian Environment: Staff support providing wider sidewalks to give enough space for pedestrian amenities such as street trees and lighting. Both facades are proposed to provide active entrances with the office entrance on Hancock Street and retail entrances on Thames. Thames Street has a long façade but



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accommodates the pedestrian environment through the use of storefront and high transparency, retail uses and entrances, canopies, and plane changes.

4. *Primary Entrances and Service Entrances:* *The primary entrance is on Hancock Street which is considered by these guidelines to be a primary street. More information is requested on building access points – show where building entrances on Thames Street are likely to be. Service entrances are internal to the site with an access path interior to the block.*

C. Open Space and the Public Realm

2. *Private Open Space and Plazas:* *A plaza space at the east end of the development is proposed to occupy the space of the view corridor. Staff suggest this design might be modified to be at the grade of Thames Street rather than requiring three steps. In addition, an internal path cuts through the site to provide service access and possible mid-block cut through between Hancock and a future Mountfort extension. The project also proposes rooftop plazas for the office workers.*

Archetype's architectural team has offered the following narrative describing changes that are now reflected in the accompanying renderings.

UPDATES AFTER PLANNING BOARD WORKSHOP

Following the Planning Board Presentation, there were several design aspects that needed modifications or better clarification. These included better articulation of the larger massing forms, modifications to the Thames Street Elevation, adjustments to and clarification of the windscreen on the roof deck, a better explanation of the pedestrian experience along Thames and at the public corner. There are also modifications being made to the site and landscaping and these will be explained and documented by the civil engineer and landscape architect.

In terms of the building changes, articulation of the masses was emphasized through several moves. Starting with the "tower" element, the form was finished visually thorough the replacement of a glazed corner with metal panels on the 3rd and 4th floors. When standing at the corner of Hancock and Thames, this is a definitive end to the first form before the separation from the clear structural glazing at the WEX entrance.

At the other end of the massing, the three equal forms along Thames are now more defined through separations of dark gray metal panels that protrude from the mullion system and the horizontal mullion divisions within these elements are to be painted to match so the division is stronger. The horizontal bands of spandrel glass that are within the tinted glazing of the three Thames elements are now to be painted a light gray instead of the dark gray blue they were previously labeled with. This same gray is to continue around the plaza façade and the one tinted bay of the north face of the building. The gray helps the spandrel to blend with the transparent tinted glazing creating large rectangular elements in between the dark pilaster



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form. These start at the second level, above the retail entrances, and continue up beyond the roof as the wind screen and have rails that end at a higher elevation than those on the pilasters. This causes the rectangular forms to visually separate from the darker forms that divide them and shift upwards.

It is the same uses of material that help to separate the façade of Thames Street. Because of the curtain wall system, we are working with pushing and pulling the building structurally has serious implications which is why it has been done very intentionally at massing divisions, first floor setbacks, and fourth floor setbacks. On another scale, we can work with the materials that are inserted into the mullion system to break up the planar façade. The metal panels are designed to sit proud on the face of the mullion whereas the spandrel glass sits behind it. Along with facial relationship between the two materials, the reflectivity difference of the materials creates a very different relationship to the viewer. The pushed back spandrel has a high reflectivity that works with the transparent glazing it neighbors to create gently mirrored images of its surroundings creating depth and softening the feel of the wall while the metal panel changes sheen with lighting but continues to work as a solid feature within the vertical surface giving portions of the wall that present and ground themselves.

After creating the strong vertical elements in the long façade of Thames, it was time to continue the massing development back at the tower. With it being a vertical element, the same metal panels and match mullions are now used as the horizontal dividers instead of spandrel. This ties the tower further to the architecture surrounding by creating more solid details and emphasizing a horizontal division of the massing.

It was suggested that the guard surrounding the roof deck be switched from glazing to a cable rail. We have decided to leave it as glass because it seconds as a wind screen which is important for the users at a site that is so open to the water. We also believe that it adds to the shifting nature of the rectangular glazing as described previously and because the building is only 3 stories below the roof deck the extra height added by the guardrail/wind screen is not an issue for height or scale.

More renderings have been added to the presentation to help explain the pedestrian experience at Thames and the public corner and show the areas where the building steps under itself creating overhangs and a larger exterior walkway. We increased the depth of the step backs because they create nice spaces for pedestrians to take in the retail storefronts off from the main path of traffic – this is also important to the conversation of the width of the Thames Street sidewalk. The overhang helps to block sun and minimize reflection allowing the storefront to add their own lighting and create frontage that glows from within the cavity.



Ms. Caitlin Cameron
September 26, 2017
Page 12

CLOSURE

We trust the updated plans, renderings and supporting materials will satisfy staff comments and Planning Board concerns as heard at the workshop meeting. The materials uploaded for City review are as follows:

- Updated Civil Plans
- Updated Landscape Plans and Details
- Photometrics and Site Lighting Information
- Stormwater Management Operations and Maintenance Manual and a Stormwater Maintenance Agreement
- Architectural renderings

Information previously uploaded and remaining as current to the ongoing review includes:

- Traffic Movement Permit Application
- Transportation Demand Management Report
- Construction Management Plan
- Financial Capacity Evidence

We look forward to the Planning Board Public Hearing on October 4, 2017. If you have any questions regarding this submission, please contact our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

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

Attachments: A – Mohr and Seredin Memorandum
B – Stormwater Management O&M Manual and Draft Stormwater Maintenance Agreement

c: Bill Hopkins, Archetype PA
Jonathan Cohen, 0 Hancock Street LLC

ATTACHMENT A

Mohr & Seredin Memorandum

MEMORANDUM

September 25, 2017

To: Steve Bushey, Stanteck

From: Stephen B. Mohr, Mohr & Seredin Landscape Architects, Inc. (M&S)

Re: **September 8, 2017 Tarling WEX Landscape Review Comments**

Cc: William Hopkins, Archetype
Jonathan Cohen, Owner



Dear Steve,

As requested please find below our responses to Jeff Tarling's comments regarding the WEX Landscape Plan. The changes as noted are incorporated into the Mohr & Seredin (M&S) plan set dated today.

1. For the street trees on Hancock, we have located them in five foot by seven foot granite edged raised islands. This will address the deicing salt issue noted by Jeff. The tree species are now Regal Prince Oak.
2. The street tree closest to the Thames and Hancock Street intersection has been relocated to the east on Thames Street.
3. The proposed plant beds on the Hancock Street side of the building have been eliminated as requested by City staff, and therefore the comments about the planting in those areas are moot.
4. The two tree planters in the Plaza in the pavement at the northeast end of the site are in four foot square flush beds with Silva cells beneath the trees. The other six trees are in longer lawn panels. These trees are now Exclamation London Planetrees.
5. There is a six foot high green fence planted barrier/screen proposed for separation between the property to the west and the WEX lot except for the portion of the lot line where the access license requires free passage between the lots.
6. There are two proposed layouts for the street trees on Thames. One puts the six Karpick Red Maples in four foot by eight foot curbed planters within a grass esplanade adjacent to the curblin. The second option sets the trees flush in the sidewalk when that walk is entirely elevated to be at grade with the building. In this condition the trees are protected with a four foot by eight foot Neenah R8808 grate, and will be placed on Silva cells with structural soil.

Please include this memo with your submission and I will follow-up with Jeff later this week.

END OF MEMORANDUM

ATTACHMENT B

Stormwater Management O&M Manual and Draft Stormwater Maintenance Agreement

**OPERATION AND MAINTENANCE FOR
0 HANCOCK STREET MULTI-USE COMPLEX**

PREPARED FOR:

**0 HANCOCK STREET LLC
PO BOX 910
PORTLAND, MAINE 04098**

PREPARED BY:

**STANTEC CONSULTING LTD.
482 PAYNE ROAD
SCARBOROUGH, MAINE**

SEPTEMBER 2017

A. INTRODUCTION

The 0 Hancock Street multi-use complex features a Fabco cartridge filter unit, model 10080-2, located within the building. The stormwater management system must be regularly inspected and maintained to ensure that each component is performing as intended throughout its life.

B. FABCO MODEL 10080-2 STORMBASIN CARTRIDGE FILTER UNIT

Preface: The roof drain filter unit is intended to provide water quality treatment for runoff from the proposed roof surface prior to discharge into the municipal drainage system in Thames Street. Primary contaminants from the roof include bird waste, metals, dust, and related pollutants.

Inspection: The roof filter unit must be inspected to ensure proper function during rain events. Primary inspection goals include removal of debris, leaves, or related solids preventing filtering and water pass thru or blocking the internal overflow.

Maintenance: If the filter is not draining within 24 hours, the filter media shall be replaced in accordance with the manufacturer's instructions. Debris must be removed from the filter unit. With all debris removed from the StormBasin the filter cartridge(s) will be exposed at the bottom. To remove the cartridge(s) reach down into the basin and firmly grasp the plastic outer rim of the cartridge body just below the foam, twist the cartridge body counter-clock-wise about ¼ turn until it stops, and lift the cartridge straight up to remove. Insert the new StormBasin cartridge down through the hole in the base of the unit. The colored ring on the cartridge should be facing upwards. Push the cartridge all the way through the hole until it rests on the bottom. Slowly turn the cartridge in a clock-wise direction until the tabs align with the slots and the cartridge body drops about ¼' further down. Once the tabs fall through the slots, continue turning firmly in a clock-wise direction until the tabs contact the STOPS. The cartridge is now installed.

Frequency: During the first year, the unit should be inspected quarterly and following all major storm events. Thereafter, the unit should be inspected at least every 6 months. Debris and sediment buildup should be removed as needed in accordance with manufacturer's recommendations. The filter cartridges shall be replaced on an annual basis. Cartridges can be sourced from Fabco Industries, Inc., phone 631-393-6024, 66 Central Avenue Farmingdale, NH 11735.

C. STORMWATER INLETS

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets may include catch basins, open culverts, culverts with bar screens, roof scuppers, plaza scuppers, trench drains, and field inlets. Inlets exist throughout the system.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Landscape services
- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets on parking decks or plaza areas. Grass clippings and leaves should be bagged and removed particularly near the yard inlets near the building.

Frequency: All inlets should be inspected on a quarterly basis, and after/during significant storm events.

Maintenance/Inspection Responsibility:

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/inspections of the inlets and tributary drainage system.

Comments: Maintenance of inlets is critical on this project.

D. TRIBUTARY DRAINAGE SYSTEM

Preface: The stormwater conveyance system will be principally overland flow discharging to piped drain systems. Most of the sediment is carried by the drainage system is intended to be trapped near the inlets or in pretreatment devices. Maintenance of this system can play a major role in the long-term maintenance costs and the effectiveness of the pond system.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that its carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems, the inlets must be inspected to ensure the rims are set at the proper elevation to optimize flow entry and are not clogged with debris. The inlet catch basins are normally equipped with sumps and hooded outlets which will remove gross floatables and large sediment particles from the flow stream.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

In some projects, most of the stormwater is carried in open swales, channels, or ditches. These conveyance channels may be rip rapped or vegetated, depending on the gradient and expected flow velocities. These facilities must be inspected to insure debris or sedimentation does not reduce their carrying capacity. Excess vegetative growth must also be noted. The surface protection

for the channels, either stone or vegetation, must be inspected to insure its integrity. Any areas subject to erosion should be noted.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sedimentation to any downstream detention pond, or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. If a filter bag has been designated for the inlet silt or other deleterious materials, can significantly reduce capacity and the bags should be removed with the sediment and replaced. Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the retail center. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline is observed, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed. The tidal influence can aggregate sedimentation since there are periods of no flow. Backwater valves and connection points are intended to reduce this occurrence.

Frequency: The piped drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation.

Maintenance/Inspection Responsibility:

Special Services: The owner will contract with an independent agent for cleaning or replacement of catch basins, sumps, and pipelines. Remedial source control measures may be performed by the owner or an outside service depending upon the nature of the particular situation.

Comments: Maintenance of inlets of utmost importance to the project to avoid unintended roof loading, ice accumulation, and cleanliness of the floors of the building.

E. RECORD KEEPING

Records of all inspections and maintenance work accomplished must be kept and maintained to document filter operation and related site maintenance. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by City staff associated with the City's stormwater program. Copies of such records should also be filed with the City's Stormwater Program Coordinator. A Typical inspection and maintenance record form is attached hereto as Attachment B.

F. CONTRACT SERVICES

In some instances or at specific times, the owner may not have the ability to conduct the required inspection and/or maintenance programs as outlined in this document. In such case, the work should be accomplished on a contractual basis with a firm or organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well-written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

ATTACHMENT A

Sample Inspection Logs

**0 HANCOCK STREET MIXED-USE COMPLEX
0 HANCOCK STREET, LLC
PORTLAND, ME**

ROOF DRAIN FILTER ANNUAL INSPECTION & MAINTENANCE LOG			
FACILITY:		YEAR:	
LOCATION: 8 Middle Street		CONTRACTOR:	
FUNCTION:		INSPECTOR:	
DATE OF INSPECTION:			
ITEM IDENTIFICATION	DESCRIPTION OF CONDITIONS	MAINTENANCE ACCOMPLISHED	DATE OF MAINTENANCE
GENERAL COMMENTS:			

STORMWATER MANAGEMENT SYSTEM MAINTENANCE PROGRAM – SUMMARY CHECKLIST						
Item	Commentary	Frequency				
		Monthly	Quarterly	Semi-Annual	Annual	Long Term
Vegetated Slopes	Slopes and related ground surface should be inspected for erosion and sedimentation		X (until vegetation established)		X	
Roof Drain Filters	Inspect systems to verify adequate functioning and capacity. Dispose of filters that have reached useful life in accordance with manufacturer's recommendations. Replace filters as required.	X				
Litter	Litter should be removed daily.					

STORMWATER DRAINAGE SYSTEM MAINTENANCE AGREEMENT

For 0 Hancock Street Mixed Use Development

IN CONSIDERATION OF the site plan approval granted by the Planning Board of the City of Portland to the proposed Mixed Use development at 0 Hancock Street Project ID 2017-180 shown on the Site Layout Plan submitted by Stantec Consulting Services, Ltd., and associated Grading, Drainage & Erosion Control Plan, (Exhibits A and B) prepared by Stantec, of 482 Payne Road, Scarborough, Maine dated last revised 09.26.2017 and pursuant to a condition thereof, 0 Hancock Street LLC, a Maine limited liability company with a principal place of business in Portland, Maine, and having a mailing address of P.O. Box 910, Portland, Maine 04098, 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 Roof Filter Cartridge systems, and related onsite drainage infrastructure, (hereinafter collectively referred to as the “stormwater system”), as shown on the Grading, Drainage & Erosion Control Plan in Exhibit B and in strict compliance with the approved Stormwater Inspection and Maintenance Manual prepared for the Owner by Stantec (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 lien 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 rolls 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 _____, 2017.

(name of company)

(representative of owner, name and title)

STATE OF MAINE
CUMBERLAND, ss.

Date: _____

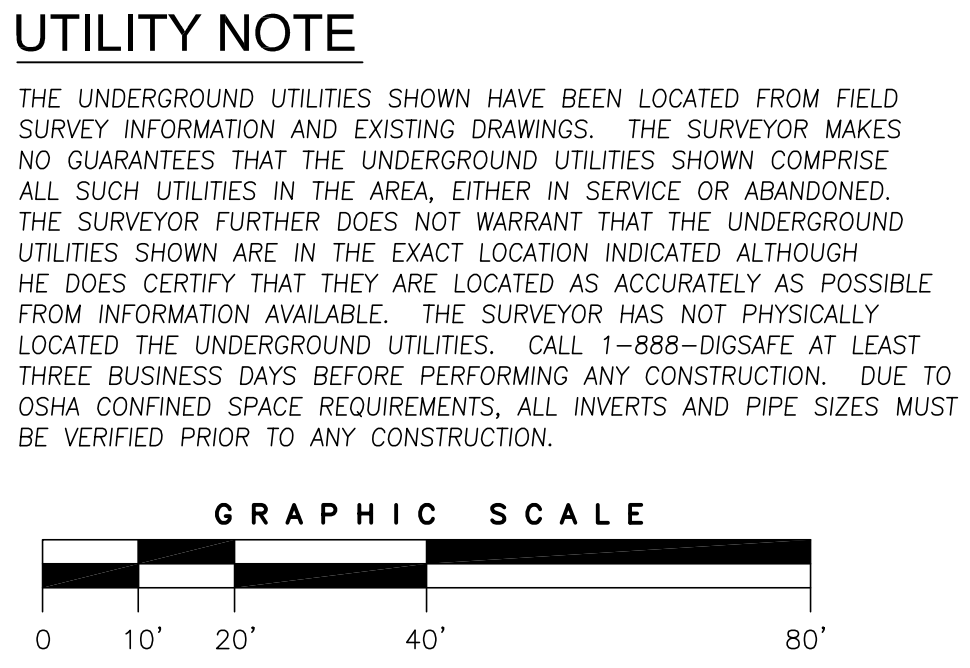
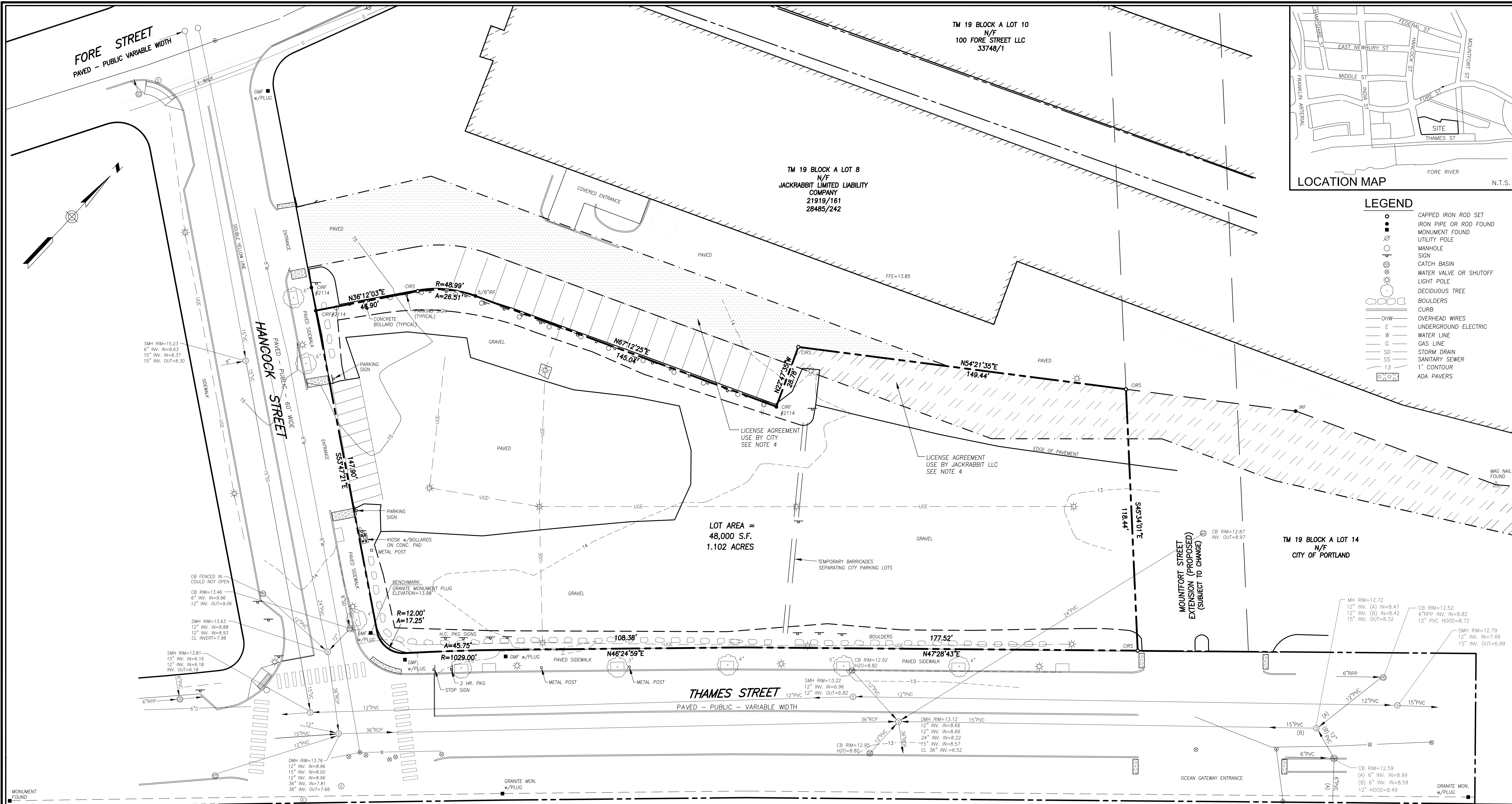
Personally appeared the above-named _____ (name and title), and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,

Notary Public/Attorney at Law

Print name: _____

Exhibit A: Approved Site Layout Plan
Exhibit B: Approved Grading, Drainage and Erosion Control Plan
Exhibit C: Approved Stormwater Inspection and Maintenance Manual



PLAN REFERENCES

- "RECORDING PLAT (SHEETS 1 THRU 3) OCEAN GATEWAY COMMERCIAL STREET & FORE STREET, PORTLAND, MAINE MADE FOR RECORD OWNERS CITY OF PORTLAND AND STATE OF MAINE," BY OWEN HASKELL, INC.D DATED AUGUST 4, 2004. OHI JOB# 2003-165P. RECORDED IN PLAN BOOK 204 PAGES 622-624.
- "ALTA/ACSM LAND TITLE SURVEY, 144 FORE STREET AND HANCOCK STREET, PORTLAND, CUMBERLAND COUNTY, STATE OF MAINE FOR RECORD OWNER: JACKRABBIT LIMITED LIABILITY CO.," BY LEWIS & WASINA, INC.D DATED 1/23/2011 AND REVISED THROUGH 1/26/2011. RECORDED IN PLAN BOOK 211 PAGE 15.
- "BOUNDARY SURVEY AND PROPOSED CONVEYANCE 144 FORE STREET AND HANCOCK STREET, PORTLAND, CUMBERLAND COUNTY, STATE OF MAINE FOR RECORD OWNER: JACKRABBIT LIMITED LIABILITY CO.," BY LEWIS & WASINA, INC., DATED 5/18/2010 AND REVISED THROUGH 10/4/2010, ON FILE WITH THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS.
- "ALTA/NSPS LAND TITLE SURVEY, 100 FORE STREET, PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR JONATHAN COHEN," BY OWEN HASKELL, INC., DATED OCTOBER 20, 2016. OHI JOB# 2016-325P.

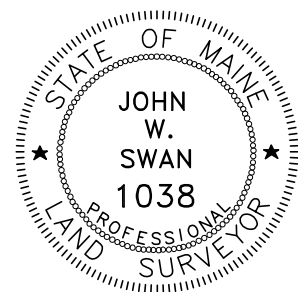
GENERAL NOTES

- OWNER OF RECORD: CITY OF PORTLAND
TAX MAP 19 BLOCK A LOT 14
C.C.R.D. BOOK 10924 PAGE 84
BOOK 12907 PAGE 105
- BEARINGS ARE BASED ON STATE PLANE COORDINATE SYSTEM, MAINE WEST ZONE, NAD 83 PER CITY CONTROL MONUMENTS.
- ELEVATIONS ARE BASED ON CITY DATUM.
- PROPERTY IS SUBJECT TO LICENSE AGREEMENT BETWEEN THE CITY OF PORTLAND AND JACKRABBIT LLC AS RECORDED IN BOOK 28481 PAGE 166.
- MOUNTFORT STREET EXTENSION IS IN THE PROPOSAL AND PLANNING STAGE AND MAY BE SUBJECT TO CHANGE. LINES SHOWN HEREON ARE BASED ON A 50 WIDTH WHERE THE NORTHEAST INTERSECTION WITH FORE STREET HINGES ON AN ANGLE POINT ON THE EASTERLY SIDE OF FORE STREET NEAREST TO MOUNTFORT (AS SHOWN ON PLAN REFERENCE 4) AND EXTENDS SOUTHEASTERLY AS TO CREATE A 48,000 SQUARE FOOT LOT - BEING THE SURVEYED PREMISES. THE TERMINATION OF MOUNTFORT STREET EXTENSION AS SHOWN HEREON ALSO IS CENTERED APPROXIMATELY WITH THE ACCESS DRIVE OF THE OCEAN GATEWAY.

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.

8/8/2017
DATE
JOHN W. SWAN, PLS NO. 1038



BOUNDARY & TOPOGRAPHIC SURVEY
ON
HANCOCK & THAMES STREETS, PORTLAND, MAINE
MADE FOR
ARCHETYPE
48 UNION WHARF, 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	JUNE 15, 2017	2017-145P
Check By JWS	Scale	Drwg. No.
Book No. FILE	1" = 20'	1



The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.
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ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

2	RESUBMITTED FOR FINAL SITE PLAN REVIEW PRIOR TO OCT. 4, 2017 PUBLIC HEARING	S38	S38	17.09.26
1	FINAL SITE PLAN REVIEW	S38	S38	17.08.08
Revision		By	Appd.	YI/MMD

Permit-Seal

Client/Project

0 HANCOCK STREET LLC

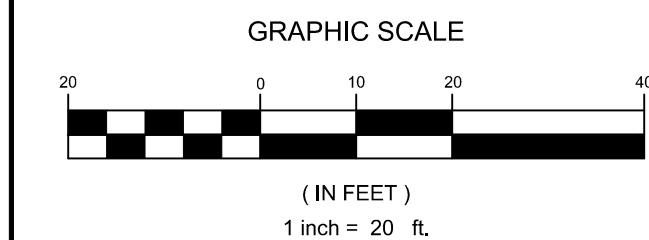
THAMES STREET SITE
PORTLAND, MAINE

Title

EXISTING CONDITIONS AND
DEMOLITION PLAN

Sheet

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1. CITY OF PORTLAND OCEAN GATEWAY PHASE 1 - MDOT PROJECT NO. 009215.00 BY WOODARD & CURRAN AS RECEIVED FROM CITY ARCHIVES, JANUARY 1, 2005.
2. BOUNDARY & TOPOGRAPHIC SURVEY ON HANCOCK & THAMES STREETS, PORTLAND, MAINE MADE FOR ARCHETYPE BY OWEN HASKELL, INC. JUNE 15, 2017 FILE 2017-145P

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 UTILITIES SHOWN. CALL 1-888-486-1111 AT LEAST 72 HOURS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

1. OWNER OF RECORD: CITY OF PORTLAND
TAX MAP 19 BLOCK A LOT 14
C.C.R.D. BOOK 10924 PAGE 84
BOOK 12907 PAGE 105
2. BEARINGS ARE BASED ON STATE PLANE COORDINATE SYSTEM, MAINE WEST ZONE, NAD 83 PER CITY CONTROL MONUMENTS
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4. PROPERTY IS SUBJECT TO LICENSE AGREEMENT BETWEEN THE CITY OF PORTLAND AND JACKRABBIT LLC AS RECORDED IN BOOK 28481 PAGE 166.
5. MOUNTFORT STREET EXTENSION IS IN THE PROPOSAL AND PLANNING STAGE AND MAY BE SUBJECT TO CHANGE. LINES SHOWN HEREON ARE BASED ON A 50 WIDTH WHERE THE NORTHEAST INTERSECTION WITH FORE STREET HINGES ON AN ANGLE POINT TO THE EASTERLY SIDE OF FORE STREET NEAREST TO MOUNTFORT (AS SHOWN ON PLAN REFERENCE 4) AND EXTENDS SOUTHEASTERLY AS TO CREATE A 48,000 SQUARE FOOT LOT - BEING THE SURVEYED PREMISES. THE TERMINATION OF MOUNTFORT STREET EXTENSION AS SHOWN HEREON ALSO IS CENTERED APPROXIMATELY WITH THE ACCESS DRIVE OF THE OCEAN GATEWAY.
6. SEE GEOTECHNICAL REPORT BY SUMMIT GEOENGINEERING SERVICES DATED 07/20/2017, PROJECT #17101
7. THE CONTRACTOR SHALL BE PREPARED TO ENCOUNTER BURIED FOUNDATIONS AND OTHER REMNANTS OF PAST USE OF THE SITE. ANY REMOVALS SHALL BE COMPLETED AT NO ADDITIONAL EXPENSE TO THE OWNER.
8. ALL STREET LIGHTS TO BE REMOVED SHALL BE DELIVERED TO A CITY STOCKYARD.

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Consultants

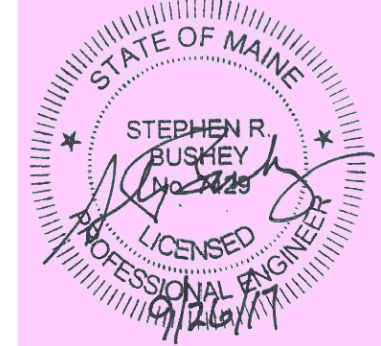
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

17/09/25	YTM/DD
SRB	Appr.
SRB	By
SRB	
2	RESUBMITTED FOR FINAL SITE PLAN REVIEW PRIOR TO OCT. 4, 2017 PUBLIC HEARING
1	FINAL SITE PLAN REVIEW

File Name: 195350450_construction.mxd	LA	DBS	SRB	17/09/25
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit Seal



Client/Project
0 HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

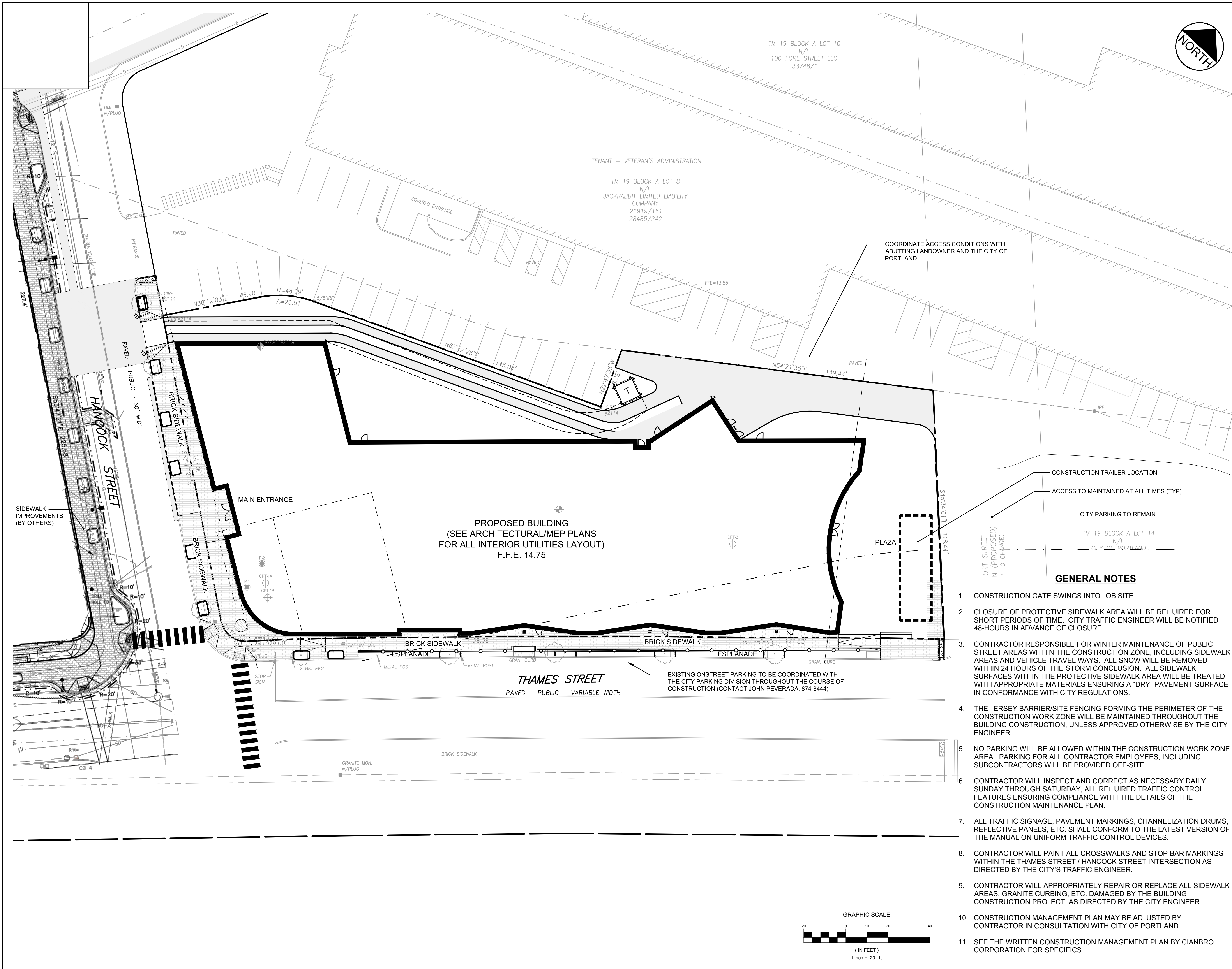
Title
CONSTRUCTION MANAGEMENT
PLAN

Project No.
195350450

Scale
1" = 20'

Sheet

C-2.2



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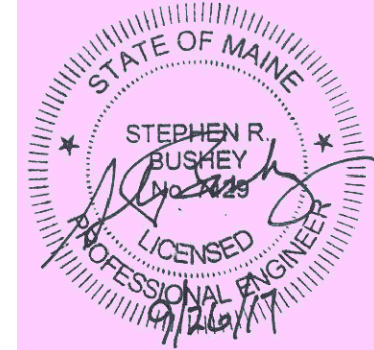
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

Revision	By	Appr.	Date
5	SRB		17.09.25
4	SRB		17.09.11
3	SRB		17.08.08
2	SRB		17.08.02
1	SRB		17.07.11

File Name: 195350450_site	LA	DBS	SRB	17.07.10
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



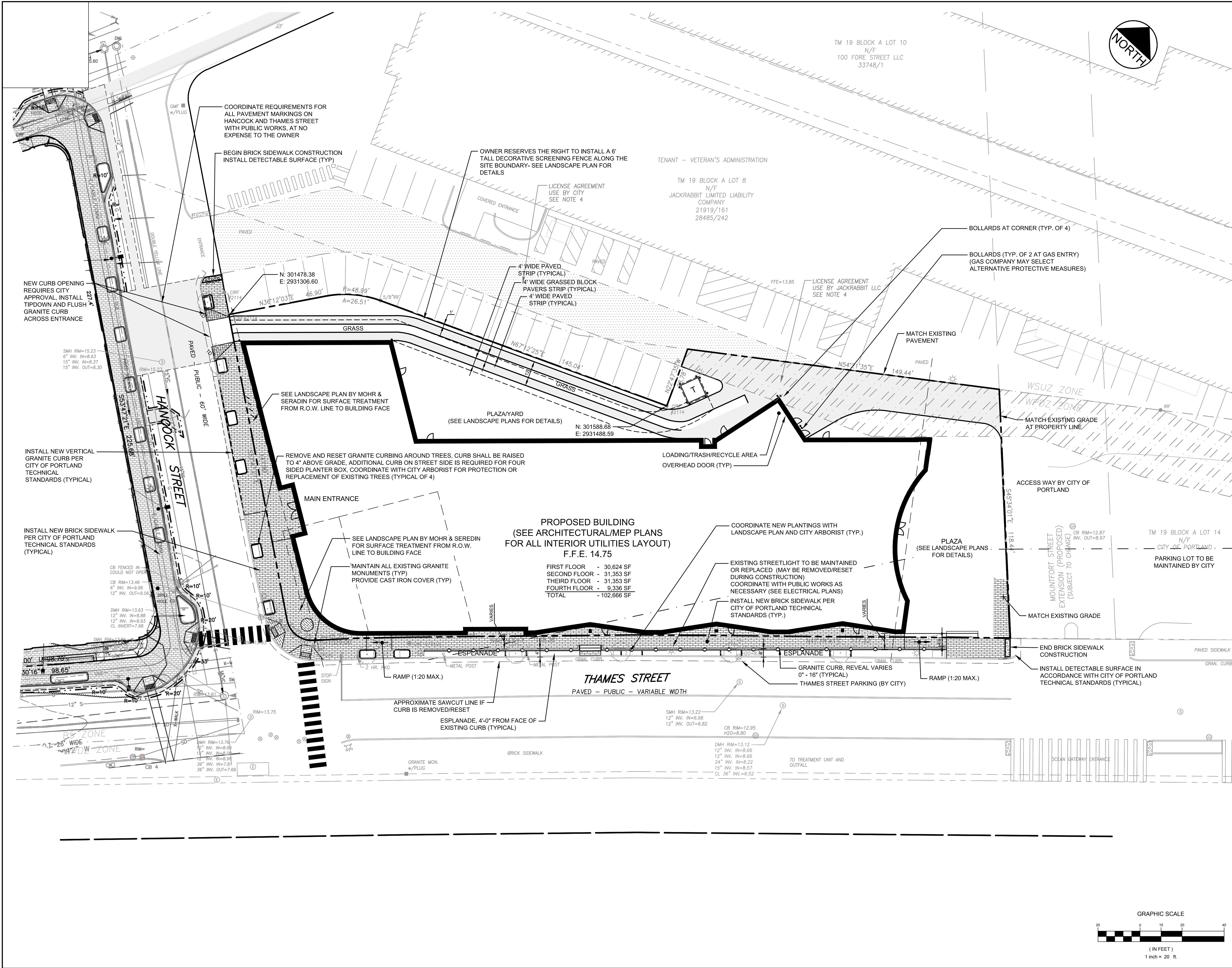
Client/Project
O HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
SITE LAYOUT PLAN

Project No.
195350450
Sheet
C-3.0

Scale
1" = 20'





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Consultants

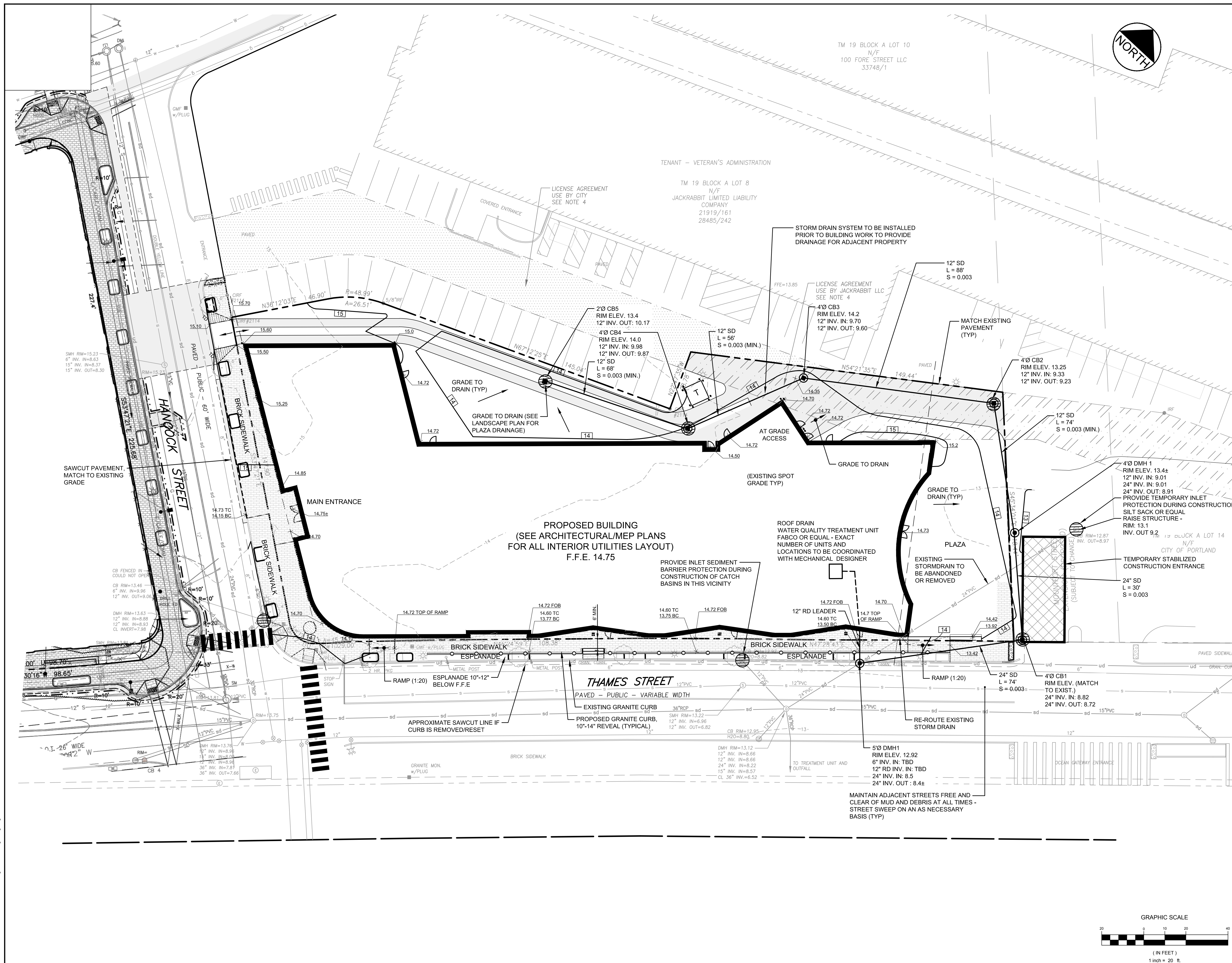
ARCHITECT
ARCHETYPE

LANDSCAPE ARCHITECT
MOHR & SEREDIN

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

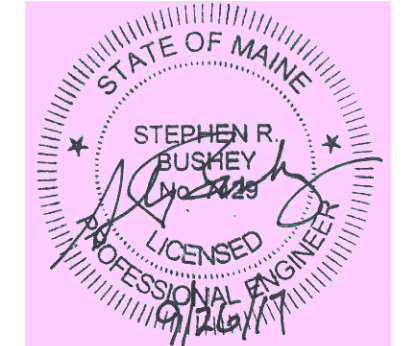
Notes



Revision		By	Appd.	Y/M/D
3	RESUBMITTED FOR FINAL SITE PLAN REVIEW PRIOR TO OCT. 4, 2017 PUBLIC HEARING	SRB	SRB	17.09.26
2	REVISED BUILDING FOOTPRINT AND GRADING - RESUBMITTED TO CITY	SRB	SRB	17.09.11
1	FINAL SITE PLAN REVIEW	SRB	SRB	17.08.08

File Name: 195350450_grading	DWN.	D8S	SR8	17.07.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
GRADING, DRAINAGE AND
EROSION CONTROL PLAN

Project No.	Scale
195350450	1" = 20'

Sheet

C-4.0

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Consultants

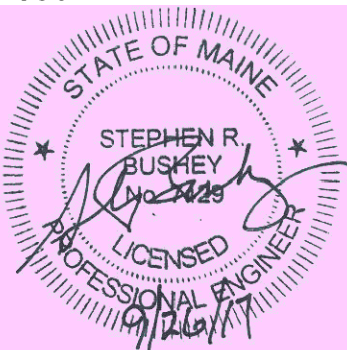
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

Revision	By	Date
1	SRB	17.09.11
2	SRB	17.09.14
3	SRB	17.09.14
4	SRB	17.09.14

File Name: 195350450.dwg	LA	DBS	SRB	17.07.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
O HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
UTILITY PLAN

Project No. 195350450
Scale 1" = 20'

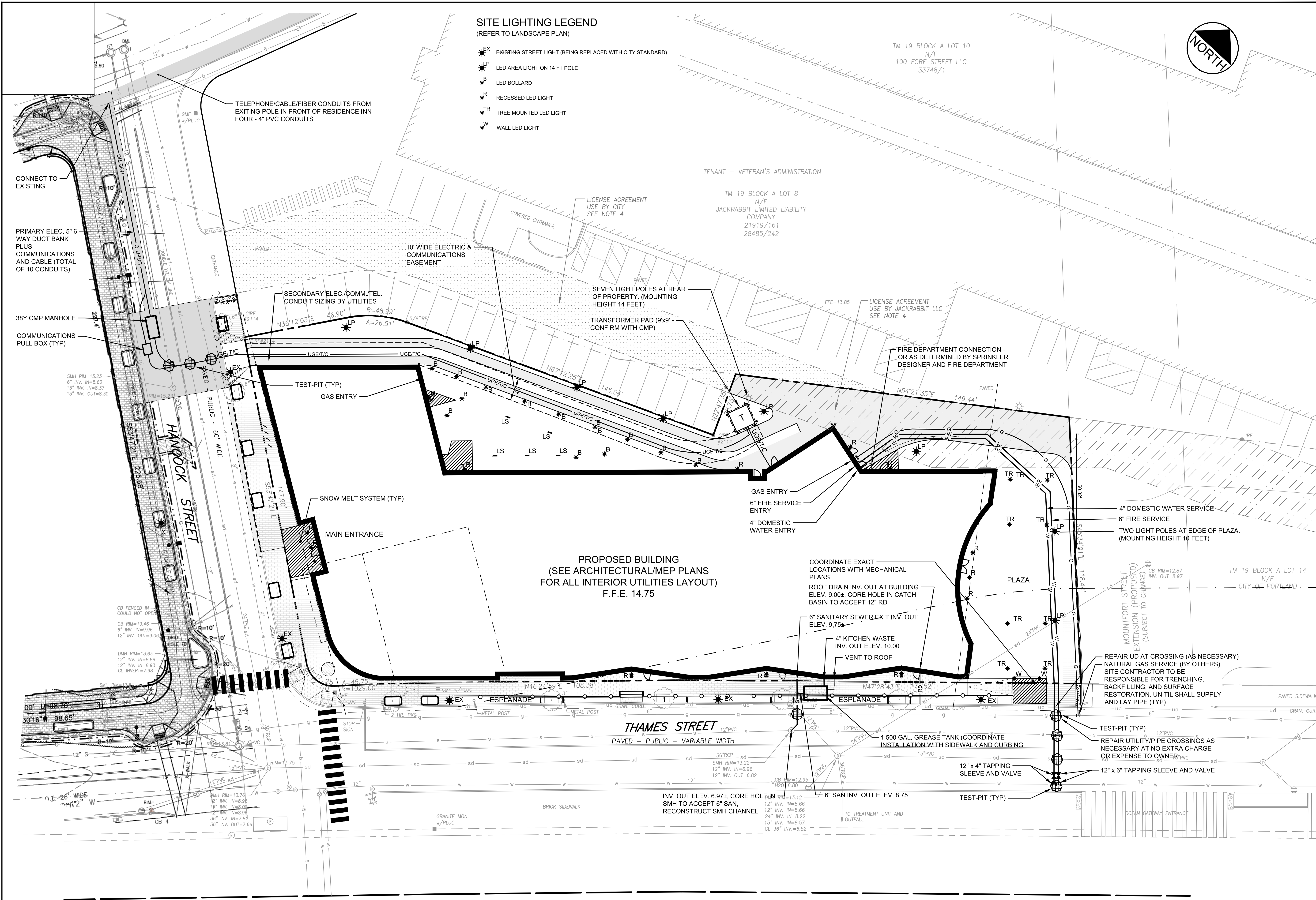
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C-5.0

SITE LIGHTING LEGEND

(REFER TO LANDSCAPE PLAN)

- EX EXISTING STREET LIGHT (BEING REPLACED WITH CITY STANDARD)
- P LED AREA LIGHT ON 14 FT POLE
- B LED BOLLARD
- R RECESSED LED LIGHT
- TR TREE MOUNTED LED LIGHT
- W WALL LED LIGHT

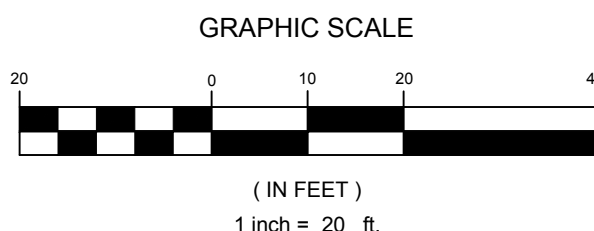


PLAN REFERENCE

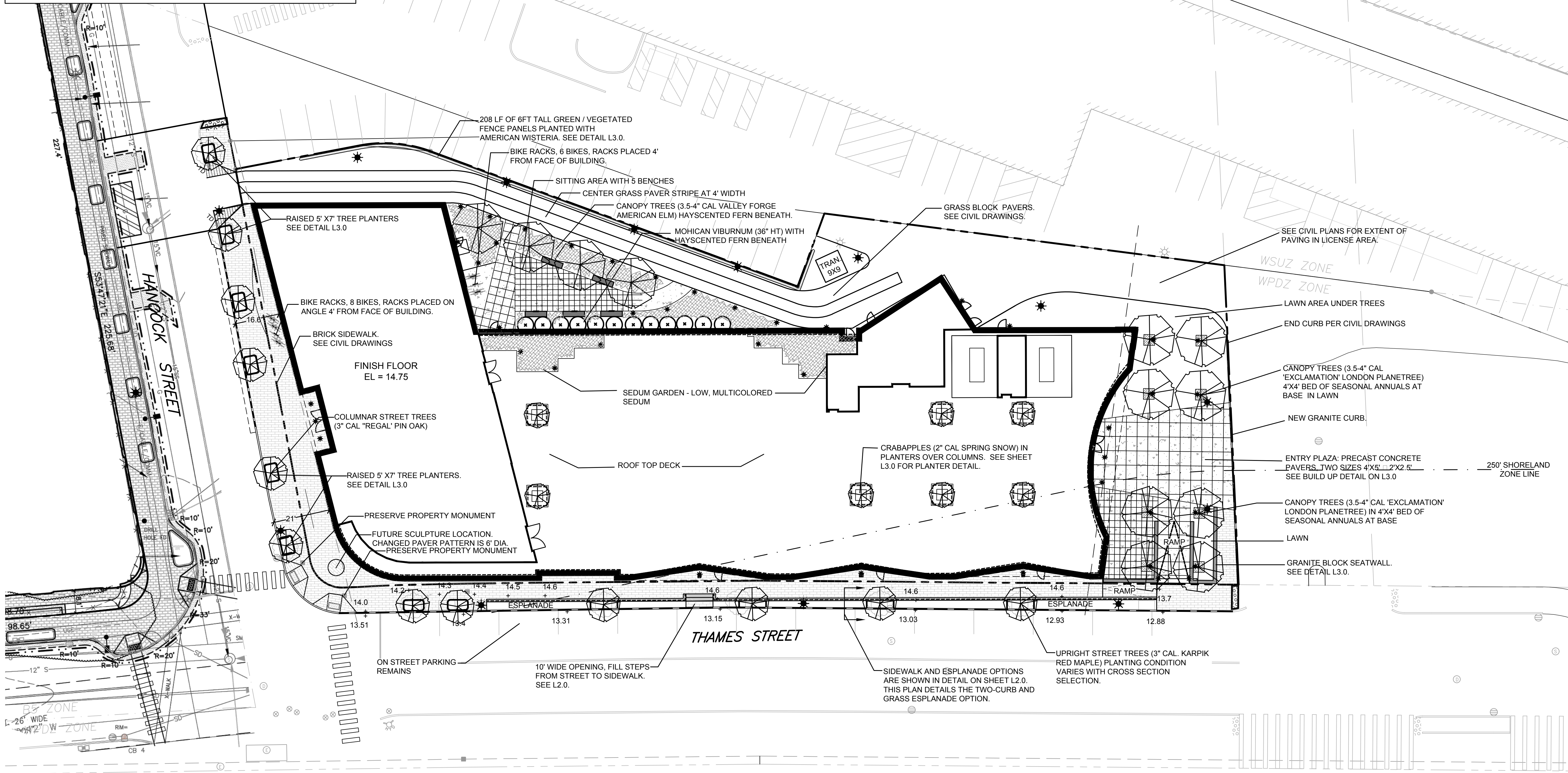
CITY OF PORTLAND OCEAN GATEWAY PHASE 1 - MDOT PROJECT NO. 009215.00 BY WOODARD & CURRAN, RECORD PLAN DATED JANUARY 14, 2005, SHEETS 215-217, PROVIDED BY CITY OF PORTLAND ARCHITECT.

NOTES

- OWEN HASKELL, INC. TO CONFIRM ALL INVERT INFORMATION PRIOR TO THE PRODUCTION OF CONTRACT DOCUMENTS.
- CONTRACTOR SHALL PROVIDE RECORD TIE LOCATIONS FOR ALL UTILITIES TO THE OWNER PRIOR TO THE REQUEST FOR A CERTIFICATE OF OCCUPANCY.
- CONTRACTOR TO COMPLETE ALL TEST-PITS AT THE COMMENCEMENT OF CONSTRUCTION AND REPORT THE RESULTS TO THE OWNER AND THE ENGINEER.



PLANT LIST				
Deciduous and Shade Trees				
AR	6	3"-3.5" cal.	Acer rubrum 'Karpick' – Karpick Red Maple	
QR	4	3"-3.5" cal.	Quercus robur x bicolor 'Long' – Regal Prince Oak	
PA	5	3.5"-4" cal.	Platanus x acerifolia 'Morton Circle' – Exclamation London Planetree	
VF	4	3.5"-4" cal.	Ulmus Americana 'Valley Forge' – Valley Forge American Elm	
Ornamental Trees				
MD	7	2-2.5" cal.	Malus 'Spring Snow' – Spring Snow Crabapple	
Shrubs				
VM	12	3.5'-4' ht.	Viburnum lantana 'Mohican' – Mohican Viburnum	
Grasses, Groundcovers & Vines				
HF	860	SOD (sf)	Dennstaedtia punctilobula – Hayscented fern	
SD	620	(sf) Trays	Sedum Multicolored for Rooftop Planting Trays	
WS	52	3 gal	Wisteria frutescens – American Wisteria (White & Purple)	



Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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Consultants

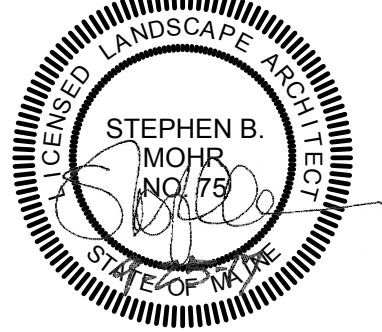
MOHR & SEREDIN
Landscape Architects, Inc.
18 Pleasant Street
Portland, Maine 04101
207-871-0003

Notes

Revision	By	Date
1	YAMALDO	17.09.25

File Name: 978-Base-MS 9-22-17	M&S	SBM	TS	17.09.25
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK LLC

THAMES STREET SITE
PORTLAND, MAINE

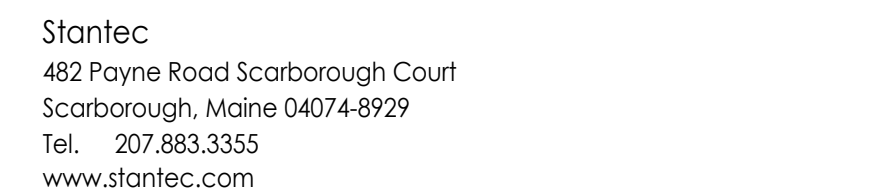
Title
LANDSCAPE PLAN

Project No.
195350450

Scale
1" = 20'

Sheet

L-1.0



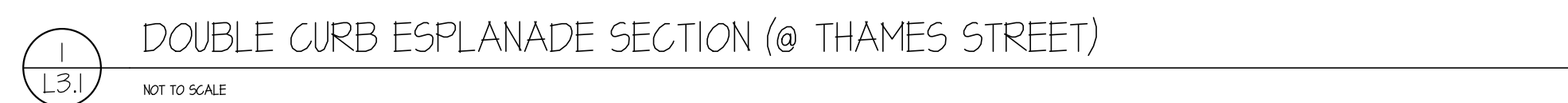
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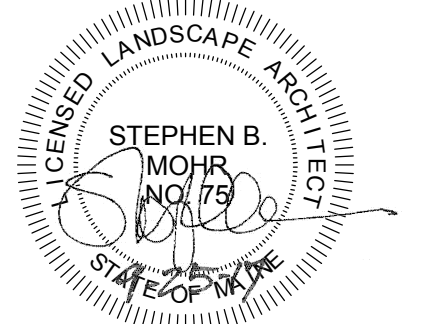
MOHR & SEREDIN
Landscape Architects, Inc.
18 Pleasant Street
Portland, Maine 04101
207-871-0003

Notes



File Name: 978-Details-MS	M&S	SBM	TS	17.09.25
P.F. STEPHEN R. BUISHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK LLC

THAMES STREET SITE
PORTLAND, MAINE

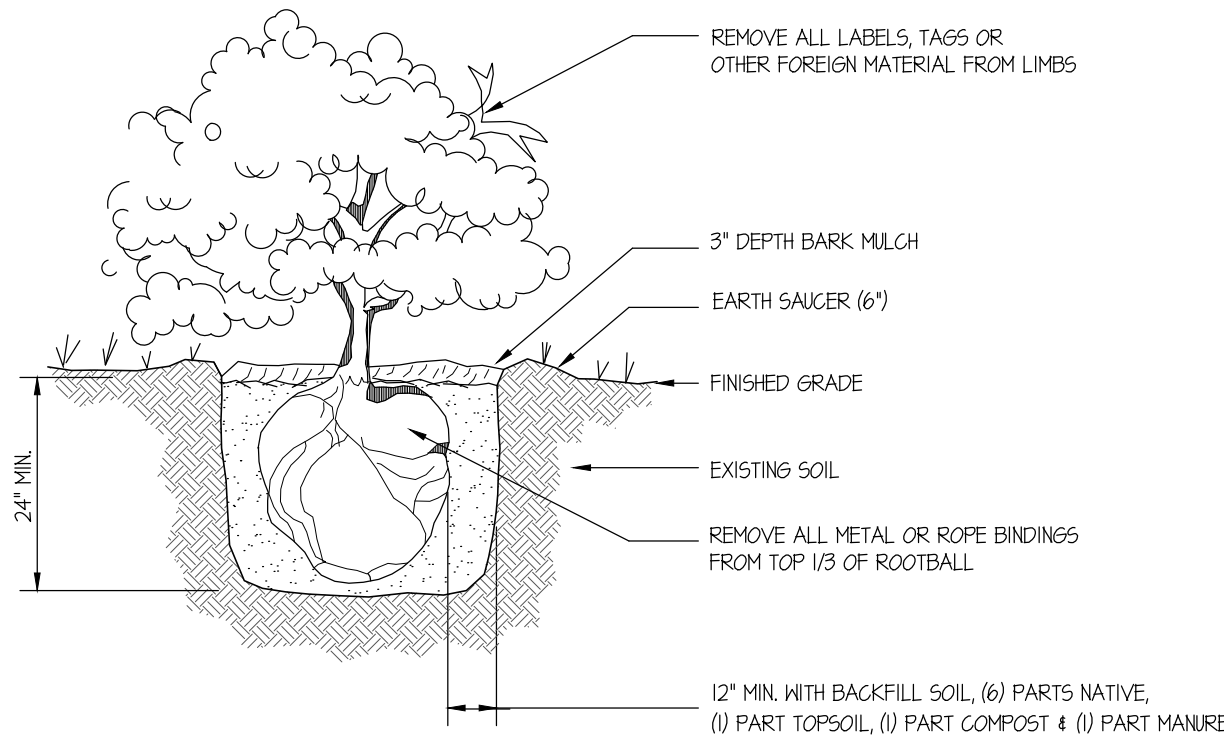
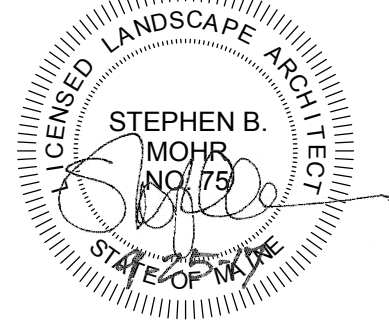
Title
LANDSCAPE DETAILS

Project No.	Scale
195350450	N.T.S.

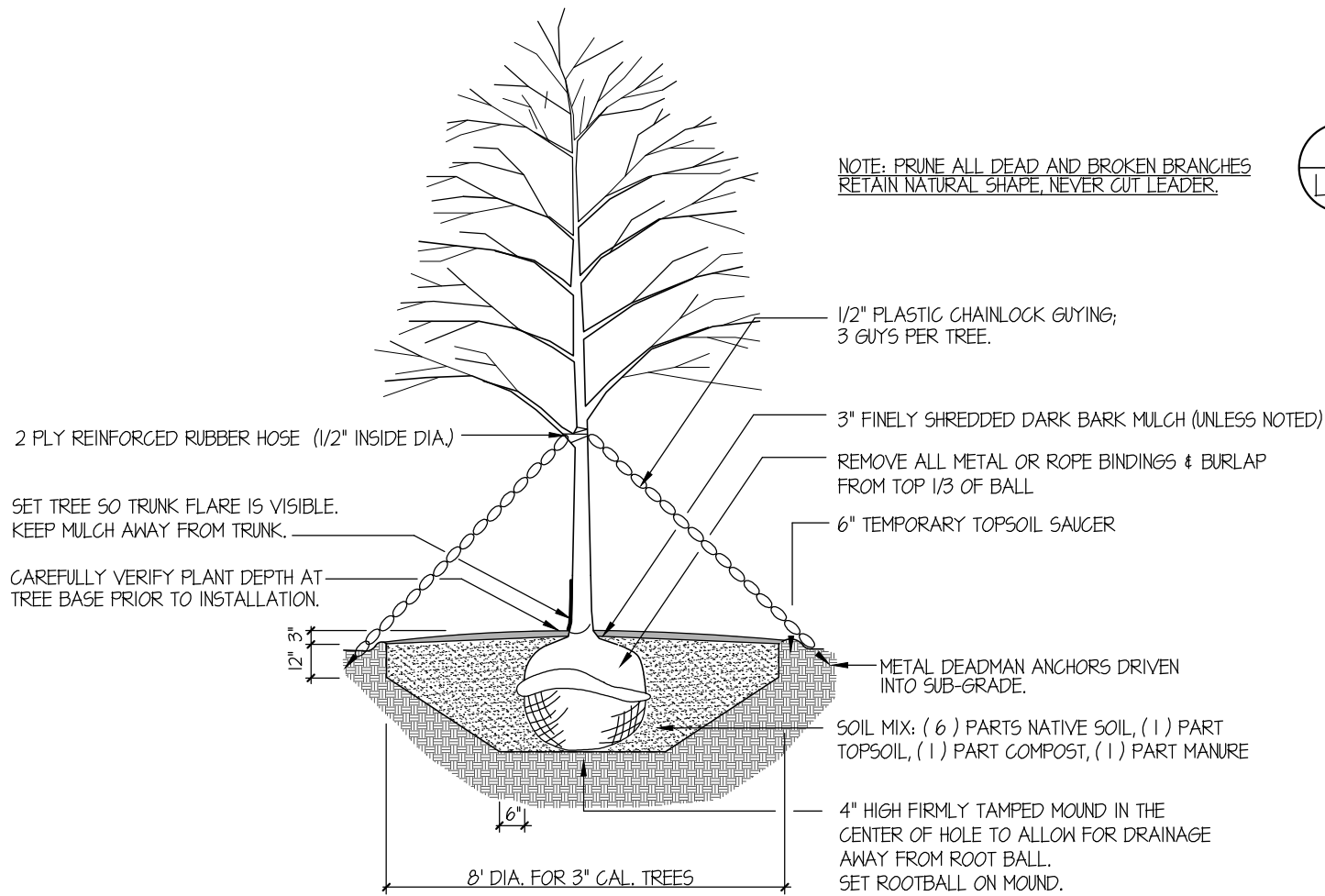
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L-3.1

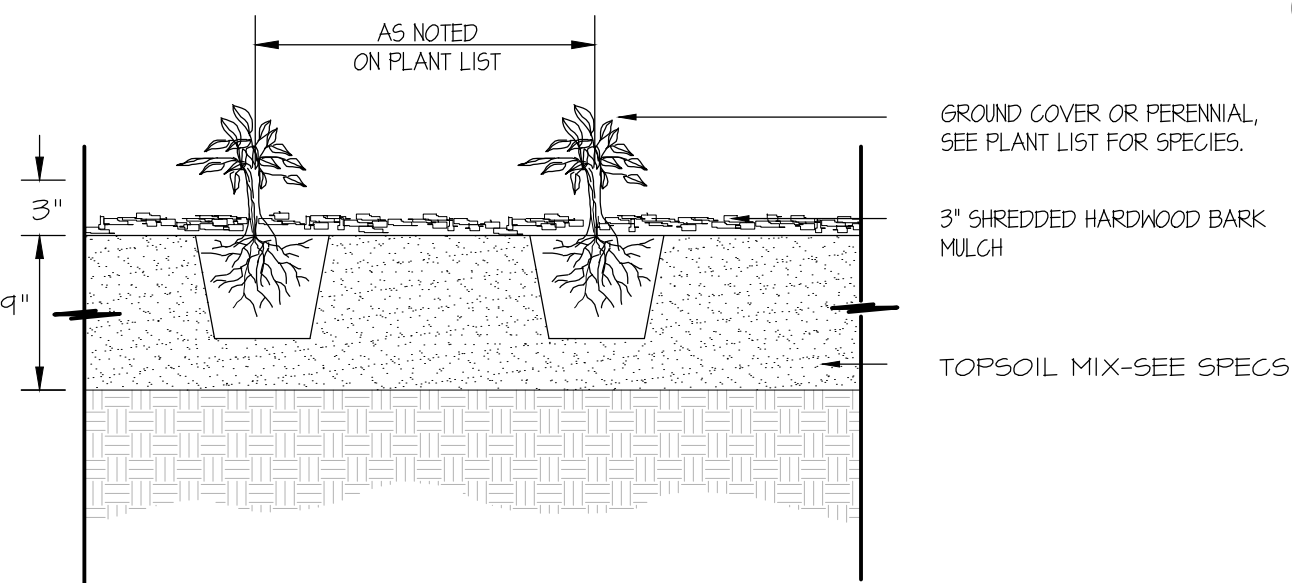
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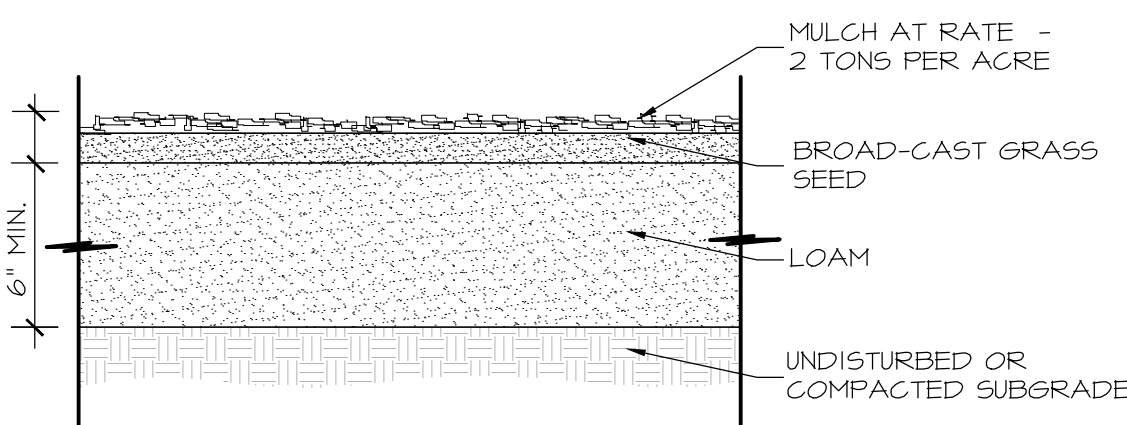
1
L3.0
SHRUB PLANTING INSTALLATION
NOT TO SCALE



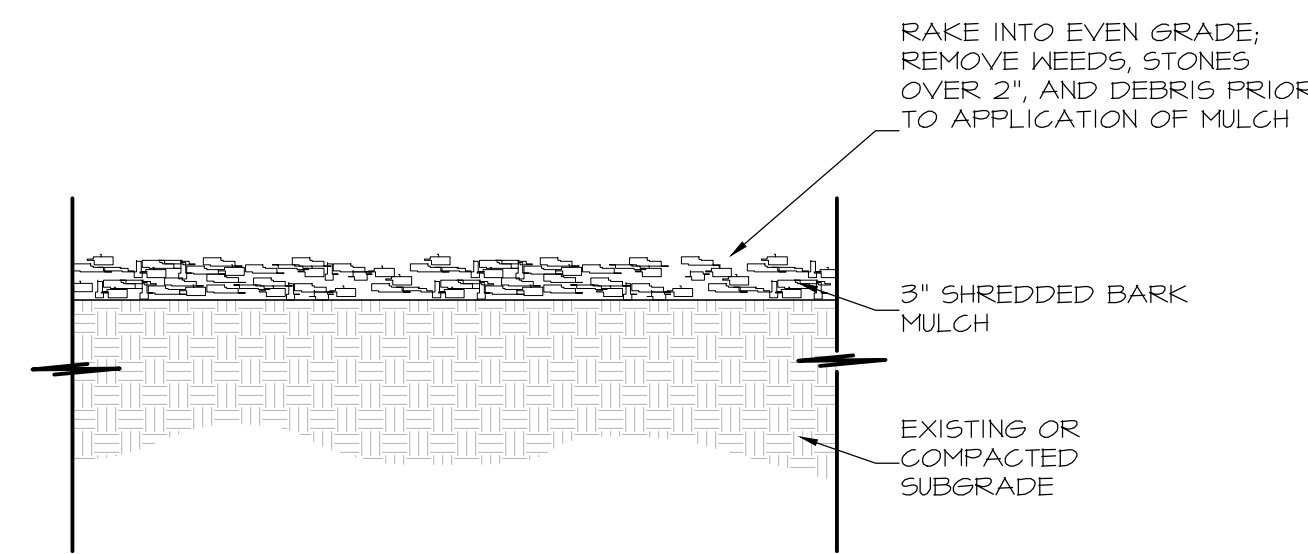
2
L3.0
DECIDUOUS TREE PLANTING INSTALLATION
NOT TO SCALE



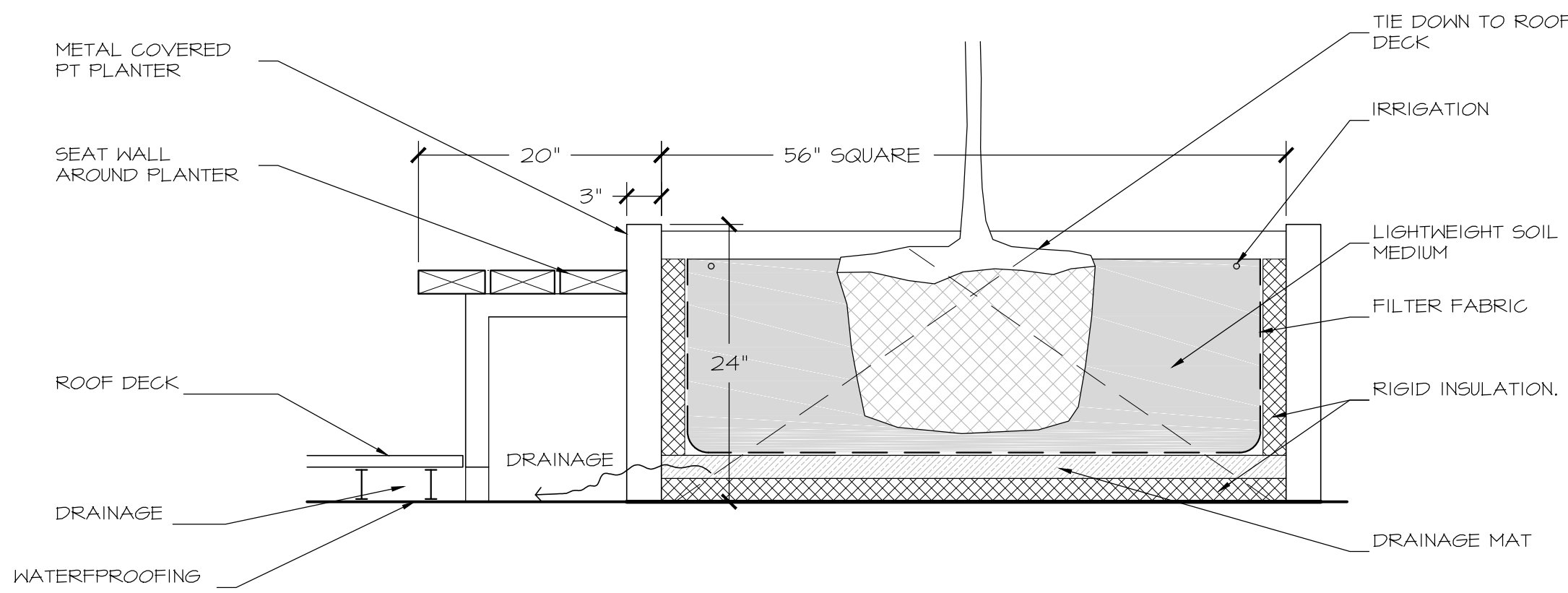
3
L3.0
GROUND COVER/PERENNIAL PLANT INSTALLATION
NOT TO SCALE



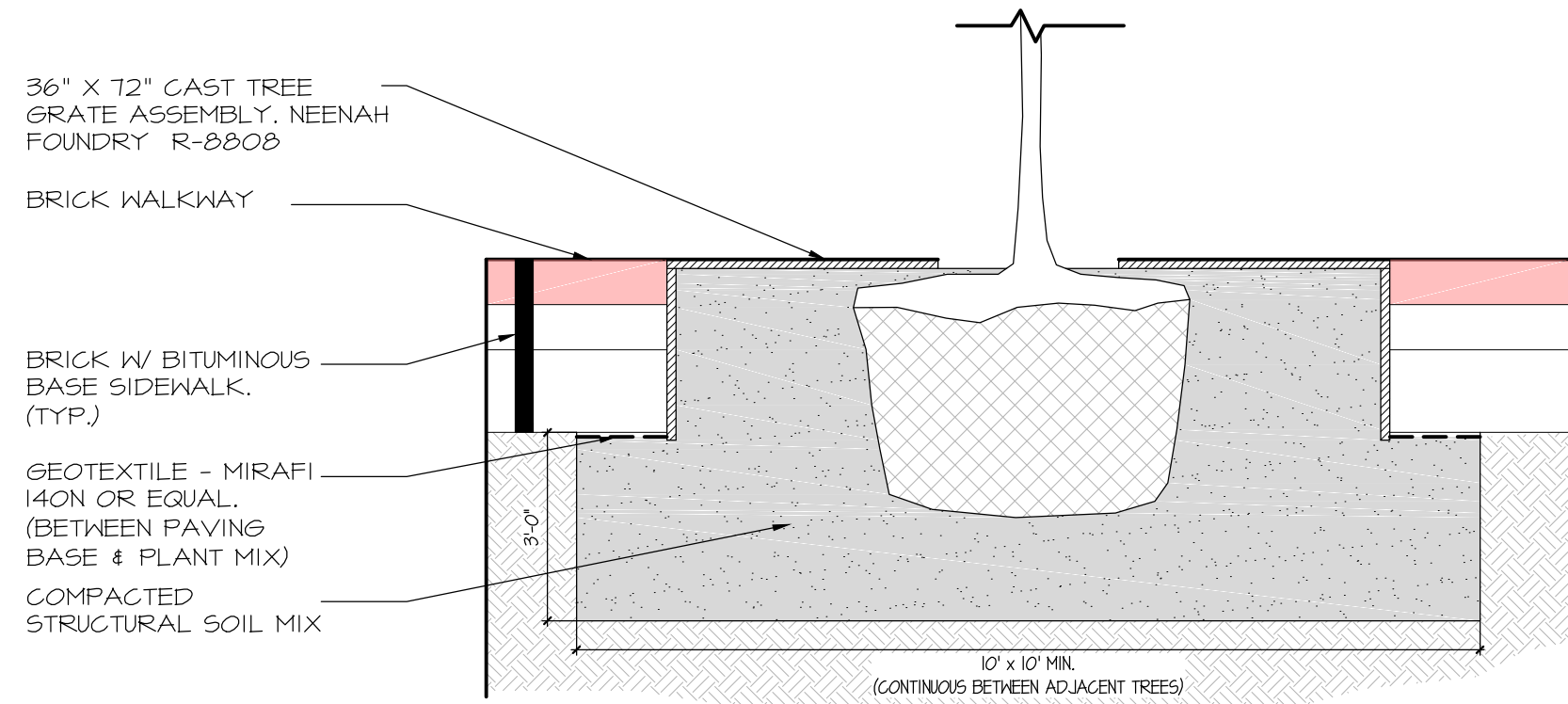
4
L3.0
LOAM AND SEED
NOT TO SCALE



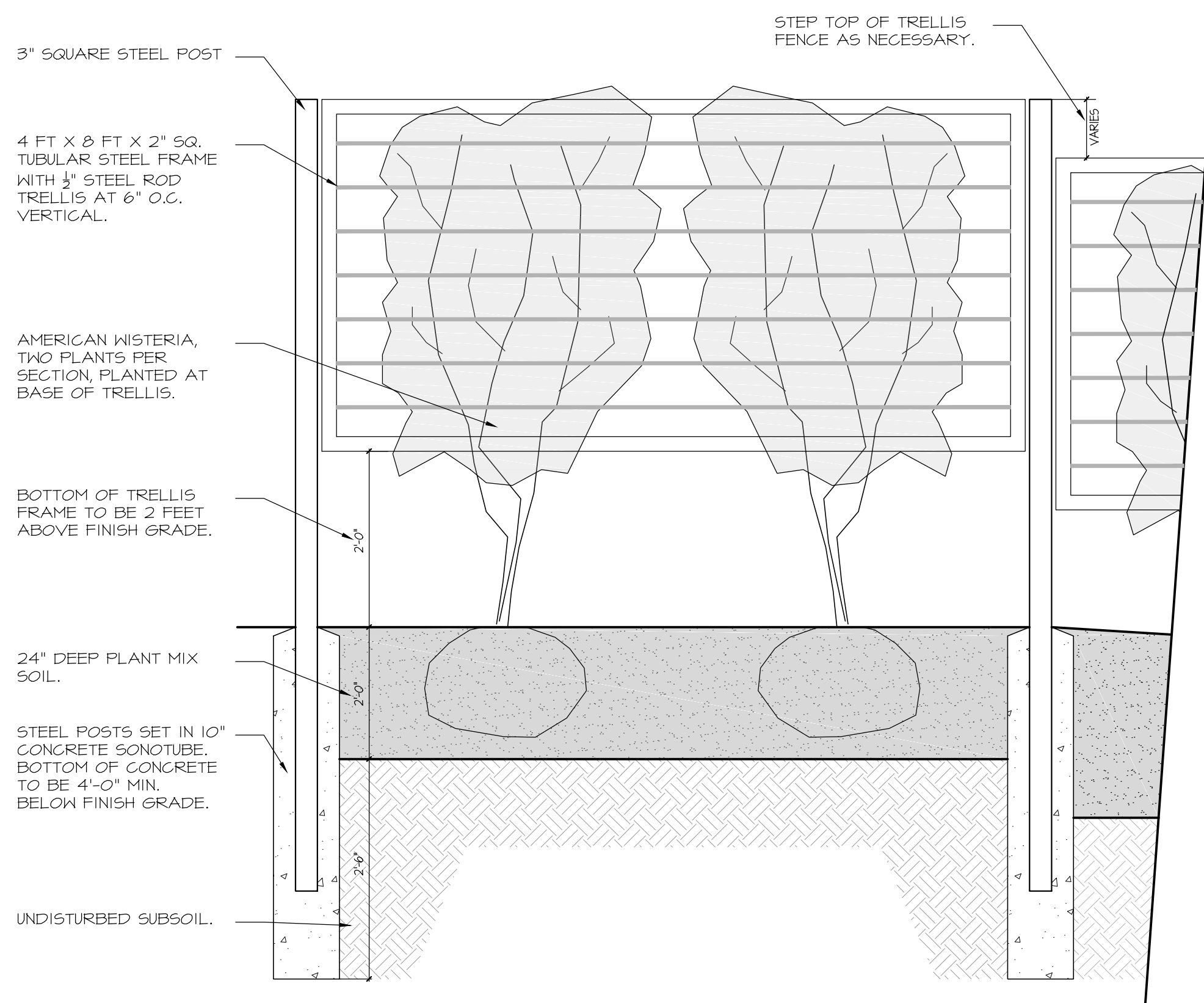
5
L3.0
BARK MULCH
NOT TO SCALE



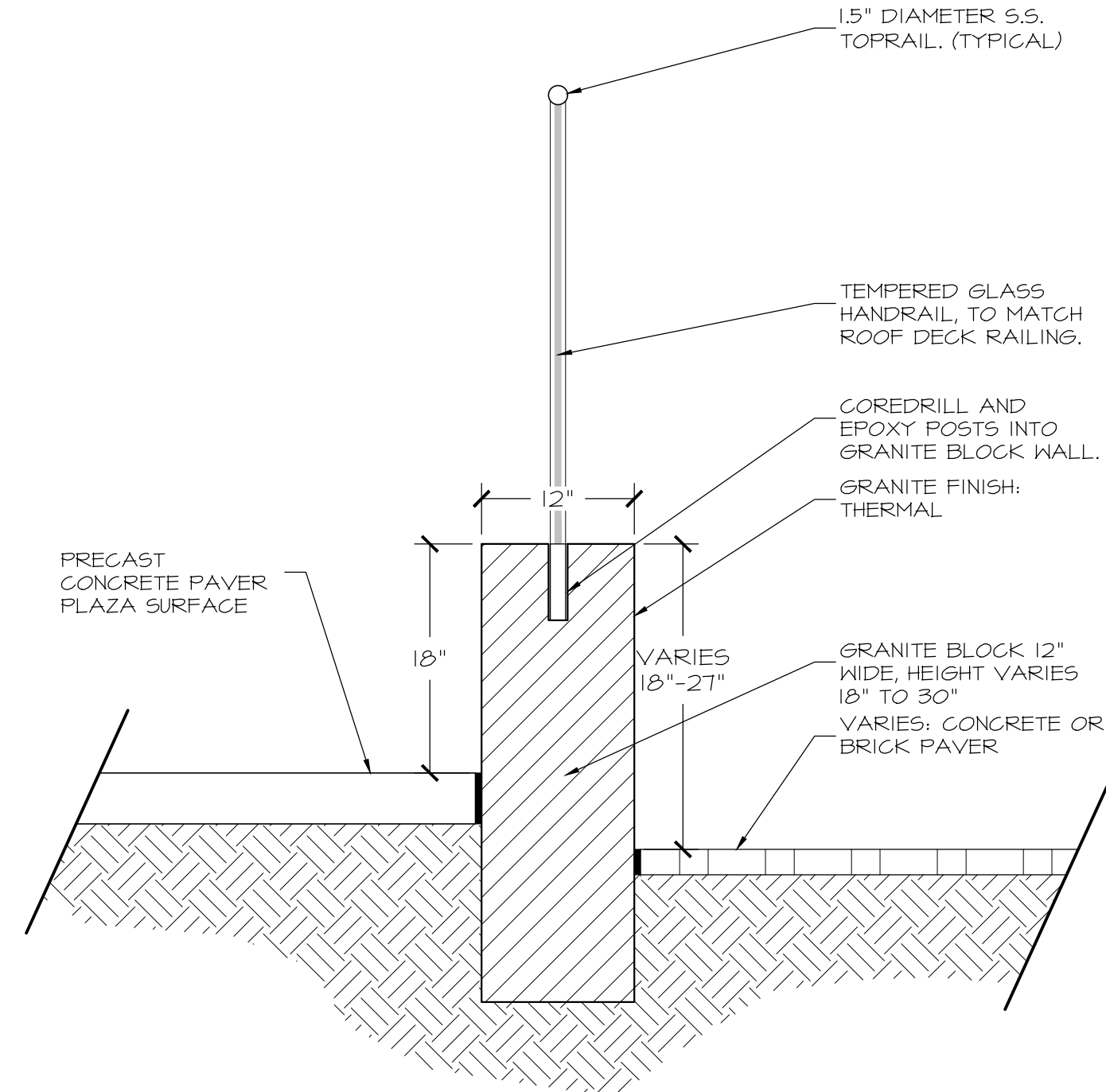
6
L3.0
TREE PLANTER ROOFTOP
NOT TO SCALE



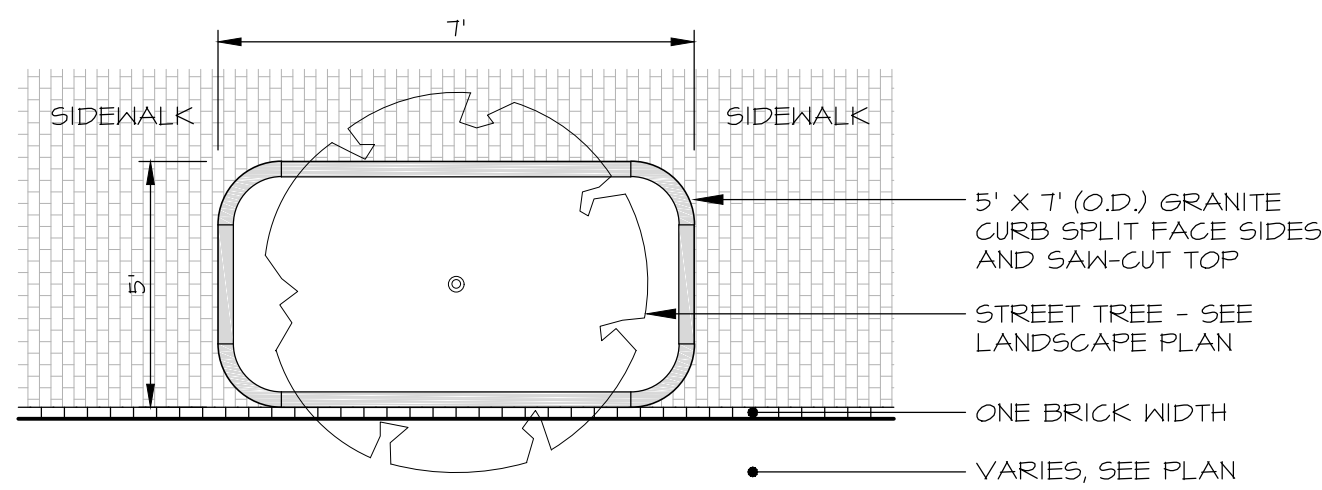
7
L3.0
FLUSH TREE GRATE DETAIL
NOT TO SCALE



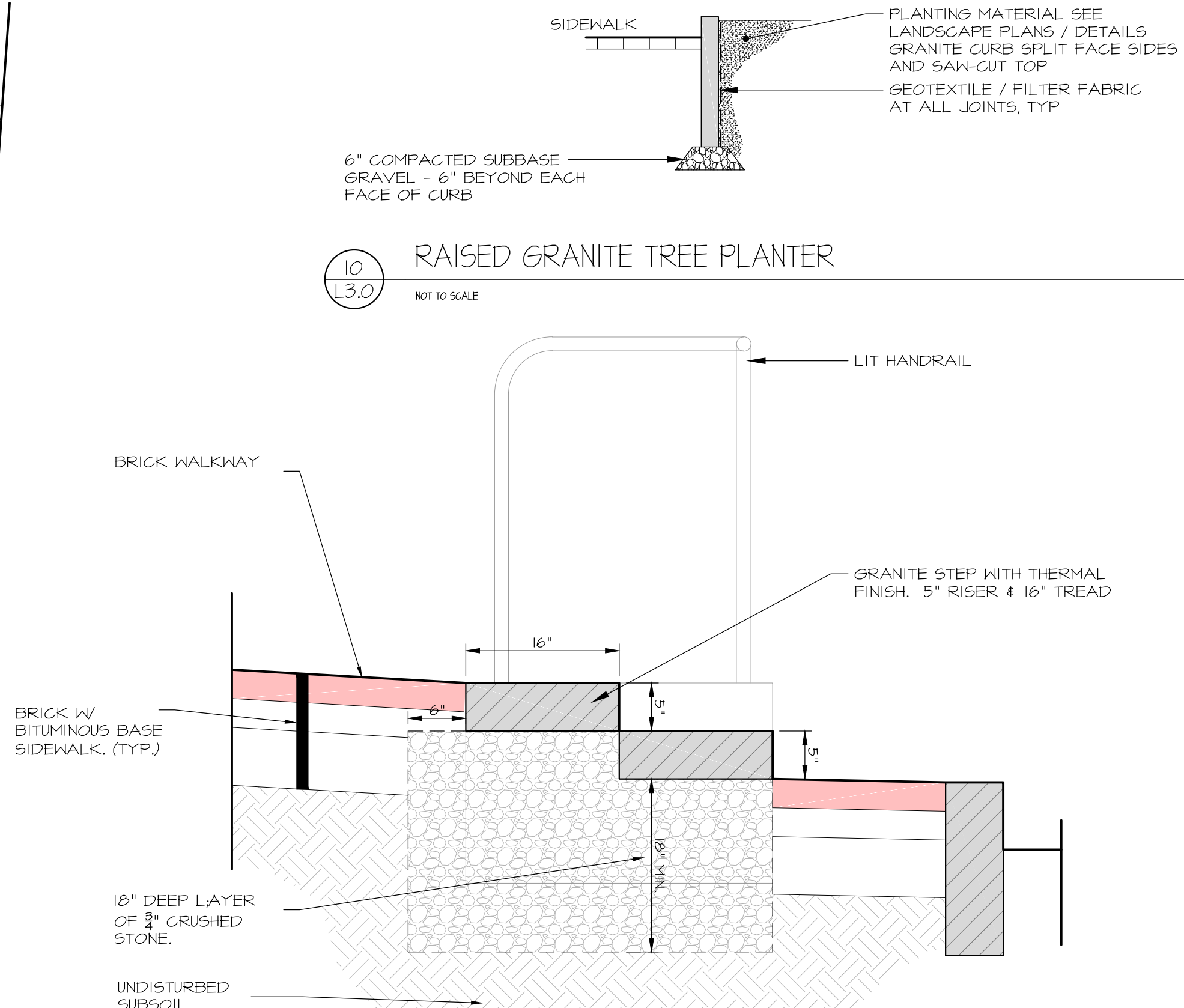
8
L3.0
6 FT TALL GREEN VEGETATED FENCE
NOT TO SCALE



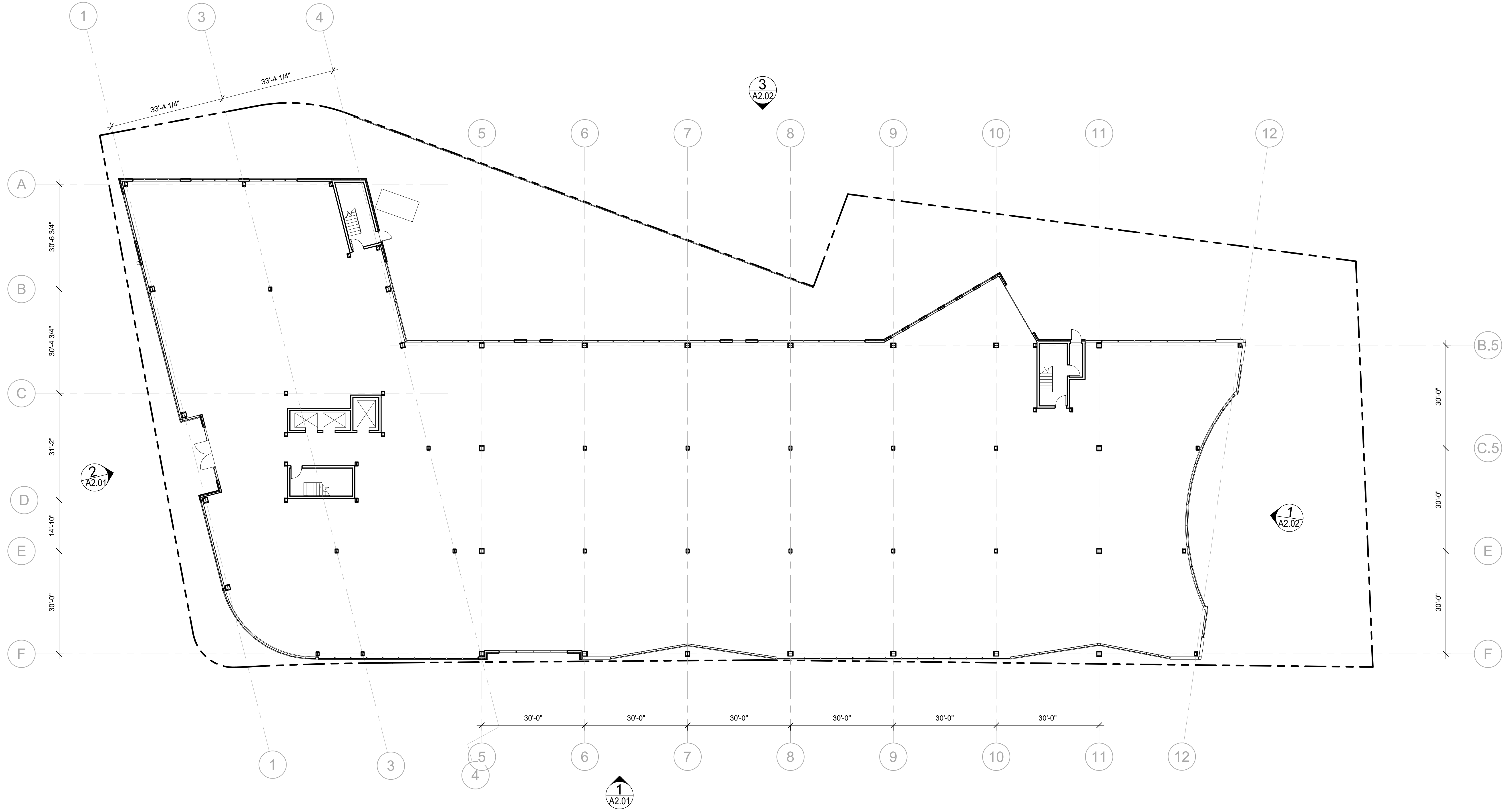
9
L3.0
GRANITE BLOCK SEAT WALL (PLAZA)
NOT TO SCALE



10
L3.0
RAISED GRANITE TREE PLANTER
NOT TO SCALE



11
L3.0
GRANITE STEP DETAIL
NOT TO SCALE



1 | 1ST FLOOR
1/16" = 1'-0"

Date: August 8, 2017

Scale: 1/16" = 1'-0"

First Floor Plan

Revisions:

Project:

0 Hancock Street

Architect:

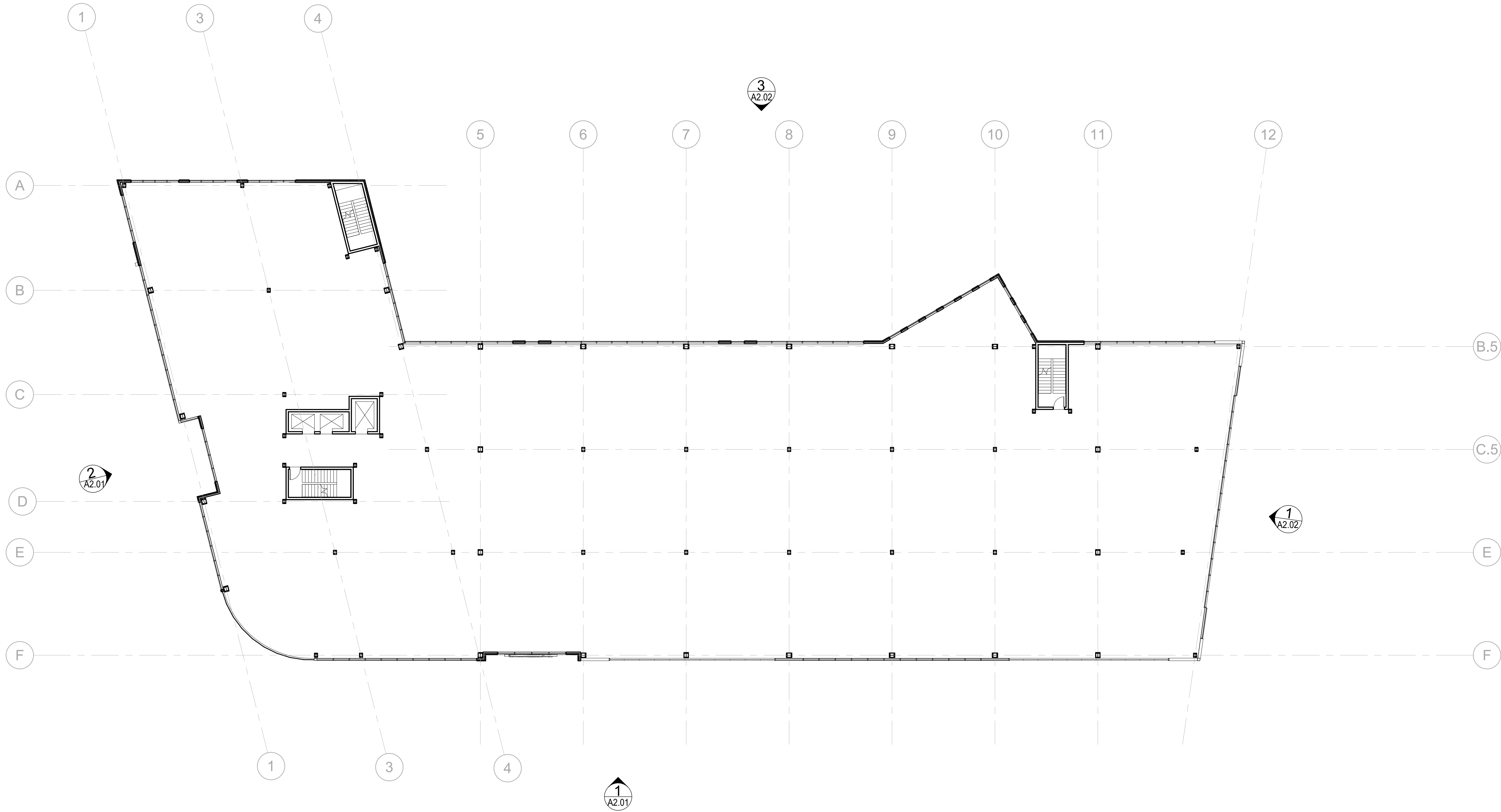
ARCHETYPE
architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Consultant:

Prepared For:

0 Hancock Street
LLC

A1.01



1 | 2ND AND 3RD FLOOR
1/16" = 1'-0"

Prepared For:
0 Hancock Street
LLC
Address
City, State

Consultant:

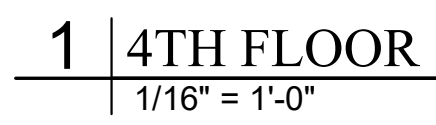
Architect:
ARCHETYPE
architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

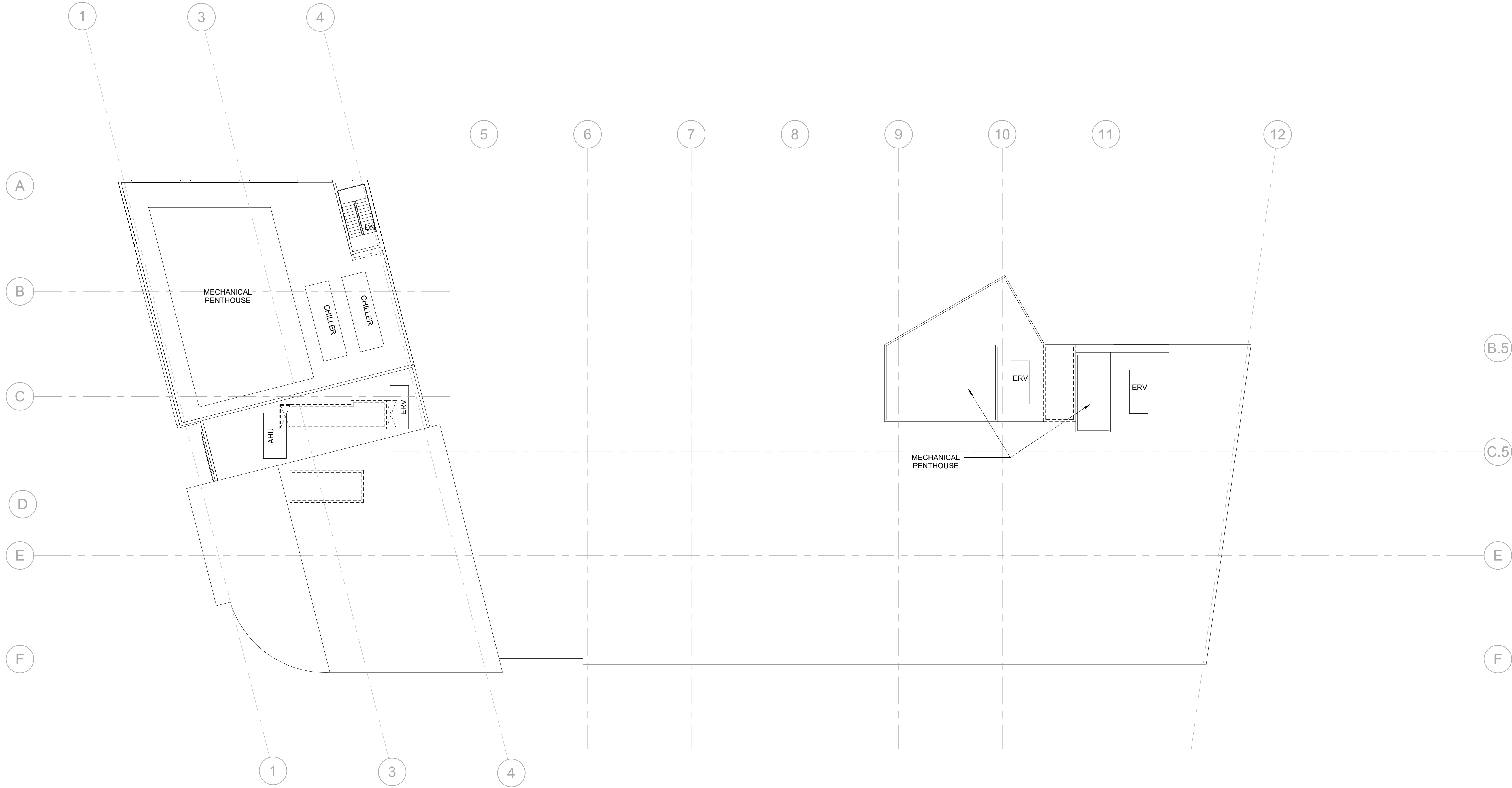
Project:
0 Hancock Street
Portland, Maine

Revisions:

Date:
August 8, 2017
Scale:
1/16" = 1'-0"
Second and Third Floor

A1.02



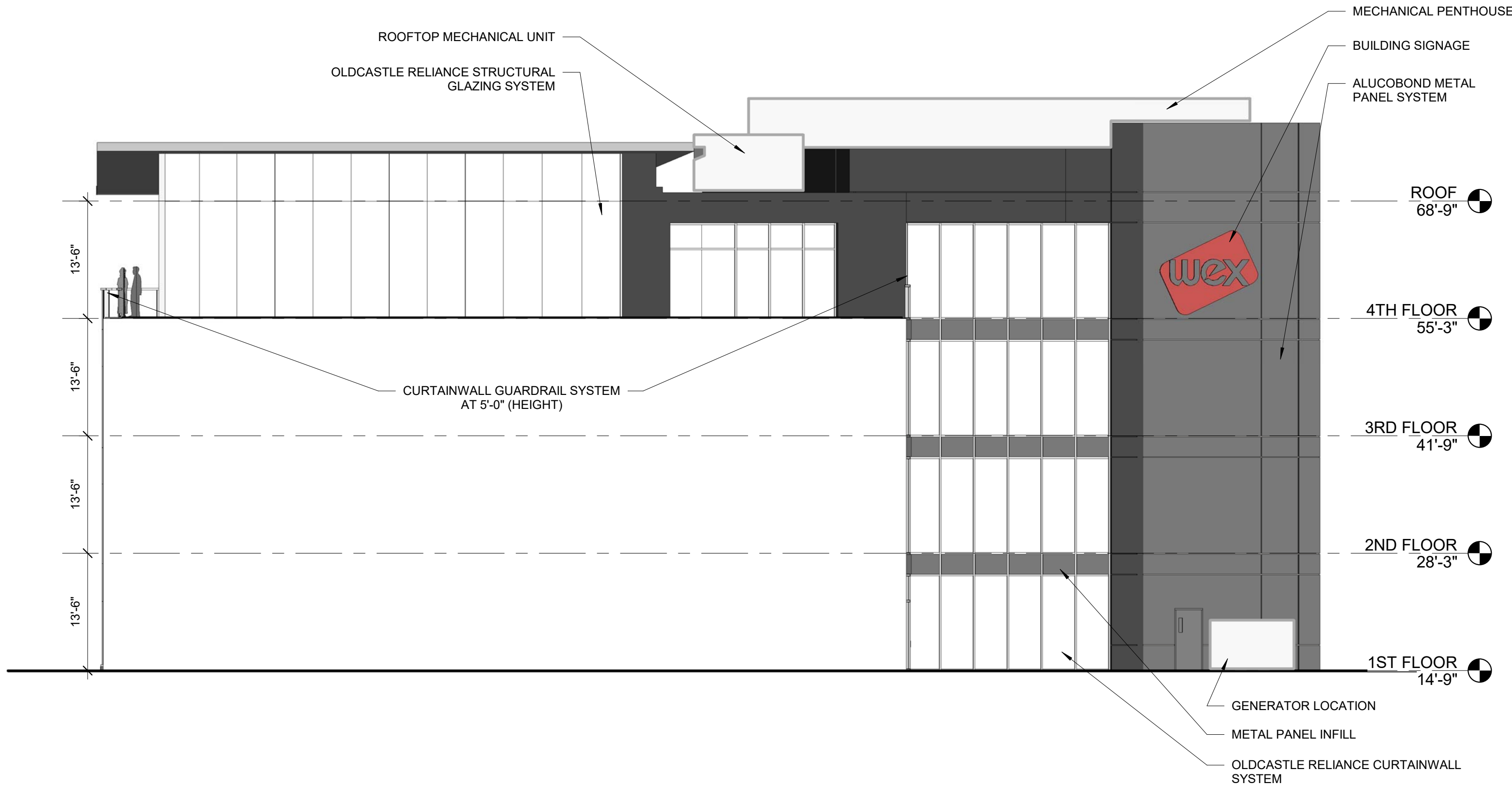


1 | ROOF
1/16" = 1'-0"

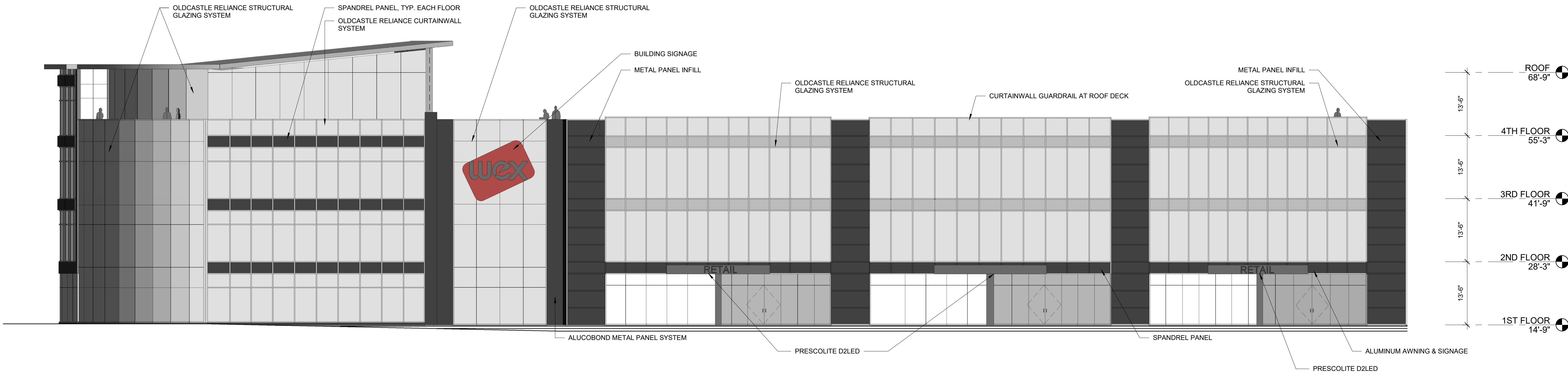
NOTE: ALL EXTERIOR BUILDING LIGHTING HAS FULL CUT-OFF



2 | West Elevation - Hancock Street
3/32" = 1'-0"



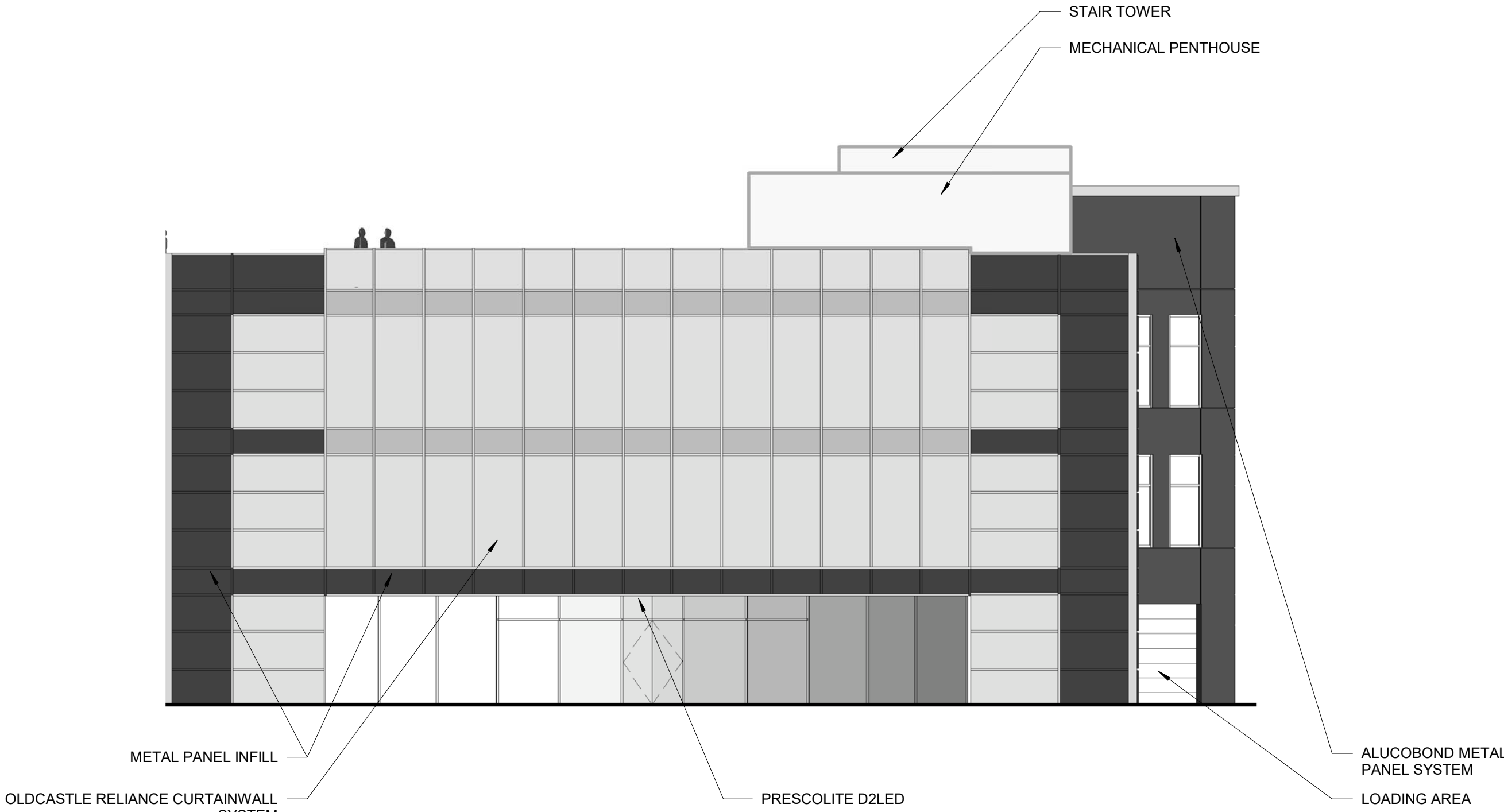
3 | -- Courtyard/Patio Elevation --
3/32" = 1'-0"



1 | South Elevation - Thames Street
3/32" = 1'-0"

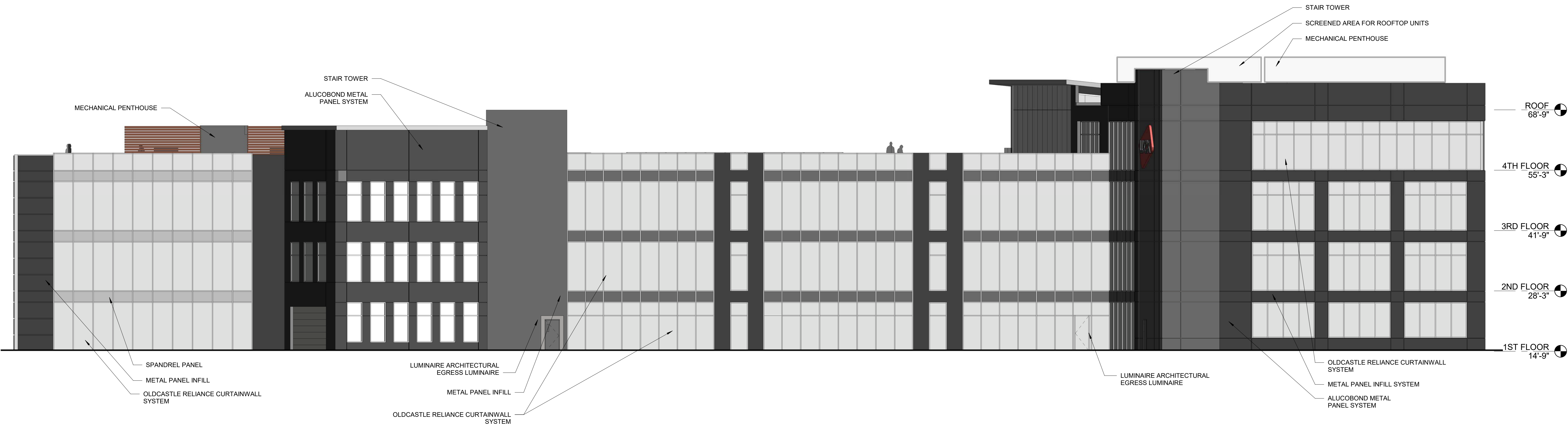
Prepared For:		0 Hancock Street LLC Address City, State	
Consultant:		Architect: ARCHETYPE architects 48 Union Wharf Portland, Maine 04101 (207) 772-0022 ARCHETYPE@ARCHETYPEPA.COM	
Project:		0 Hancock Street Portland, Maine	
Revisions:		Date: 8-30-2017 Scale: 3/32" = 1'-0"	
Building Elevations		A2.01	

NOTE: ALL EXTERIOR BUILDING LIGHTING HAS FULL CUT-OFF



1 | Plaza Elevation

3/32" = 1'-0"



3 | North Elevation

3/32" = 1'-0"

Prepared For:

0 Hancock Street
LLC

Consultant:

Architect:
ARCHETYPE
architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:

0 Hancock Street

0 Hancock Street
Portland, Maine

Revisions:

Date: 8-30-2017

Scale: 3/32" = 1'-0"

Building Elevations

A2.02

















RETAIL

alt.
PIZZA

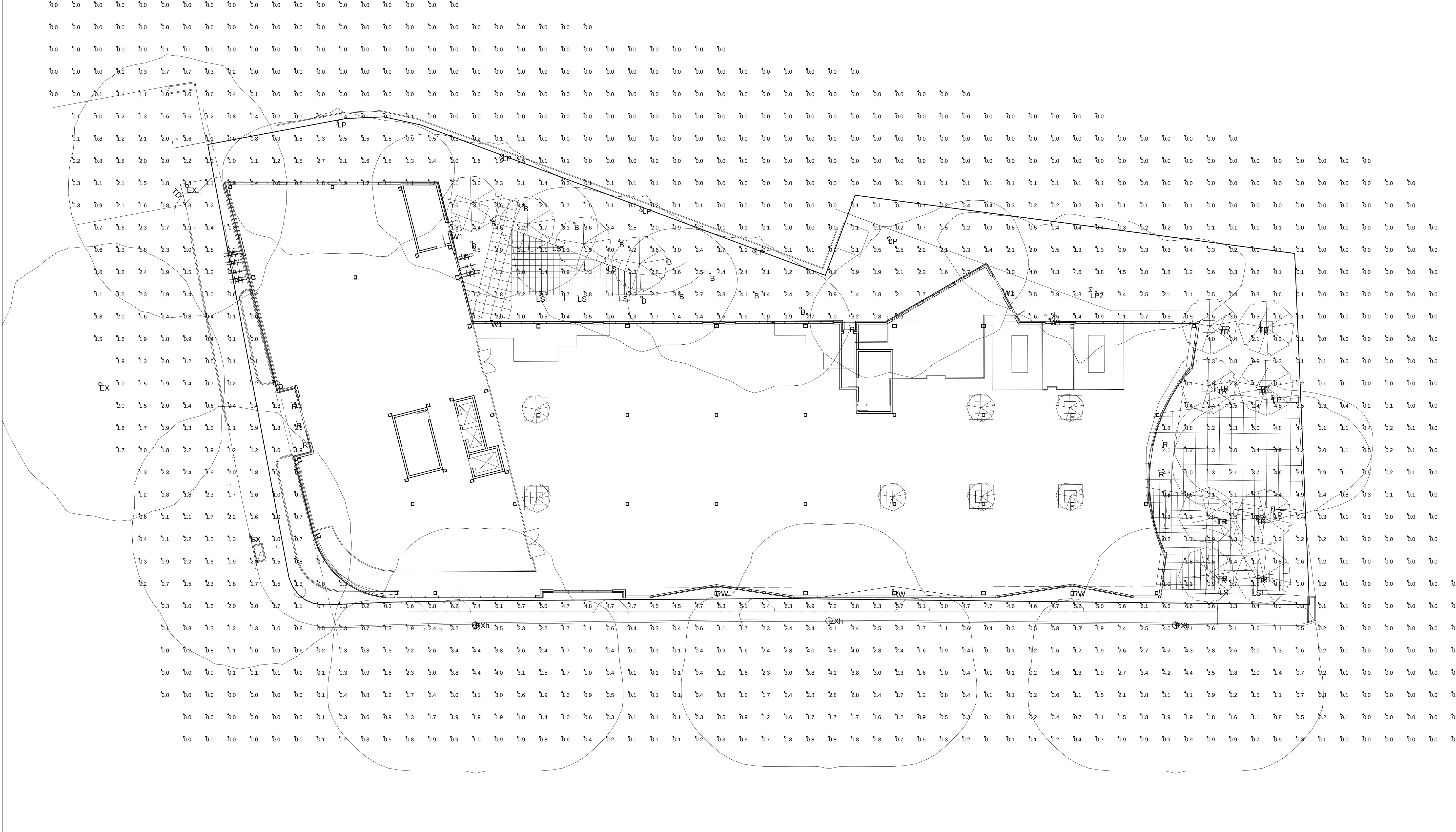
Gogo's Crystal Cave

Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
site	1.01	7.4	0.0	N.A.	N.A.

CITY STREET LIGHTING TURNED ON

Luminaire Schedule (note fixture catalogue numbers are not complete)						
Type	Symbol	Qty	Lumens	LLF	Lum. Watts	Description
W1	⌋	4	726	0.800	10.8	AEL12-10W 3000K
LS	⌋	7	30	0.900	4.95	SS-LED-e102-A-0-DEGREES
B	⊙	11	506	0.600	18.1	B30-8R-15L3K reduced output
TR	⊙	16	176	0.900	2.56	MM-LED-e72-MFL-12-C
EX	⊙	3	6220	0.900	109	Holophane Eastern city
R	⊙	6	676	0.600	8.42	FLC3D-RO-700L-120-L11-T reduced output
		68	321	0.300	9.28	LR5-GPI-LED-CLR-3000K-30-48 reduced output
LP	⌋	7	3221	0.900	55.8	VP-S-24NB-55-3K-T4-BLC
LP2	⌋	1	4816	0.900	55.8	VP-S-24NB-55-3K-T2
RW	⌋	3	649	0.300	8.08	FLC33W-SDO-700L-35K-WFL-WWS-WH reduced output
EXh	⊙	3	8937	1.000	153	Holophane comm city

- NOTES:
- 1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
 - 2) CALCULATIONS MAY SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
 - 3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE UNLESS OTHERWISE INDICATED.
 - 4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES AND STANDARD ASSUMPTIONS OF THE SPACE AND/OR SITE.
 - 5) CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
 - 6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
 - 7) CHECK GRAPHIC SCALE. DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY OCCUR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.



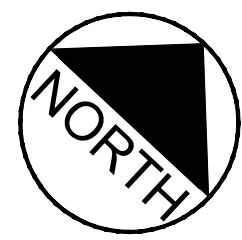
PLAN VIEW

WEX
PORTLAND, ME
SITE LIGHTING LAYOUT

GENERATED FOR:
STANTEC,
MOHR & SEREDIN
SCALE NOT TO SCALE



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Scarborough, Maine 04074-8929
Tel. 207.883.3355
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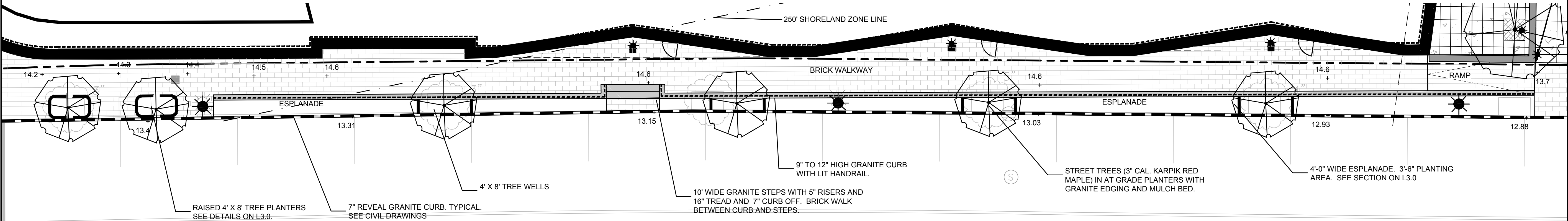
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Consultants

MOHR & SEREDIN
Landscape Architects, Inc.
18 Pleasant Street
Portland, Maine 04101
207-871-0003

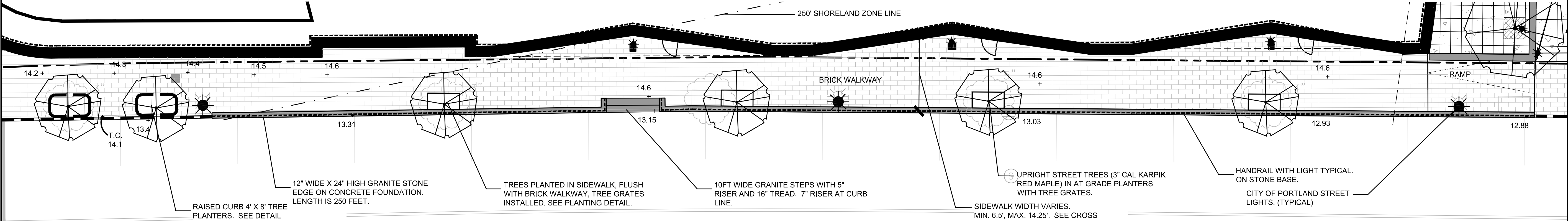
Notes



THAMES STREET

DOUBLE CURB AND ESPLANADE PLAN VIEW

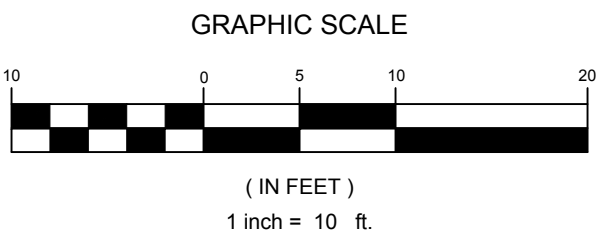
Scale: 1"=10'-0"



THAMES STREET

ALTERNATE GRANITE STONE EDGE PLAN VIEW

Scale: 1"=10'-0"



17.09.25	YAMALDO
SBM	Apd.
M&S	By
FINAL SITE PLAN REVIEW	Revision

File Name: 978-Base-MS 9-22-17	M&S	SBM	TS	17.09.25
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project

0 HANCOCK LLC

THAMES STREET SITE
PORTLAND, MAINE

Title

THAMES STREETScape DETAIL PLAN

Project No.

195350450

Scale

1" = 10'

Sheet

L-2.0



The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

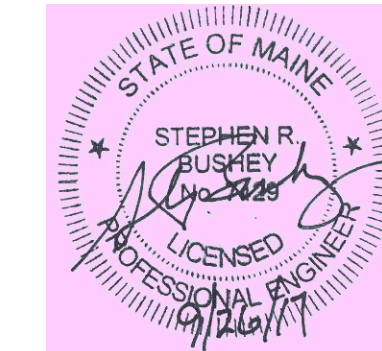
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ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO



Decision		By	Appcd.	YY-MM-DD
2	RESUBMITTED FOR FINAL SITE PLAN REVIEW PRIOR TO OCT. 4, 2017 PUBLIC HEARING	SRB	SRB	17-09-26
1	FINAL SITE PLAN REVIEW	SRB	SRB	17-08-08

File Name: 195350450_det	DWN.	DBS	SRB	17.07.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE
Permit-Seal				

THAMES STREET SITE
PORTLAND, MAINE

Title MISCELLANEOUS DETAILS

Project No.	Scale
195350450	N.T.S.

Sheet

C-6.4



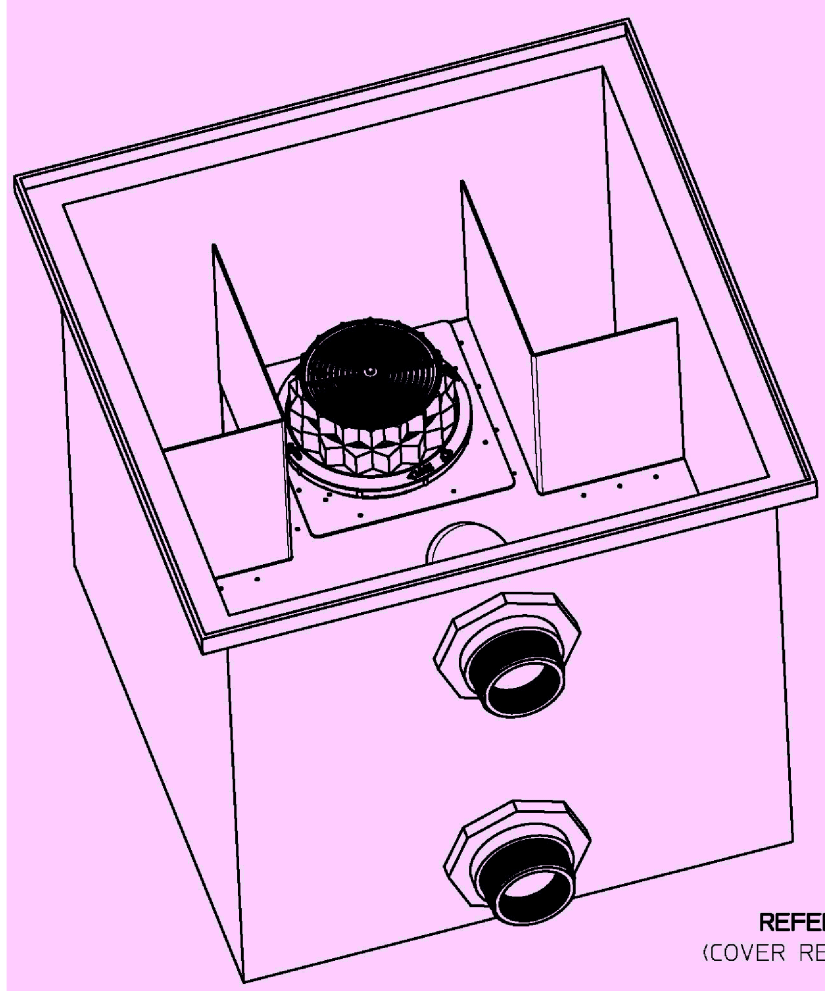
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NOTES:

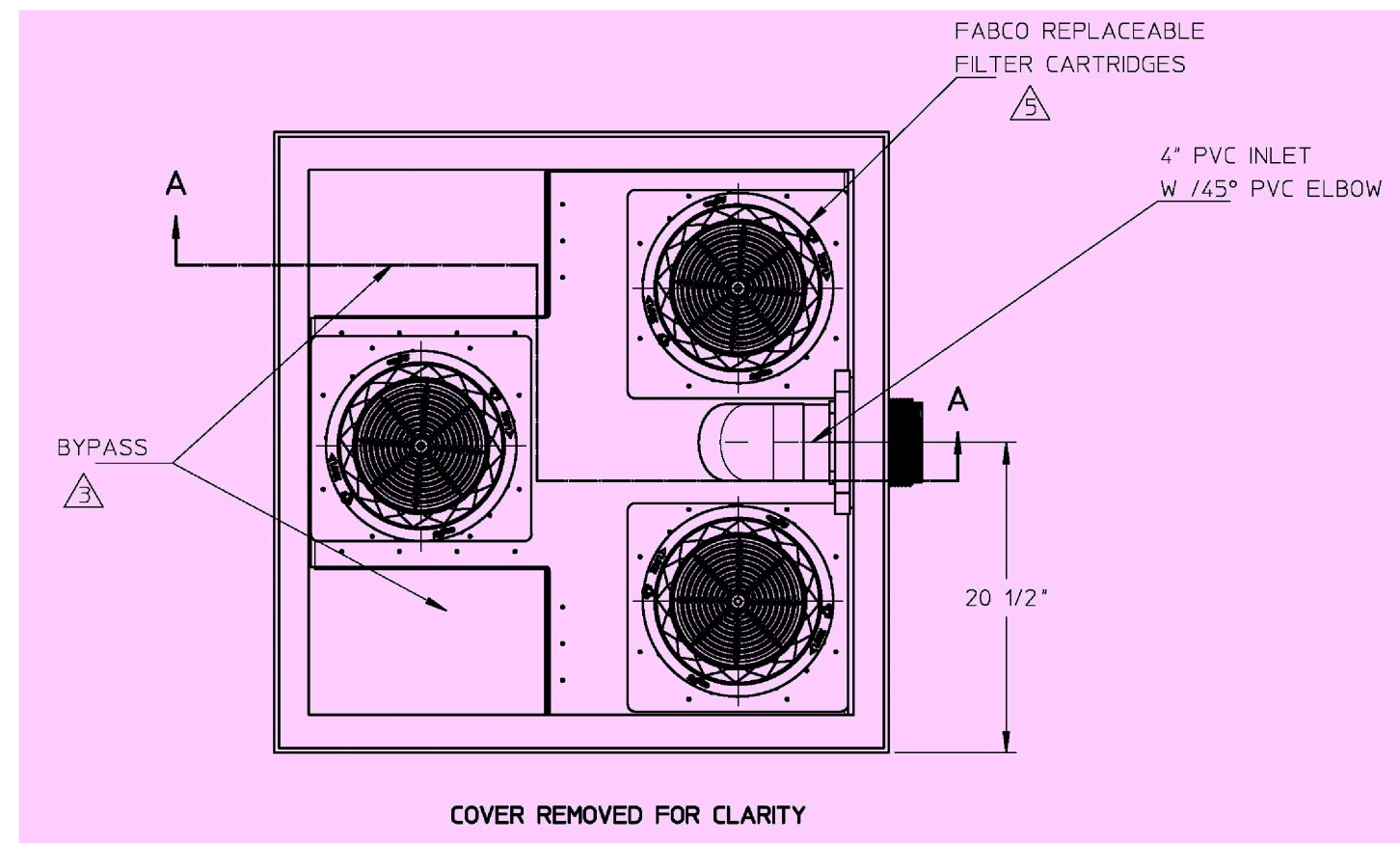
1. WEIGHT (APPROX):
A) EMPTY W/CARTRIDGES: 50-LB (MAX)
B) FULL OF WATER: 1800-LB (MAX)
2. MATERIAL:
A) FILTER HOUSING AND COVER: HDPE, WHITE
B) CARTRIDGE PLATE: 5052-H32 ALUMINUM ALLOY
C) SUPPORT HARDWARE: CRES 300 SERIES OR EQUAL
3. PERFORMANCE CHARACTERISTICS (TYP):
A) DEBRIS CAPACITY: 11.0 CU-FT
B) FILTERED FLOW RATE: SEE TABLE 1
C) BYPASS FLOW RATE: 3100 GPM (6.9 CFS)
4. TYPICAL INSTALLATION: CUT DOWNSPOUT PIPE AND CONNECT THE 4" INLET AND OUTLET PIPES AS REQUIRED TO REDIRECT RAIN FLOW THROUGH THE FILTER BOX.
5. USE ONLY WITH FABCO REPLACEABLE MEDIA CARTRIDGES.
6. ALL TANK DIMENSIONS ARE REFERENCE AND VARY BY THE STANDARD ROTATIONAL MOLDING TOLERANCE OF $\pm 3\%$

TABLE 1
ADDITIONAL CARTRIDGE DESIGNS

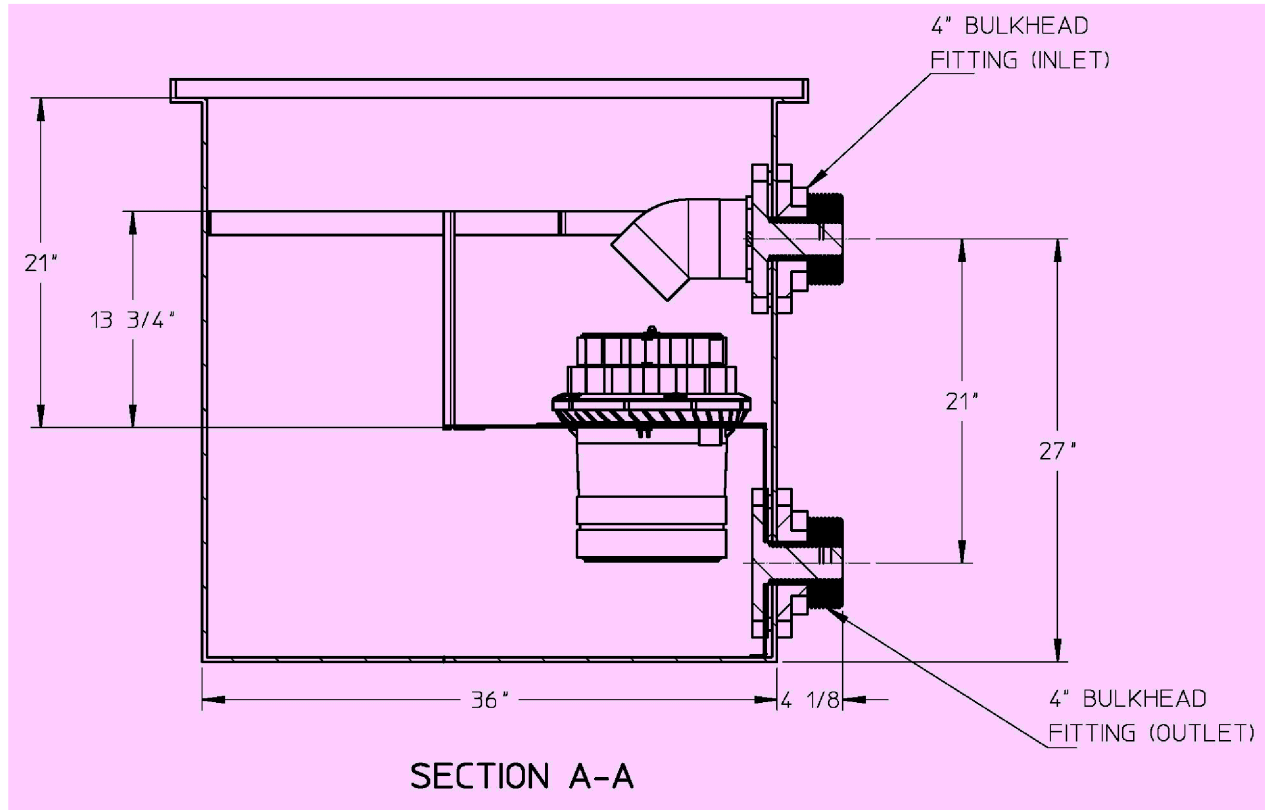
ORDER NUMBER	DESCRIPTION	COLOR CODE	FLOW RATE (TYP)
9718-1	STANDARD	RED	115 GPM (.26 CFS)
9718-2	BACTERIA	YELLOW	115 GPM (.26 CFS)
9718-3	HYDROCARBONS	BLUE	115 GPM (.26 CFS)
9718-4	HEAVY METALS	GREY	60 GPM (.13 CFS)
9718-5	STANDARD (SHORT)	MINT	115 GPM (.26 CFS)
9718-6	NUTRIENTS	GREEN	100 GPM (.22 CFS)
9718-7	HIGH FLOW	RED (MARKED)	260 GPM (.58 CFS)



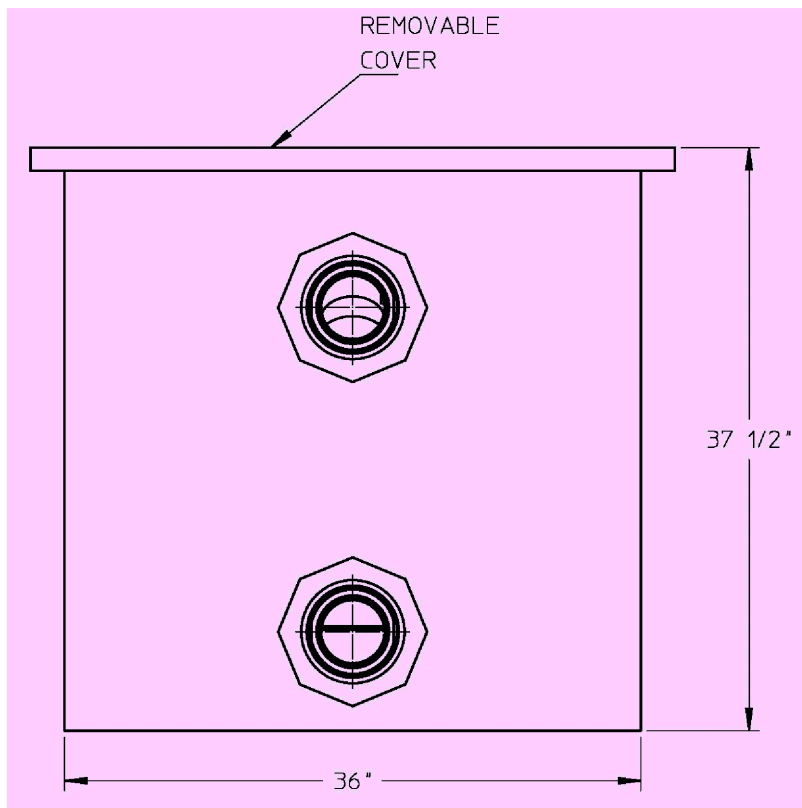
REFERENCE VIEW
(COVER REMOVED FOR CLARITY)



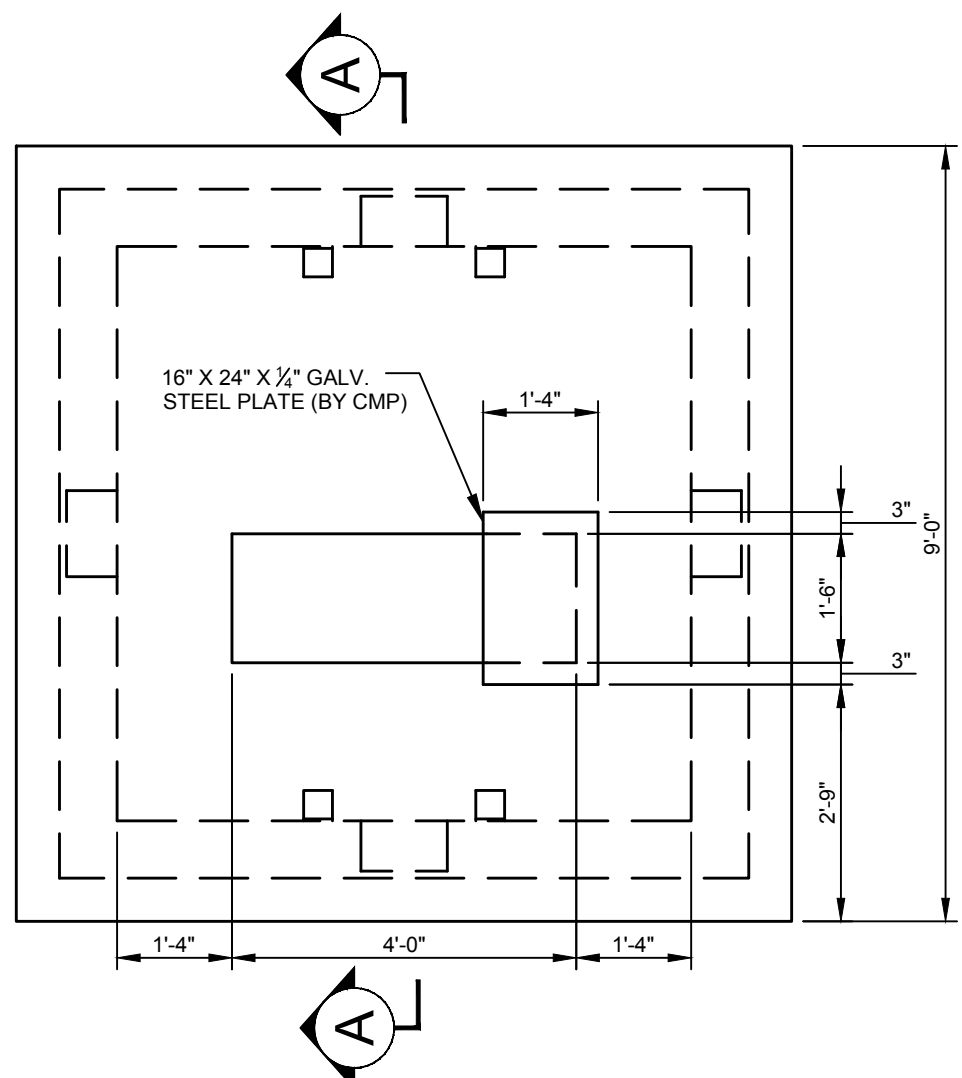
A FABCO DOWNSPOUT FILTER UNIT DETAIL
N.T.S.



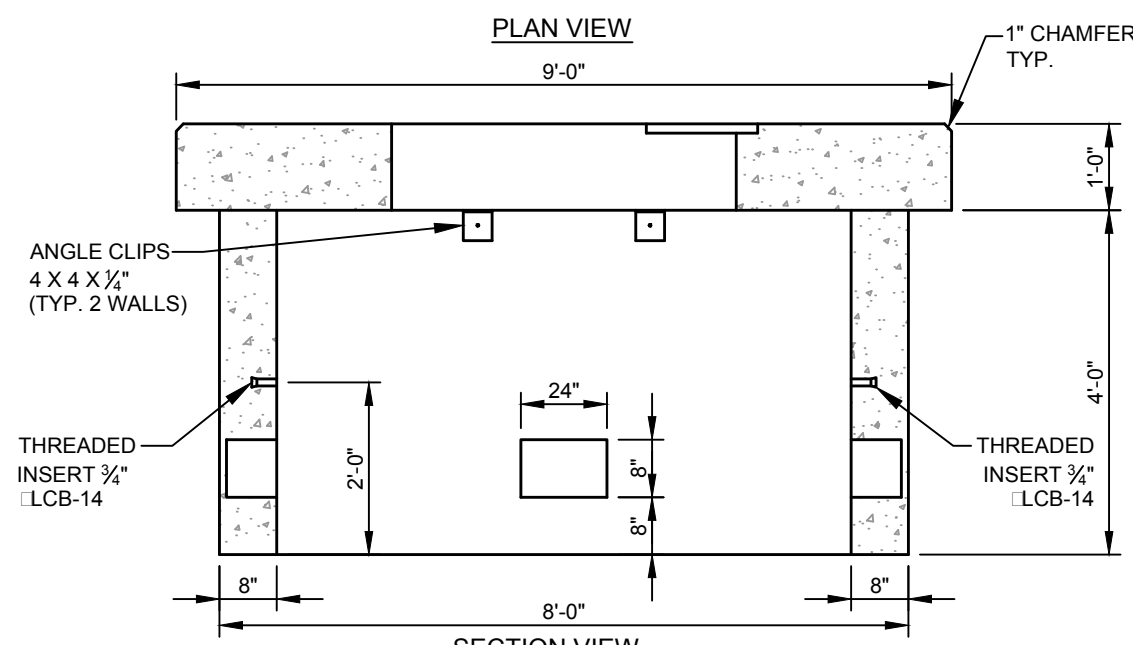
SECTION A-A



REMOVABLE COVER



B 9'-0" TRANSFORMER PAD
N.T.S.



SECTION VIEW

NOTES:

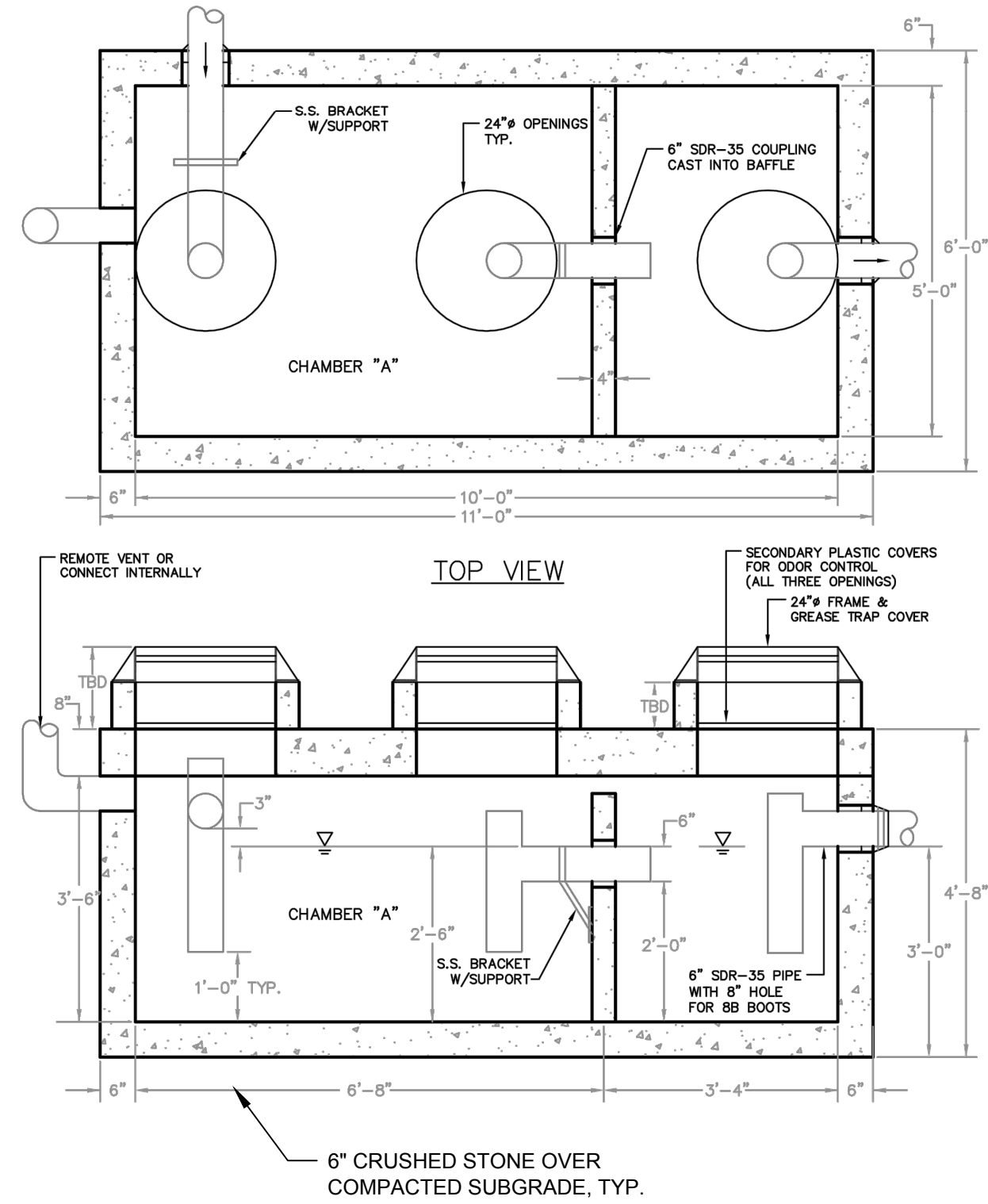
1. CONCRETE MINIMUM COMPRESSIVE STRENGTH 4,000 PSI @ 28 DAYS WITH STEEL REINFORCEMENT.
2. AS PER CENTRAL MAINE POWER COMPANY SPECIFICATIONS.
3. ONE 8" - 24" KNOCKOUT PROVIDED EACH WALL.
4. FOR 750 - 5000 KVA THREE PHASE TRANSFORMER.
5. FINISH GRADE SHALL BE GRADED TO ALLOW SURFACE WATER TO FLOW AWAY FROM THE PAD.

DESIGN NOTES:

1. CONCRETE: 5000 PSI AT 28 DAYS.
2. H-20 LOADING
3. JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT (ASSHTO M-19)
4. ALL TEES/RAFFLES PROVIDED BY PRECAST.

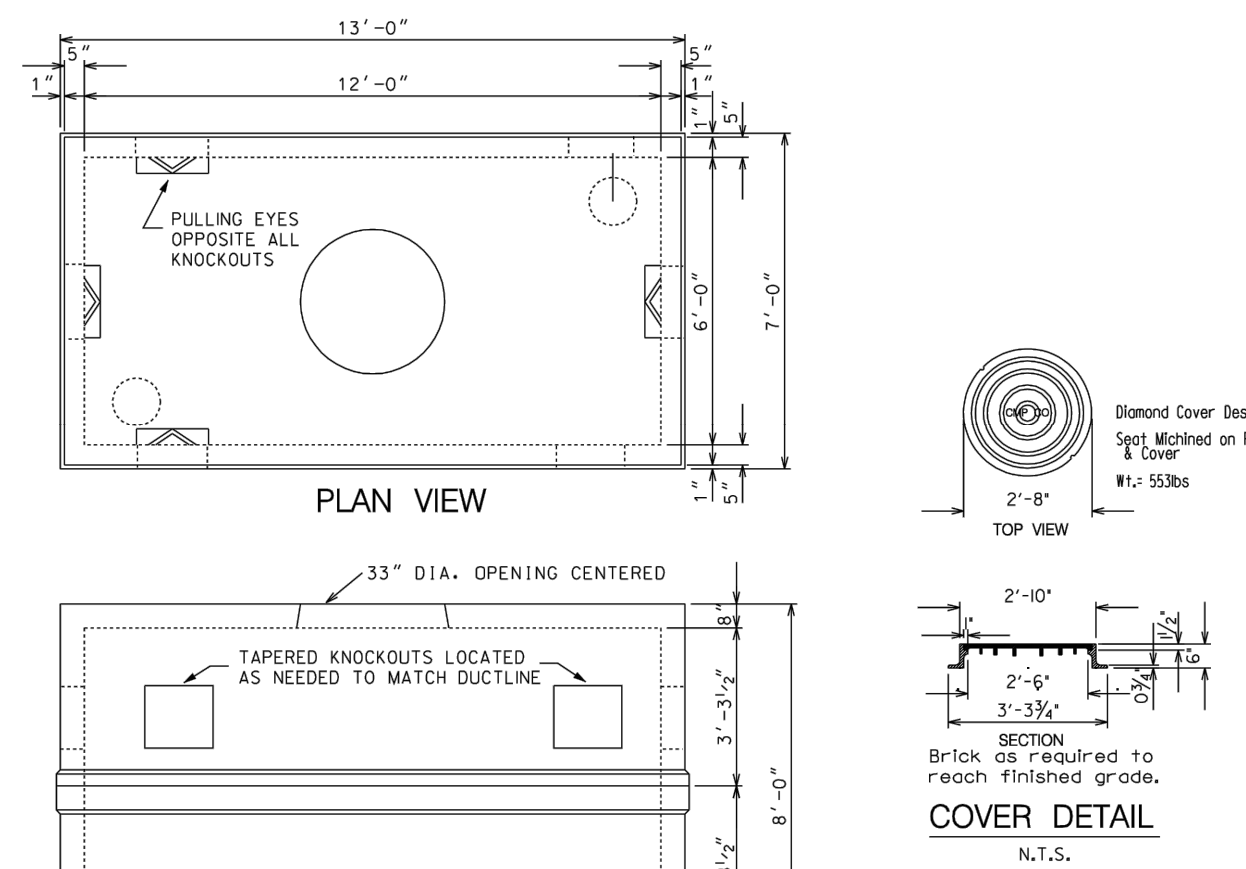
THIS STRUCTURE MUST DISCHARGE TO A CITY OF PORTLAND STANDARD MANHOLE WITH CHANNEL (CONTROL/SAMPLING MANHOLE).

FORMULA FOR SIZING THE TRAP: CHAMBER "A" (2/3 OF TANK VOLUME) MUST BE EQUIVALENT TO THE AVERAGE DAILY PROCESS FLOW FROM THE FACILITY WITH NO SANITARY OR OTHER EXTRANEIOUS WASTES FLOWING THROUGH IT.



C GREASE TRAP
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



SIDE VIEW
MANHOLE DETAIL
N.T.S.
(Ref.Type: 38Y)

NOTES:

- 1) Vault shall be designed to withstand H20 wheel loading with 6 inches of overburden. The design shall also comply with the attendant requirements of National Electrical Safety Code Section 332.4. Provide shop drawings stamped by a State or Maine Registered Professional Engineer upon Request.
- 2) Joints sealed with asphalt.
- 3) Mounting for cable racks etc. cast in wall by further plane or field located.
- 4) Manhole shall be set on a suitable gravel base.
- 5) Cables are to be racked along one wall only.

D CMP PRECAST CONCRETE 38Y MANHOLE
N.T.S.



Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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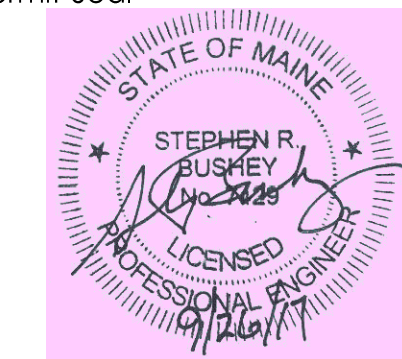
Consultants

ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

17.07.25	17.08.08	SRB	SRB	SRB	By	Appr.	YTM/MD
2	1	SRB	SRB	SRB	By	Appr.	YTM/MD

File Name: 195350450.dwg
P.E. STEPHEN R. BUSKEY
Permit-Seal
LA DBS SRB 17.07.12
DWN CHKD DSGN DATE



Client/Project
O HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
MISCELLANEOUS UTILITY DETAILS

Project No.
195350450

Scale
N.T.S.

Sheet

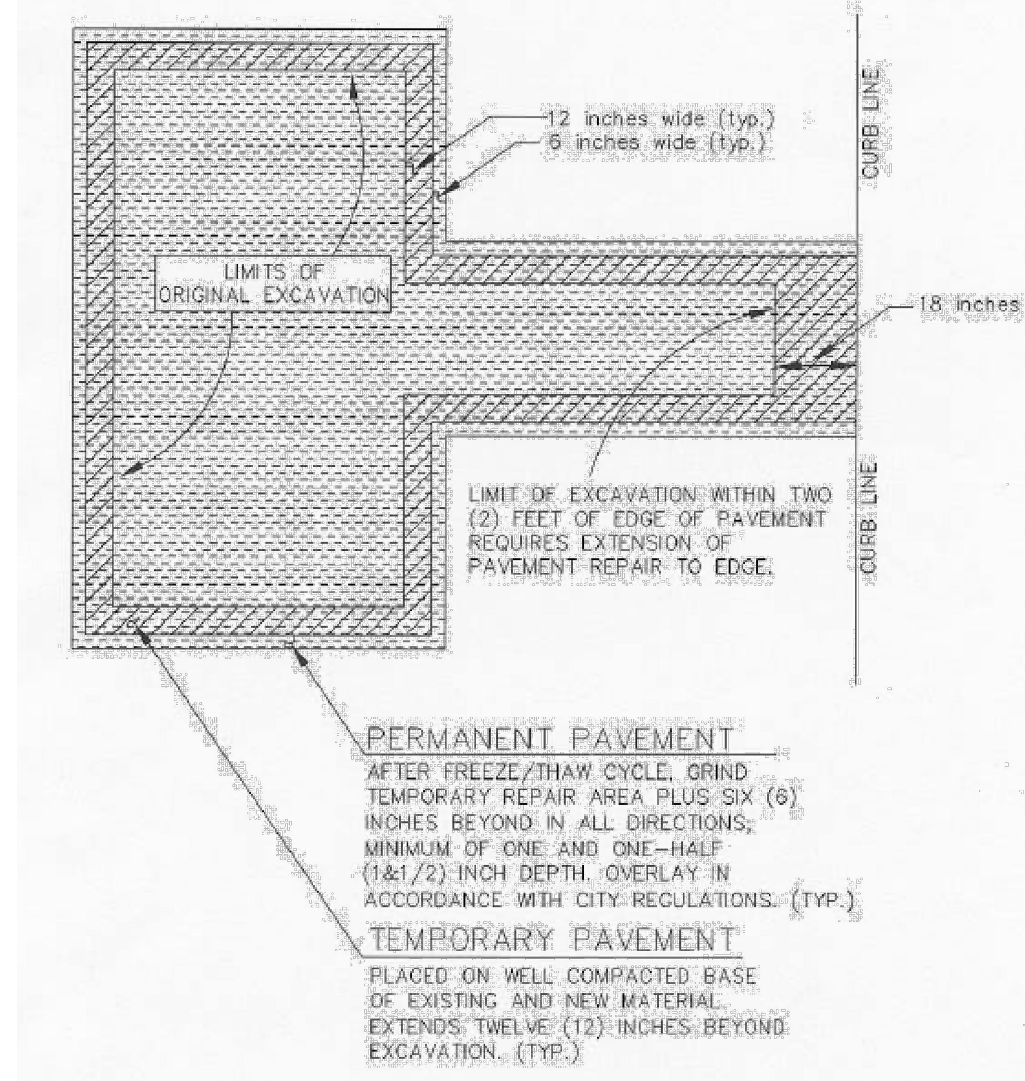
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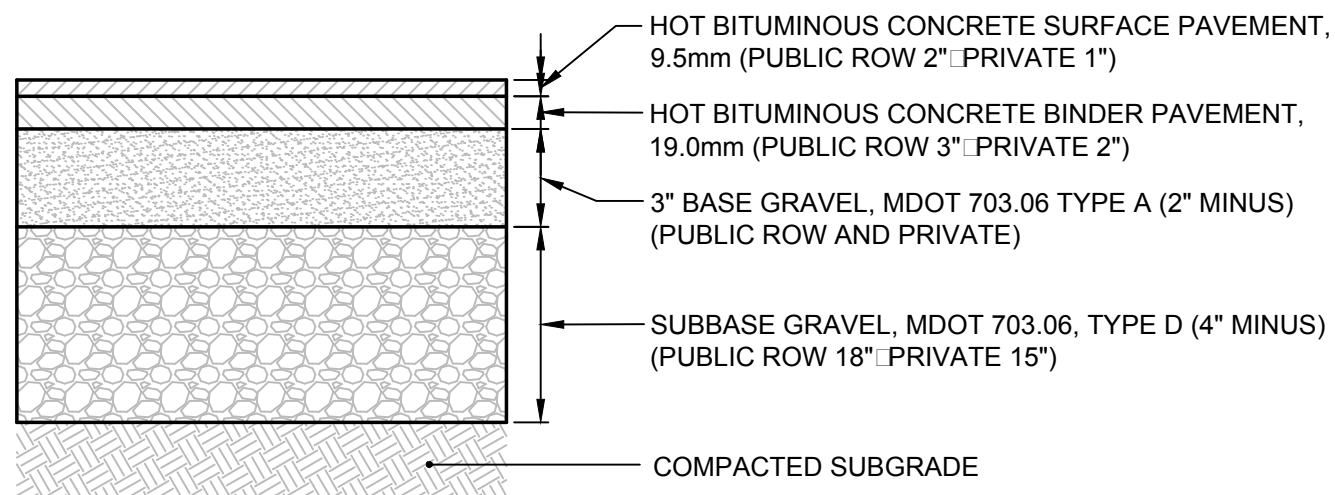
Consultants

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ARCHETYPE
LANDSCAPE ARCHITECT
MOHR & SEREDIN
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

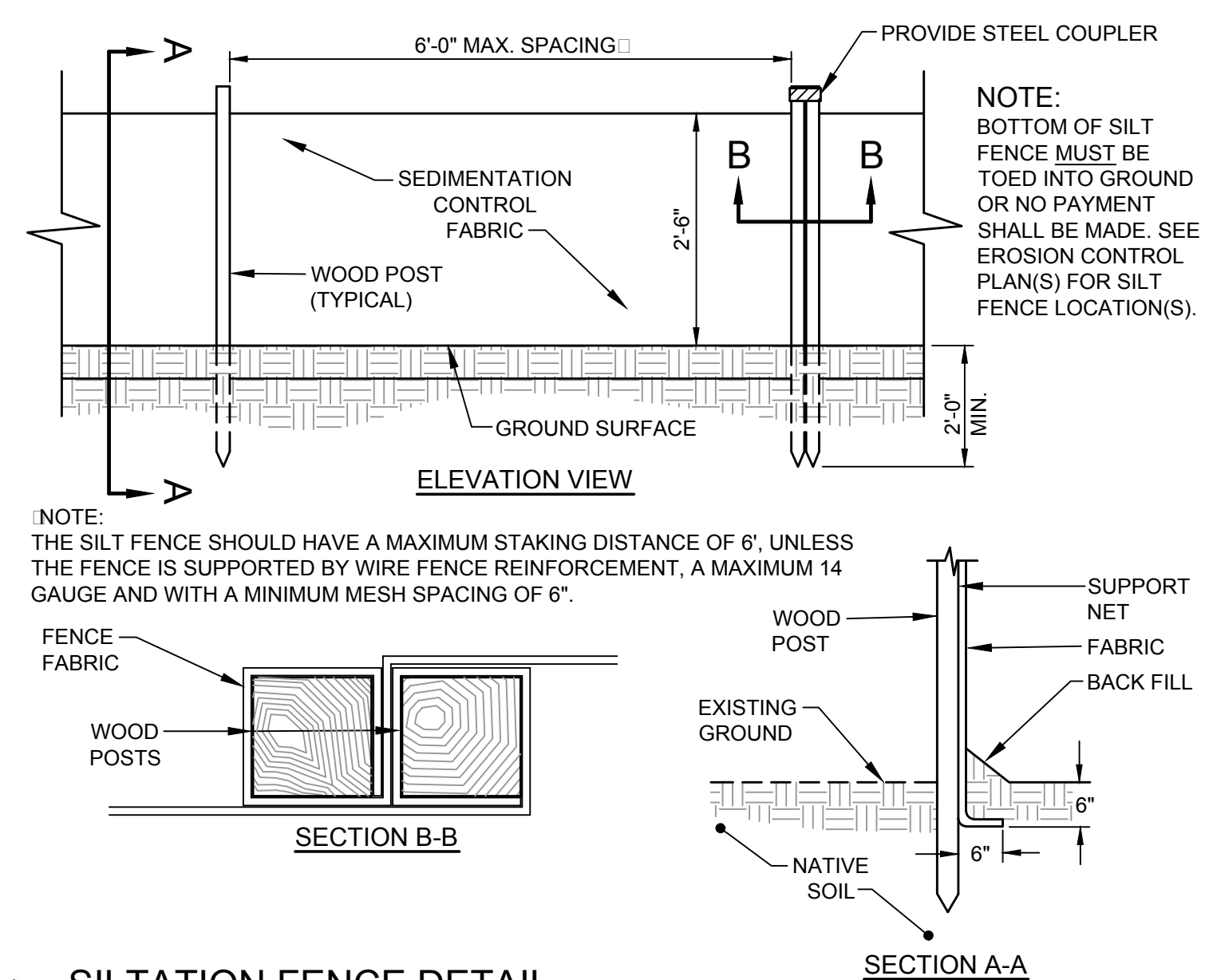


A PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR
AS OBTAINED FROM THE CITY OF PORTLAND "RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC RIGHT OF WAY"

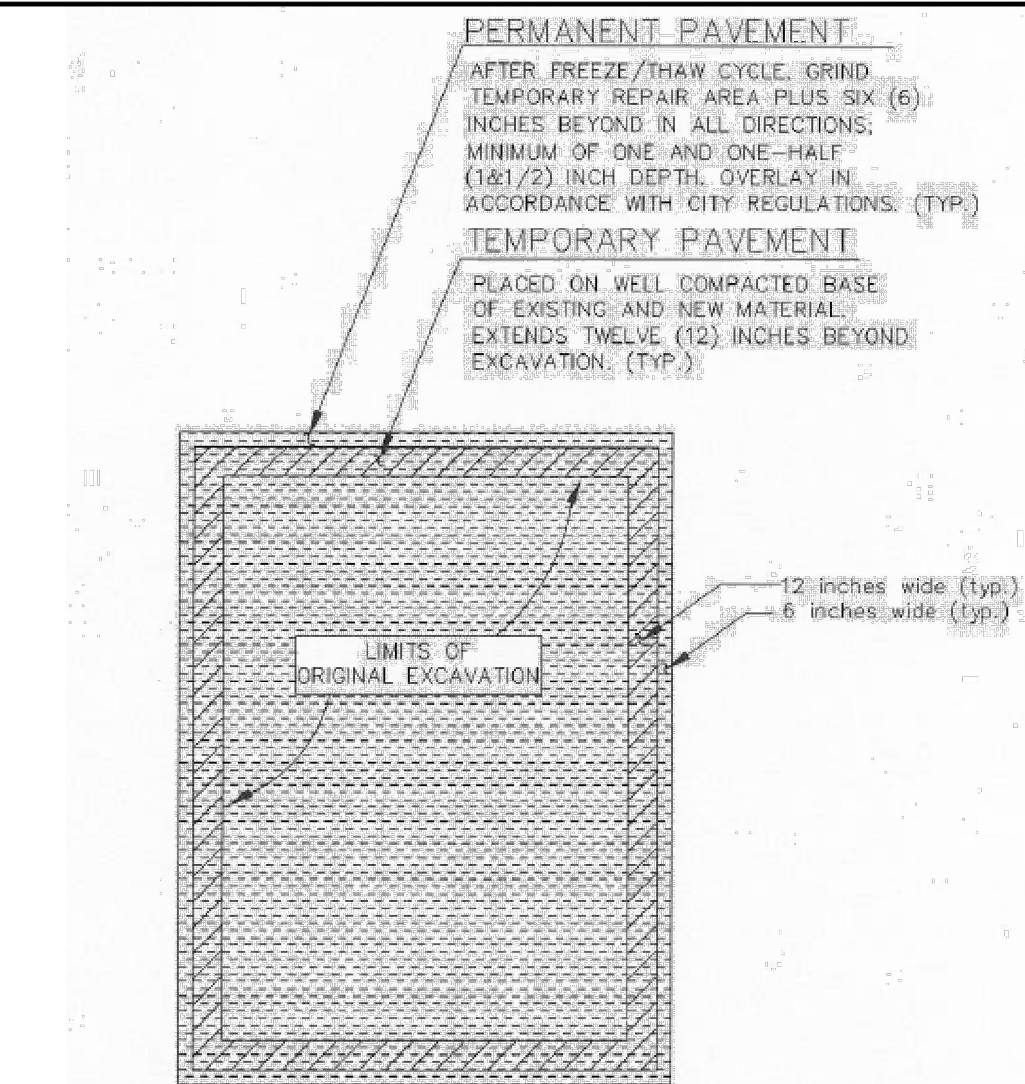


- NOTES:
1. APPLY TACK COAT BETWEEN BINDER AND SURFACE COURSES.
 2. ALL MATERIALS SHALL CONFORM TO MDT SPECIFICATIONS, LATEST REVISION AND/OR CITY OF PORTLAND TECHNICAL STANDARD, WHICHEVER IS MORE STRINGENT. COMPACTION OF ALL MATERIALS TO BE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE GEOTECHNICAL REPORT.

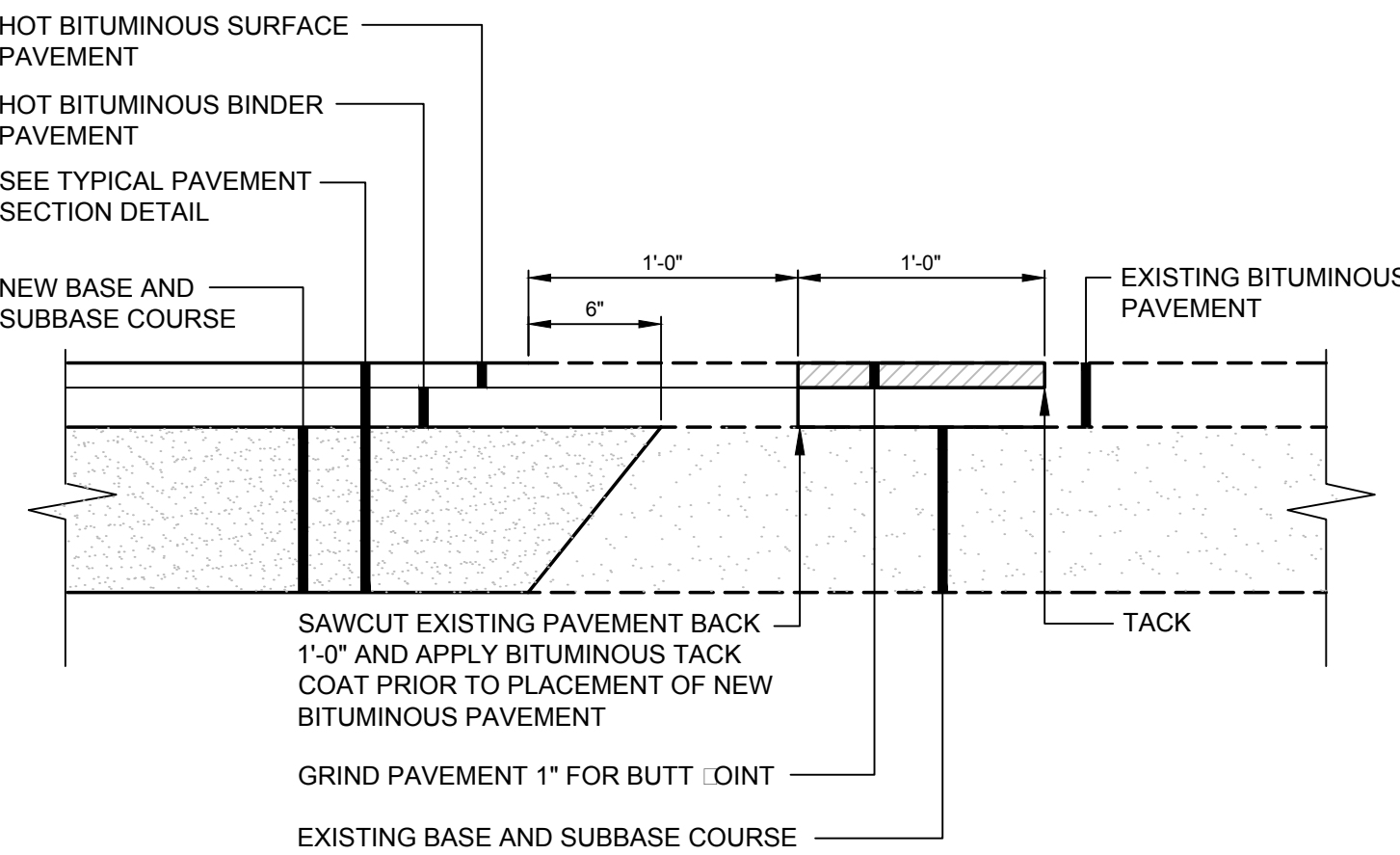
D BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.



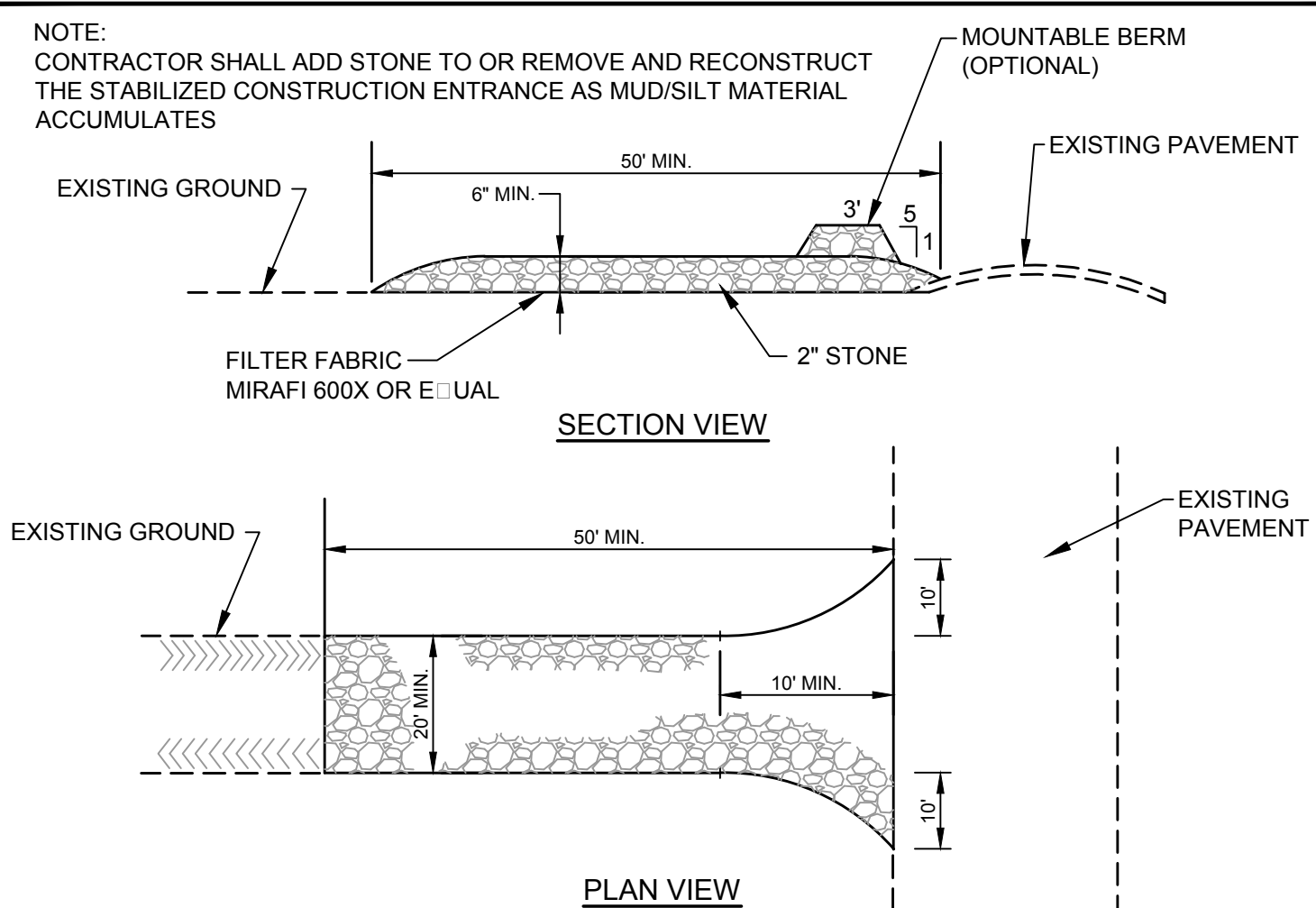
G SILTATION FENCE DETAIL
N.T.S.



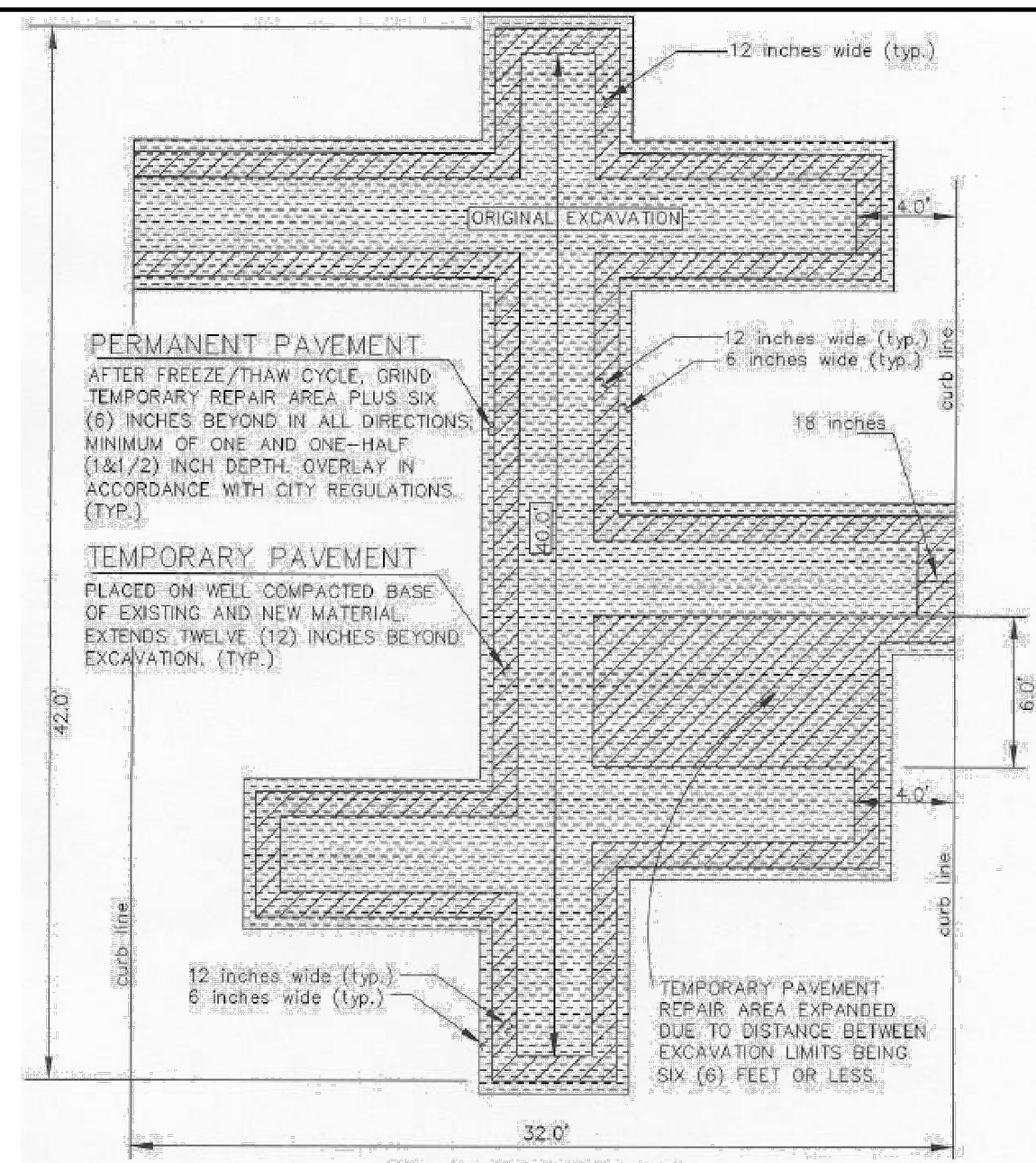
B PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR
AS OBTAINED FROM THE CITY OF PORTLAND "RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC RIGHT OF WAY"



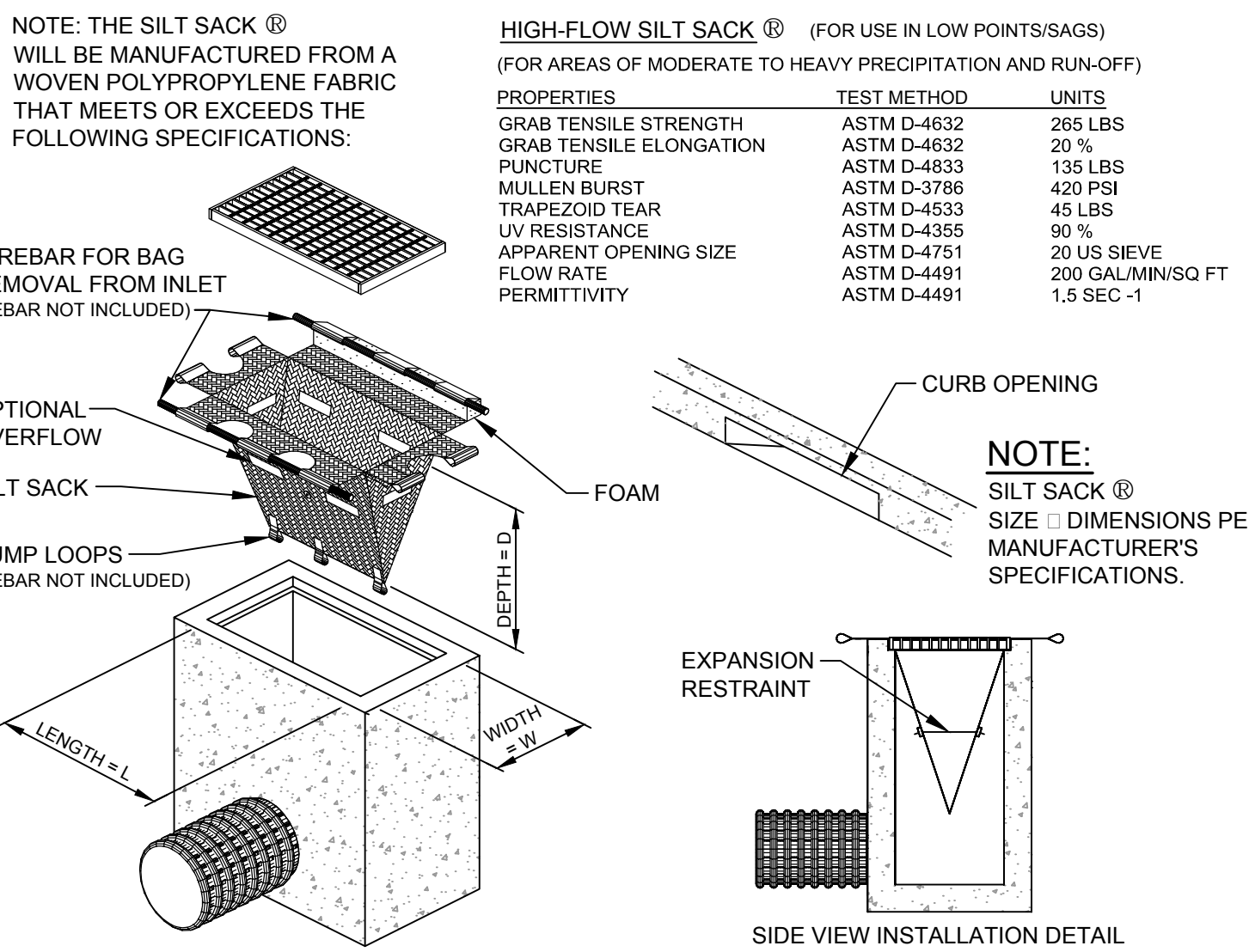
E PAVEMENT SAWCUT DETAIL
N.T.S.



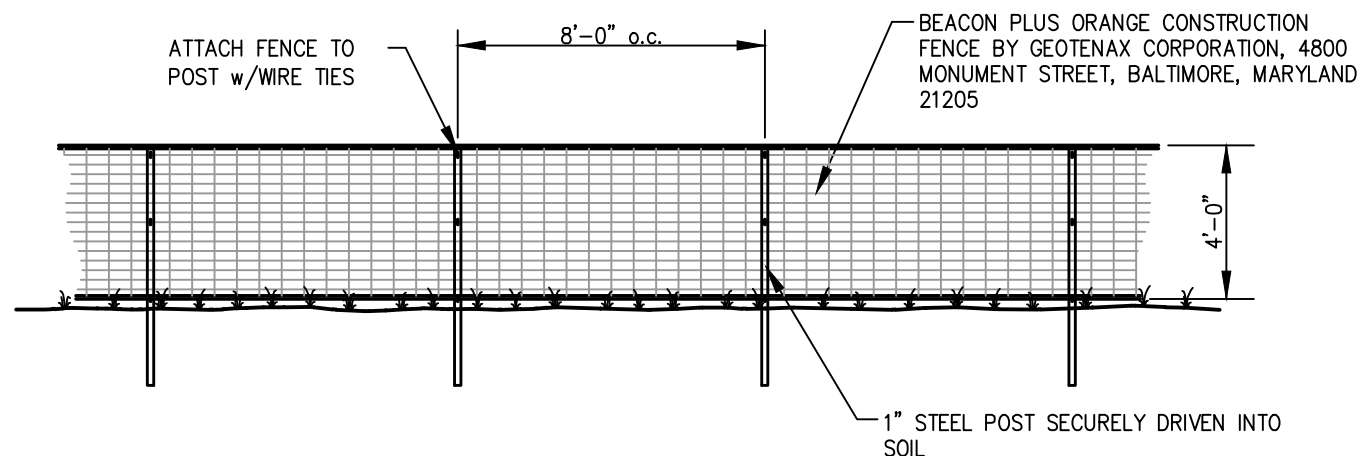
H STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.



C PLAN VIEW OF MAJOR EXCAVATION PAVEMENT REPAIR
AS OBTAINED FROM THE CITY OF PORTLAND "RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC RIGHT OF WAY"



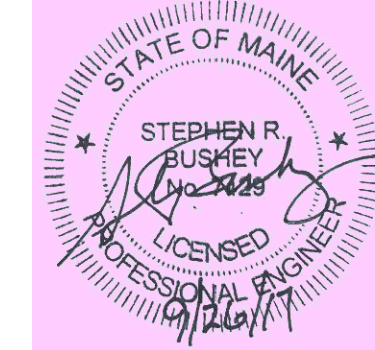
F SILT SACK ® DETAIL & SPECIFICATIONS
N.T.S.



I ORANGE CONSTRUCTION FENCE DETAIL
N.T.S.

File Name: 195350450.dwg	LA	DBS	SRB	17.07.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit Seal



Client/Project
O HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
PAVEMENT, EROSION AND MISCELLANEOUS DETAILS

Project No. 195350450
Scale N.T.S.

Sheet

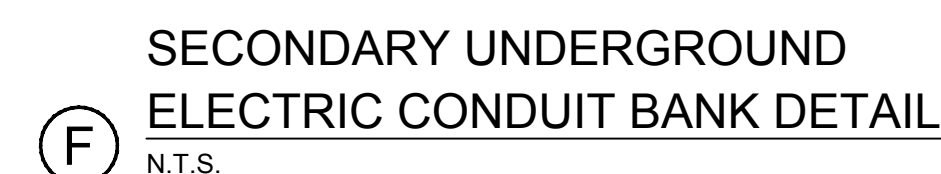
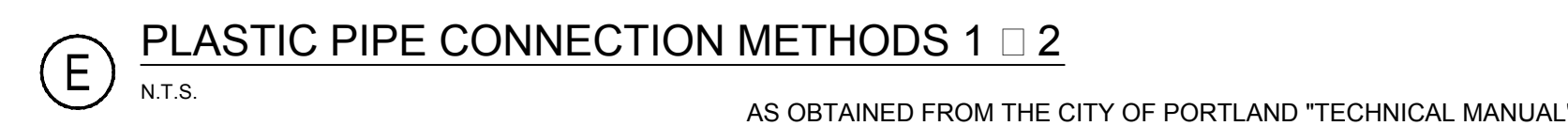
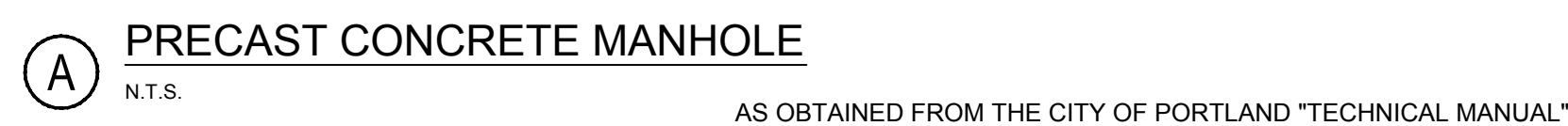


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OWEN HASKELL
CONTRACTOR
CIANBRO

100

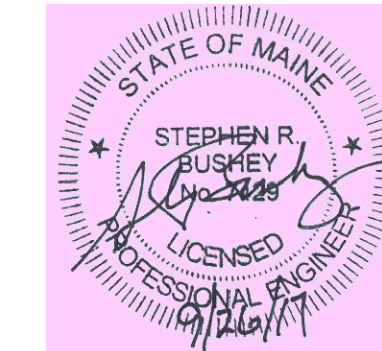


2	RESUBMITTED FOR FINAL SITE PLAN REVIEW PRIOR TO OCT. 4, 2017 PUBLIC HEARING	\$88	17.09.26
1	FINAL SITE PLAN REVIEW	\$88	17.08.08
Revision		By	YY.MM.DD

V:\1953\act_e\195350450\ci\1\cadd\ermit\dwg\195350450_det.dwg fi letta 9/26/2017 8:20 AM

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P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
STORMDRAIN AND UTILITY DETAILS

Project No.	Scale
195350450	N.T.S.

Sheet

C-6.1

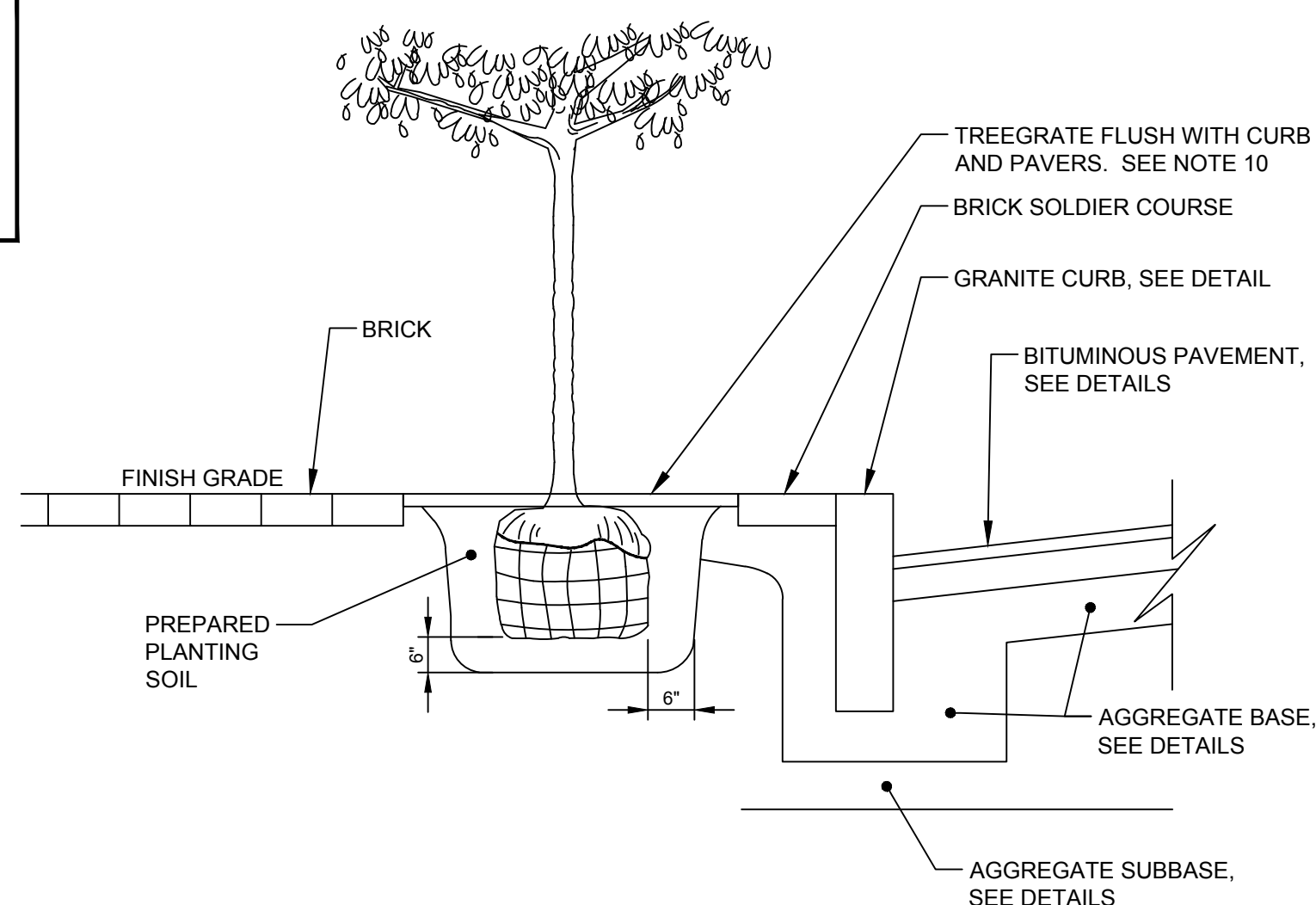


The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.

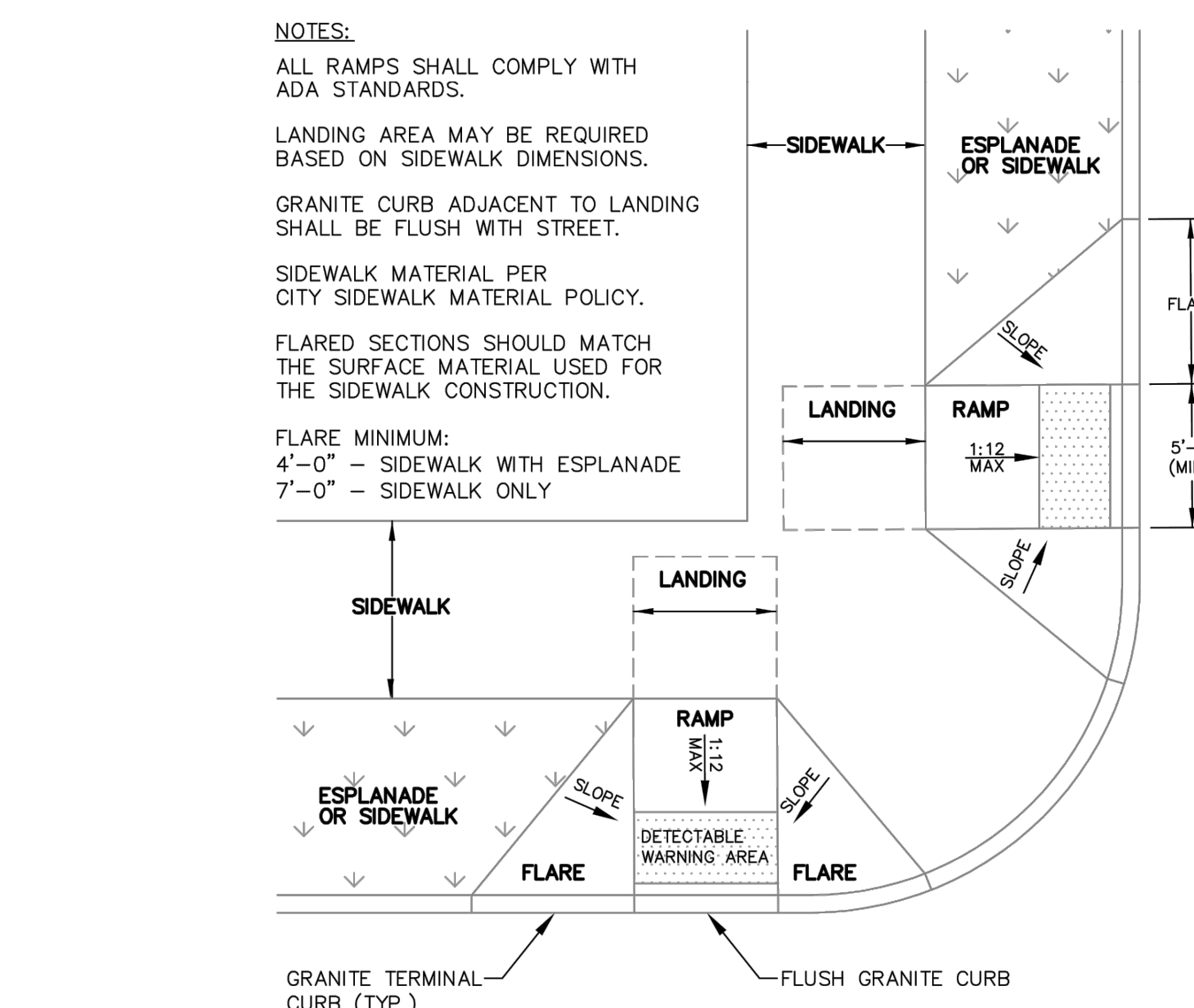
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MOHR & SEREDIN
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OWEN HASKELL
CONTRACTOR
CIANBRO

(A) TREE PLANTING DETAIL ☐ **LANDSCAPE NOTES**

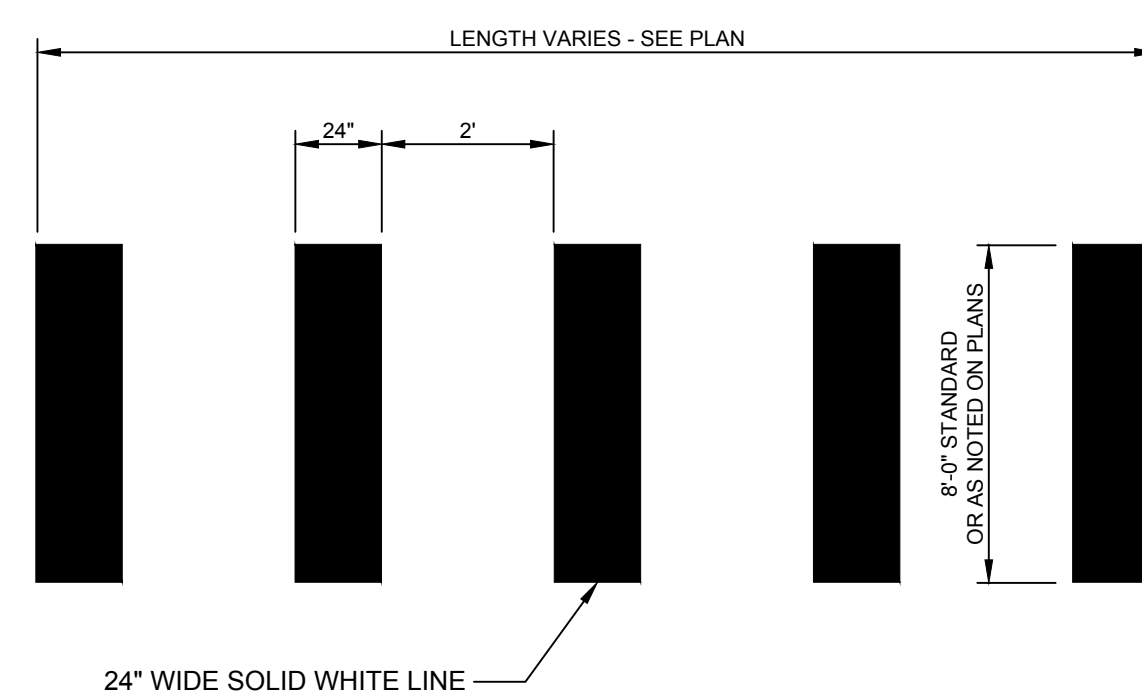


1. THE LANDSCAPE CONTRACTOR SHALL BE ADVISED OF THE EXISTENCE OF UNDERGROUND UTILITIES. CONTRACTOR SHALL VERIFY UTILITIES PRIOR TO COMMENCING DIGGING OPERATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY UTILITIES, WALKS, PAVING, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO COST TO THE OWNER.
3. ALL PLANT MATERIALS SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK", BY THE AMERICAN NURSERYMAN'S ASSOCIATION, LATEST EDITION.
4. ALL PLANTING SHALL BE COMPLETED IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES, INCLUDING PROPER BED PREPARATION, SOIL MIX, PRUNING, STAKING, WRAPPING AND OTHER MAINTENANCE UNTIL ACCEPTED BY THE OWNER.
5. ALL GRASS, DEBRIS AND OTHER EXTRANEIOUS MATERIALS SHALL BE REMOVED FROM THE PLANTING AREAS PRIOR TO INSTALLATION OF PLANT MATERIALS.
6. ALL PLANTS SHALL BE LOCATED IN ACCORDANCE WITH THE PLANS. ANY DEVIATION FROM THESE PLANS SHALL BE APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT PRIOR TO PLANTING.
7. CONTRACTOR SHALL SUPPLY QUANTITIES OF PLANTS SUFFICIENT TO COMPLETE THE WORK INDICATED ON THE PLAN. ANY DISCREPANCY BETWEEN THE PLANT LIST AND PLAN SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL REMUNERATION.
8. NO LANDSCAPING SHALL BE INSTALLED UNTIL FINAL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
9. PLANTING SOIL MIX SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS COMPOST AND ONE PART PERLITE. ROTOTILL TO A DEPTH OF 8" MINIMUM.
10. TREE GRATE AND FRAME SHALL BE CAST IRON. R-8908-103 RECTANGULAR TREE GRATE WITH 4 FOOT HIGH TYPE "C" TREE GUARDS FROM NEEHAH FOUNDRY AND INSTALLED PER MANUFACTURER'S RECOMMENDATION (TREE GRATES AND TREE GUARDS TO BE COORDINATED WITH CITY ARBORIST).

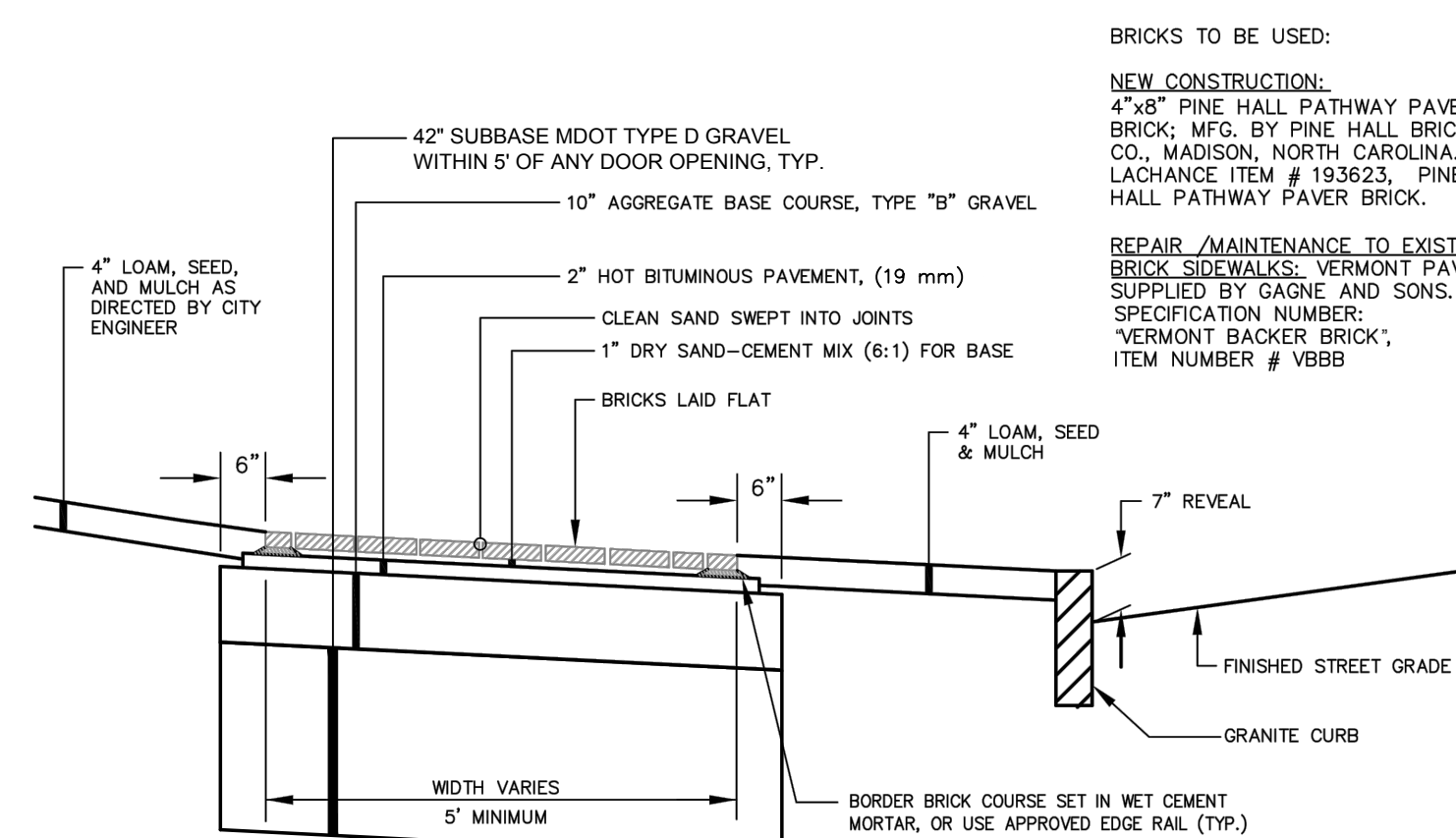


(F) PREFERRED SIDEWALK RAMP AT INTERSECTION
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"

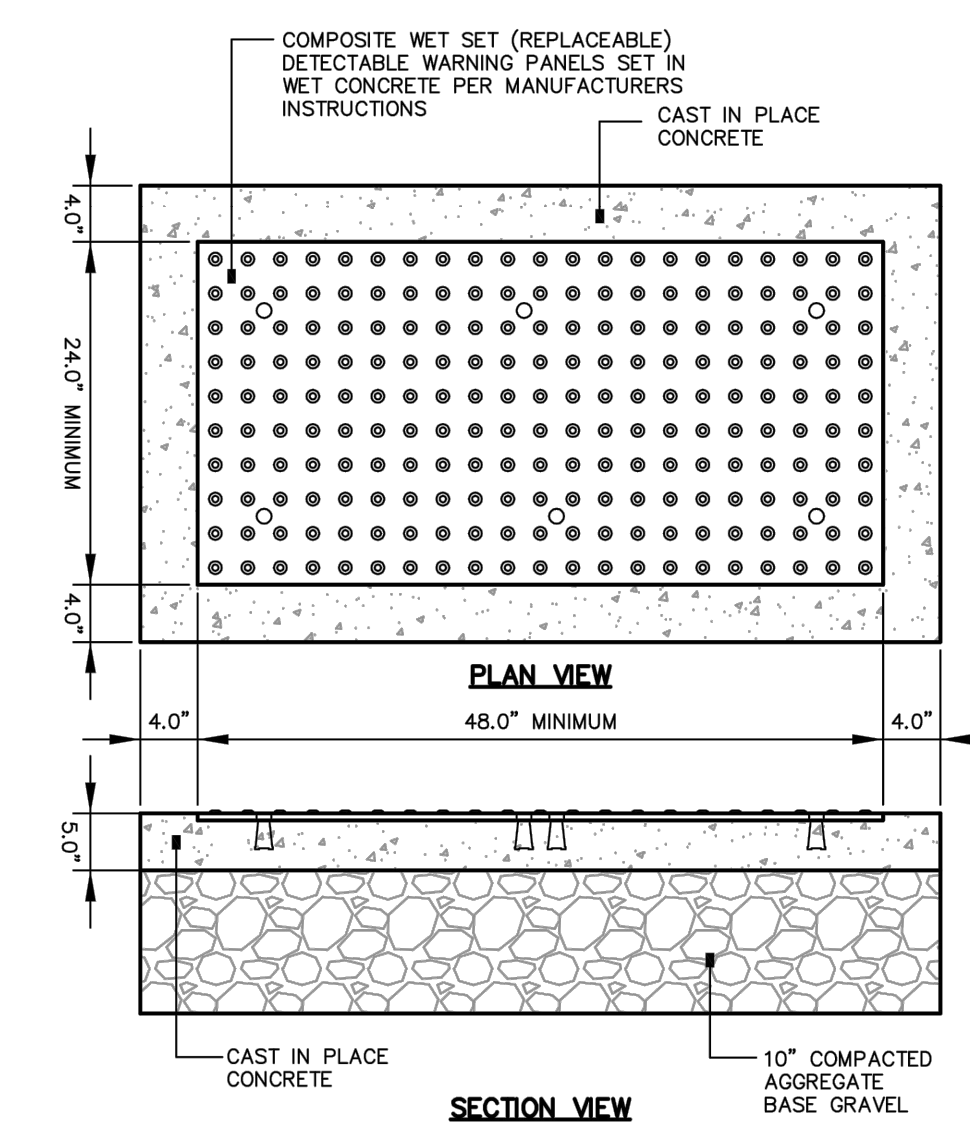


(B) CROSSWALK STRIPING DETAIL
N.T.S.



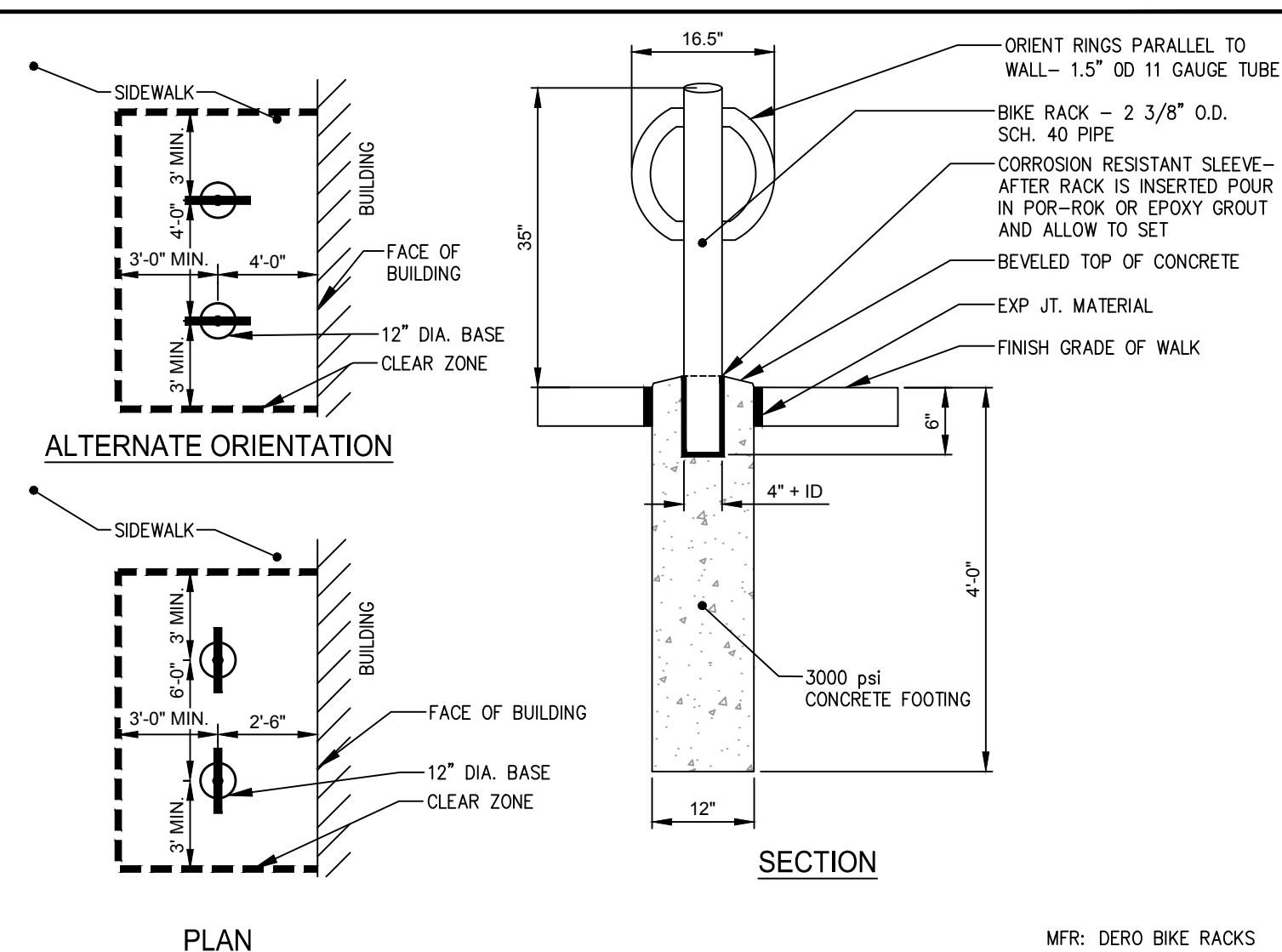
(D) BRICK SIDEWALK WITH BITUMINOUS BASE
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



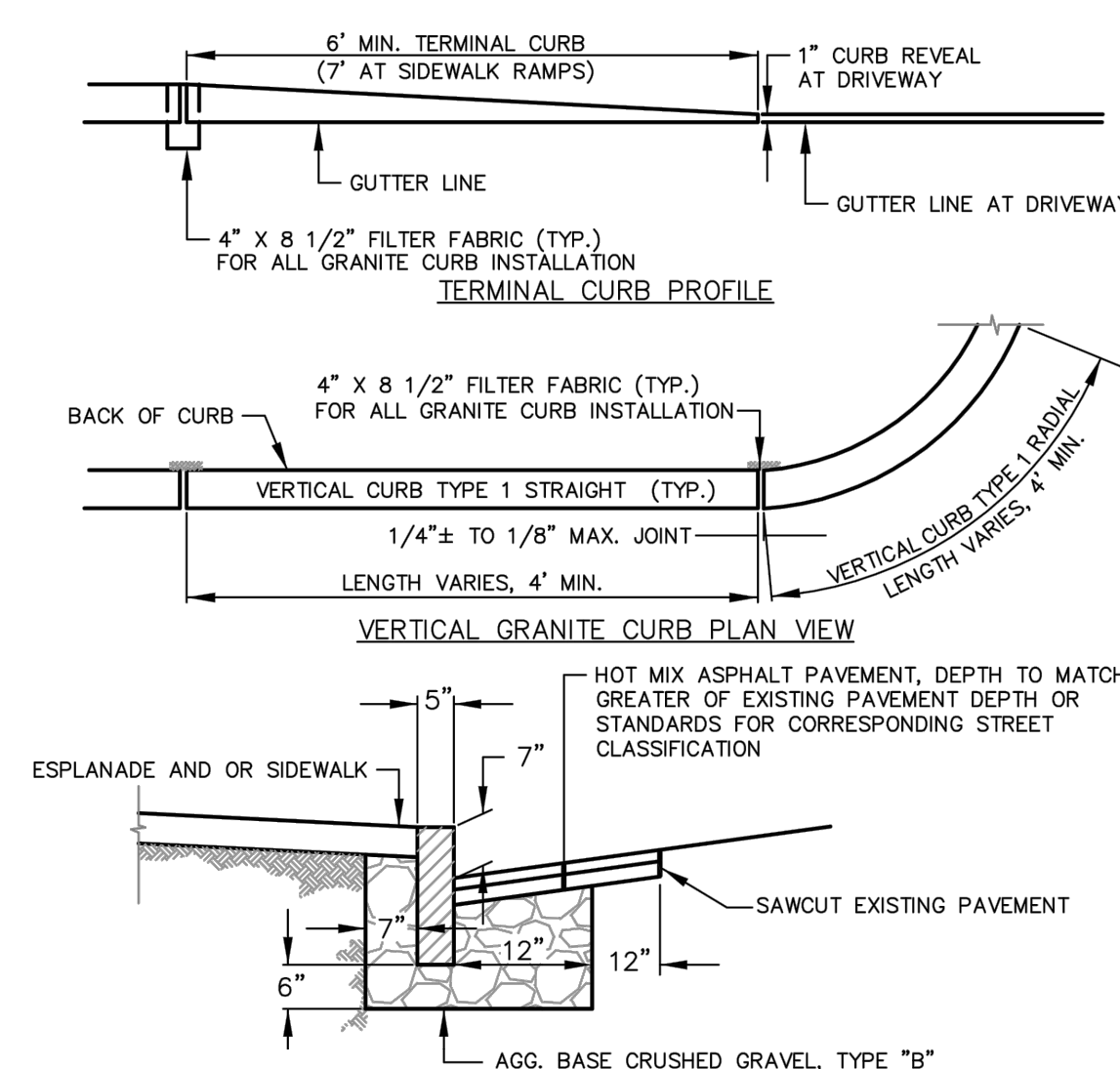
SIDEWALK RAMP DETECTABLE WARNING PANEL

NOT TO SCALE



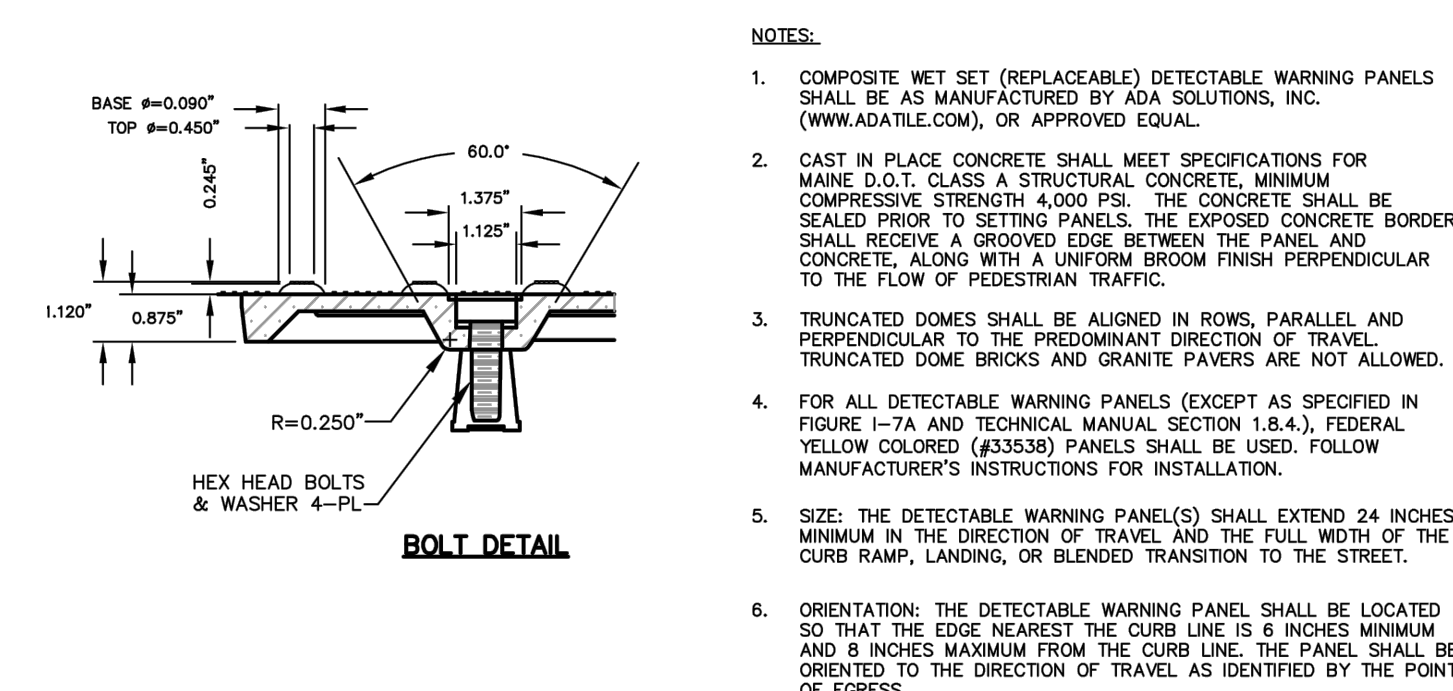
© BIKE HITCH MOUNTING DETAIL

SEE LANDSCAPE PLAN FOR QUANTITY & LAYOUT



(E) VERTICAL GRANITE CURB INSTALLATION IN EXIST. STREETS
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



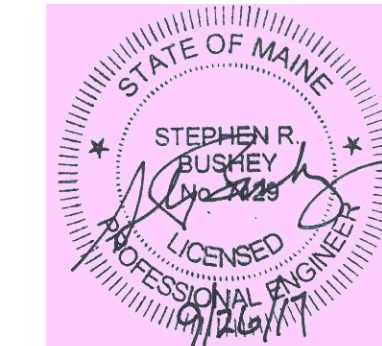
- NOTES:**
1. COMPOSITE WET SET (REPLACEMENT) DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. (WWW.ADASITE.COM), OR APPROVED EQUIV.
 2. FOR CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS 3 STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4000 PSI. DETECTABLE WARNING PANEL SHALL BE SEALED PRIOR TO SETTING PANELS, THE EXPOSED CONCRETE BORDER SHALL BE COVERED BY A GROUTED CONCRETE CURB OR PANEL. CONCRETE, ALONG WITH A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
 3. TRUNCATED DOWNS SHALL BE ALIGNED IN ROWS, PARALLEL AND EQUIDISTANT TO THE DIRECTION OF TRAVEL OF TRAVEL. TRUNCATED DOWNS BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
 4. FOR ALL DETECTABLE WARNING PANELS (EXCEPT AS SPECIFIED IN FIGURES 1-7A AND TECHNICAL MANUAL SECTION 1.8.4), FEDERAL AND STATE AGENCIES (AND/OR LOCAL AGENCIES) SHALL FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
 5. SIZE: THE DETECTABLE WARNING PANEL(S) SHALL EXCEED 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
 6. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 8 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

(G) SIDEWALK RAMP DETECTABLE WARNING PANEL
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"

File Name: 195350450_det	LA	DBS	SRB	17.07.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
0 HANCOCK STREET LLC

THAMES STREET SITE
PORTLAND, MAINE

Title LANDSCAPE, SITE AND SIDEWALK DETAILS

Project No.	Scale
195350450	N.T.S.

Sheet



PLANNING BOARD REPORT – Addendum 1

PORTLAND, MAINE

Level III Site Plan
0 Hancock Street (Thames Street Property)
0 Hancock Street, LLC, Applicant

Submitted to: Portland Planning Board	Prepared by: Caitlin Cameron, Planning Division
Date: October 3, 2017	CBL: 019 A0014
Public Hearing Date: October 4, 2017	Project #: 2017-180

I. **DESCRIPTION OF ADDITIONAL AND REVISED MATERIALS**

Since the publication of the Planning Board Report dated September 29, 2017 there have been additional materials submitted to be included and considered in the Site Plan application review as described below and attached:

- **Applicant Submittals**
 - o Revised Parking Assessment – Applicant corrected some errors found in the report
 - o Revised Landscape Plan and Thames Street Sidewalk Detail – More complete drawings showing the Thames Street sidewalk design as proposed by the applicant to deal with the grade change between Thames Street elevations and the new building finished floor as proposed
 - o Revised Construction Management Plan – Revised per staff comment
- **Public Comment**
 - o Robert Cummins: Summary of concerns and questions from the Executive Board of the Bay House Condominium Association on behalf of the 80 plus property owners

Staff anticipates there may be additional staff comment and conditions of approval provided at the Planning Board Hearing as a result of these revised submissions.

ATTACHMENTS

PUBLIC COMMENTS

9. Public Comment Received – Robert Cummings

APPLICANT'S SUBMITTAL

- L. Parking Assessment

PLANS

- P7 Landscape Plans
P14 Thames Street Sidewalk Detail

Google Groups

WEX - Additional Public Comments Received**OCTOBER 4TH MEETING -- MEMORANDUM ON BEHALF OF THE BAY HOUSE BOARD re WEX DEVELOPMENT****Robert P. Cummins** <rcummins@nhdlaw.com>

Oct 2, 2017 8:26 AM

Posted in group: **Planning Board**

Dear Colleagues: Please find enclosed a summary of concerns and questions regarding the proposed development of the WEX corporate offices. This filing is respectfully submitted by the Executive Board of the Bay House Condominium Association and on behalf of our some 80 plus owners, residents and taxpayers. Ms. Barbara Nash – a member of our Executive Board -- will appear and will be prepared to amplify our deep interest in the resolution of the serious issues that we believe attend this development and as outlined in the attached. Thank you.

Robert P. Cummins

Robert P. Cummins, Esq.

Norman, Hanson & DeTroy LLC
Two Canal Plaza
P.O. Box 4600
Portland, Maine 04112-4600
Telephone (207) 553-4712
Fax (207) 775-0806

rcummins@nhdlaw.com

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Construction Management Plan
WEX Corporate Headquarters Project
Cianbro Corporation

This document and its subsequent attachments comprise The Construction Management Plan being submitted to the City of Portland for the WEX Corporate Headquarters Project, located at 0 Hancock Street. This plan is being submitted by Cianbro Corporation on behalf of the Owner of the property, 0 Hancock Street LLC. The Construction Management plan contains information pertaining to the overall planning and coordination of the project.

The WEX Corporate Headquarters Project involves a new three and four level 100,000 square foot mixed use building located on the corner of Thames Street and Hancock Street. The majority of the building will be office spaced occupied by WEX Corporation, with two 5,000 square foot retail spaces located on the ground floor. The portion of the building which is three levels will have a roof top patio for usage by WEX.

A. Construction Management Principles

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

- The construction zone will be fully secured with hard barriers/fencing preventing any access into the site by the public.
- 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 off site queuing required. Cianbro 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 working hours to minimize sound impacts to the surrounding area.

B. Development Review of Construction Management Plan

Cianbro has developed a comprehensive logistics plan specific to this project. Please see **Exhibit A** of this document for the logistics plan.

Cianbro will also utilize a site specific safety program for all team members who work on the construction site. Each team member will complete a job specific orientation before starting work on the project 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.

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 public street openings for utility tie-ins. All required permits will be requested and granted by the Department of Public Works prior to any street openings occurring. Street openings will need to occur on both Thames and Hancock street. MUTCD plans will be submitted to and approved by the City of Portland for any traffic disruptions caused by street openings.

D. Construction Administration and Communication

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

Brian Larsen: Project Manager
(207) 614-4342
blarsen@cianbro.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 September of 2017 and runs through September of 2018.

- **Exhibit B** of this document is the current preliminary construction schedule.

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 **Exhibit A** for fencing and barriers to be used to isolate the construction site from the public. All gates into the project will 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

Construction Activity in Public Streets: This project will require street openings on both Hancock Street and Thames Street. These openings are required to tie the building into the electrical, water, sewer, and storm water systems. Prior to any of this work starting, permits will be submitted for and approved by the Street Opening Clerk at the Department of Public Works.

Sewer and Storm Water: This building will need to connect to the sewer and storm water systems on Thames Street. All required permits will be submitted for and approved by the Street Opening Clerk at the Department of Public Works.

Traffic Control Plans: There will be periods of time throughout the project where construction activity impacts the existing public street system. Prior to any interruptions and 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 Cianbro as regular site management and control activities:

- Construction site signage will be provided, installed, and maintained by Cianbro 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 Cianbro will coordinate the cleaning of any excess dirt that has resulted from construction activities.
- Onsite snow removal will be Cianbro'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 sacks and fences to protect the 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.

Please review **Exhibit C** of this document for the landscaping plan which will be maintained throughout the duration of the project.

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

J. Construction Staging Area

Exhibit A of this document is the site logistics plan for the project. This plan shows the location of the onsite staging area for materials. The logistics plan also depicts the onsite truck unloading/staging area. All trucks will be unloaded within the construction site's foot print to avoid and impacts on public traffic. An offsite marshalling area will not be required for this project.

K. Parking During Construction

Construction parking will be provided in the private parking lot of 104 Fore Street as well as at the Ocean Gateway Parking Garage.

Exhibit D is the truck route that will be followed by deliveries for the project.

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 WEX Corporate Headquarters Project and subsequent construction management plan.

Sincerely,

Brian Larsen
Project Manager
Building
CIANBRO
Mobile (207) 614-4342

OCEAN GATEWAY CRUISE SCHEDULE

[illegible]

OCTOBER 2016						
STATION NAME	DATE	WATER TEMP	AIR TEMP	WIND SPEED	WIND DIR	WAVE PERIOD
St. Ignace	10/01/16	6.0	10.0	10	100	10
St. Ignace	10/02/16	6.0	10.0	10	100	10
St. Ignace	10/03/16	6.0	10.0	10	100	10
St. Ignace	10/04/16	6.0	10.0	10	100	10
St. Ignace	10/05/16	6.0	10.0	10	100	10
St. Ignace	10/06/16	6.0	10.0	10	100	10
St. Ignace	10/07/16	6.0	10.0	10	100	10
St. Ignace	10/08/16	6.0	10.0	10	100	10
St. Ignace	10/09/16	6.0	10.0	10	100	10
St. Ignace	10/10/16	6.0	10.0	10	100	10
St. Ignace	10/11/16	6.0	10.0	10	100	10
St. Ignace	10/12/16	6.0	10.0	10	100	10
St. Ignace	10/13/16	6.0	10.0	10	100	10
St. Ignace	10/14/16	6.0	10.0	10	100	10
St. Ignace	10/15/16	6.0	10.0	10	100	10
St. Ignace	10/16/16	6.0	10.0	10	100	10
St. Ignace	10/17/16	6.0	10.0	10	100	10
St. Ignace	10/18/16	6.0	10.0	10	100	10
St. Ignace	10/19/16	6.0	10.0	10	100	10
St. Ignace	10/20/16	6.0	10.0	10	100	10
St. Ignace	10/21/16	6.0	10.0	10	100	10
St. Ignace	10/22/16	6.0	10.0	10	100	10
St. Ignace	10/23/16	6.0	10.0	10	100	10
St. Ignace	10/24/16	6.0	10.0	10	100	10
St. Ignace	10/25/16	6.0	10.0	10	100	10
St. Ignace	10/26/16	6.0	10.0	10	100	10
St. Ignace	10/27/16	6.0	10.0	10	100	10
St. Ignace	10/28/16	6.0	10.0	10	100	10
St. Ignace	10/29/16	6.0	10.0	10	100	10
St. Ignace	10/30/16	6.0	10.0	10	100	10
St. Ignace	10/31/16	6.0	10.0	10	100	10

Sidewalk on Thames to be closed but parking kept. Pedestrians will be routed to other side of street. Two parking spaces will be taken at a time to perform any major work in the sidewalk area.

- CONSTRUCTION ACCESS GATE
- JERSEY BARRIERS W/ FENCE PANELS
- JOB SITE ENTRANCE/EXIT ACCESS

WEX Corporate Headquarters

Activity Name

Original Duration

Start

Finish

une 2017

July 2017

August 2017

S

O

N

D

January 2018

F

March 2018

April 2018

May 2018

June 2018

July 2018

August 2018

S

J

WEX Corporate Headquarters

300

11-Jul-17

14-Sep-18

Project Milestones

300

11-Jul-17

14-Sep-18

Project Release

0

11-Jul-17

Closing on Property

0

21-Jul-17

Completion of Foundation Permit Drawing Set

0

14-Aug-17

Planning Board Approval

0

21-Aug-1

Structural Design Complete

0

01-Sep-17

Completion of Building Permit Drawing Set

0

01-Sep-17

Foundation Permit Issued by City

0

26-Sep-17

Building Permit Issued by City

0

29-Nov-1

Superstructure Complete

0

27-Mar-18

Building Weather Tight

0

19-Jul-18

Building System Complete

0

26-Jul-18

Ready for Tennant Move in

0

14-Sep-18

Design/Permitting

99

11-Jul-17

29-Nov-17

Geotech Foundation Review

5

11-Jul-17*

17-Jul-17

Architectural Core and Shell Design

30

11-Jul-17

21-Aug-17

MEP Design

25

18-Jul-17

21-Aug-17

Civil Design

20

18-Jul-17

14-Aug-17

Building Footprint and Column Grid Set

5

18-Jul-17*

24-Jul-17

Ground Improvement Design

5

18-Jul-17

24-Jul-17

Property Closing

4

18-Jul-17*

21-Jul-17

Foundation Design

15

25-Jul-17

14-Aug-17

Structural Steel Bid Set

9

25-Jul-17

04-Aug-17

Structural Steel Permit Set

20

07-Aug-17

01-Sep-17

Foundation Permit Review and Approval

30

15-Aug-17

26-Sep-17

Completion of Construction Drawing Set

20

05-Sep-17

02-Oct-17

Building Permit Review and Approval

60

05-Sep-17

29-Nov-17

Subcontractor Procurement

34

11-Jul-17

25-Aug-17

MEP Subcontractor Procurement

5

11-Jul-17*

17-Jul-17

Elevator Subcontractor Procurement

25

11-Jul-17

14-Aug-17

Curtainwall Subcontractor Procurement

20

11-Jul-17

07-Aug-17

Concrete Subcontract Procurement

15

11-Jul-17

31-Jul-17

Sitework Subcontractor Procurment

25

11-Jul-17

14-Aug-17

Ground Improvement Subcontractor Procurer

15

25-Jul-17

14-Aug-17

Structural Steel Subcontractor Procurement

15

07-Aug-17

25-Aug-17

Submittals/Material Procurment

114

15-Aug-17

26-Jan-18

Rebar Shop Drawings

15

15-Aug-17

05-Sep-17

Elevator Submittal

20

15-Aug-17

12-Sep-17

Ground Improvement Submittal

10

15-Aug-17

28-Aug-17

Mechanical Submittals

20

22-Aug-17

19-Sep-17

Electrical Equipment Submittal

20

22-Aug-17

19-Sep-17

Ground Improvement Submittal Review and Ap

5

29-Aug-17

05-Sep-17

Steel Shop Drawings

15

05-Sep-17

25-Sep-17

CIANBRO Corporation

Project Release

Closing on...

Completion...

Planning B...

Structural...

Completion...

Foundation...

Building P...

Superstruc...

Building W...

Building S...

Ready f

29-Nov-17...

25-Aug-17...

26-Jan-18...

Preliminary

07/12/2017 7:10:07 AM

Remaining Level of Effort

Actual Work

Critical Re...

Actual Level of Effort

Remaining Work

Milestone

CIANBRO Corporation

Preliminary Milestone Schedule

TASK filter: All Activities

Page 1 of 2

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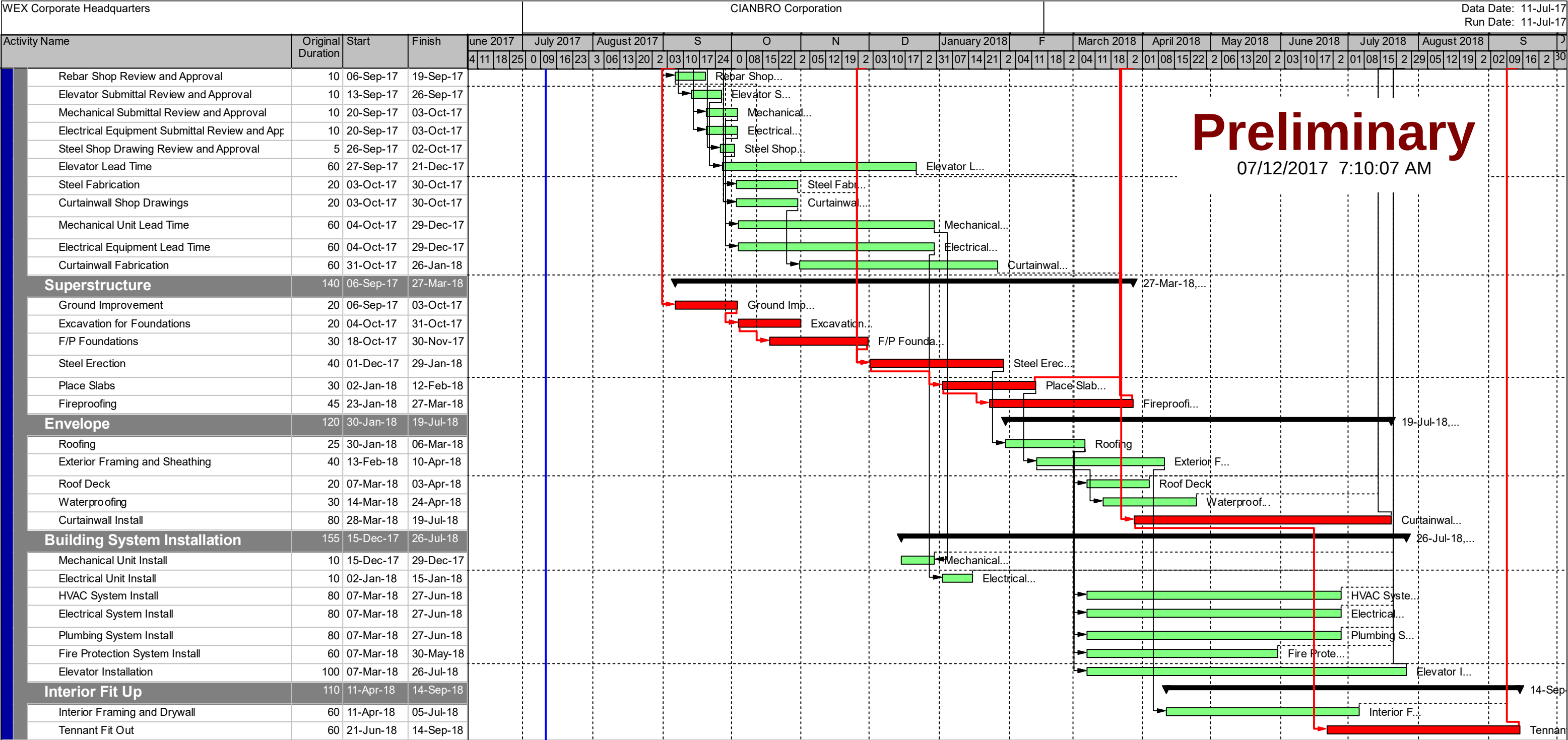


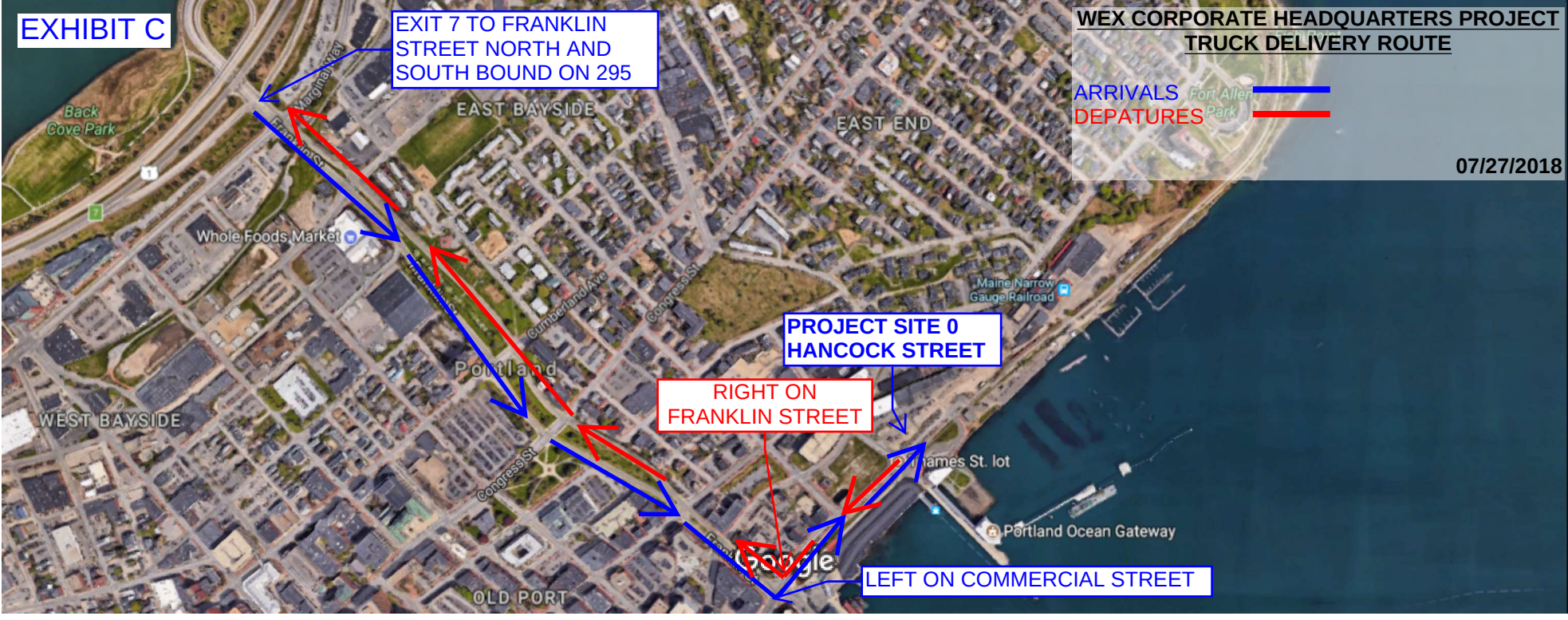
EXHIBIT C

EXIT 7 TO FRANKLIN STREET NORTH AND SOUTH BOUND ON 295

**WEX CORPORATE HEADQUARTERS PROJECT
TRUCK DELIVERY ROUTE**

ARRIVALS 
DEPARTURES 

07/27/2018



**PROJECT SITE 0
HANCOCK STREET**

**RIGHT ON
FRANKLIN STREET**

LEFT ON COMMERCIAL STREET



Traffic Solutions
William J. Bray, P.E.
235 Bancroft Street
Portland, ME 04102
(207) 774-3603
(207) 400-6890 mobile
trafficsolutions@maine.rr.com

September 29, 2017

Parking Assessment Proposed 0 Hancock Street Development Portland, Maine

INTRODUCTION

0 Hancock Street, LLC is proposing construction of a four-story 102,027 square foot building at 0 Hancock Street in the City of Portland. A portion of the first floor and all of floors two through four will be the corporate office space for WEX; the remaining space on the first floor, approximately 10,000 square feet of area will be marketed and leased as retail space. WEX anticipates that 450 employees will be in the proposed building. The determination of parking demand assumes three retail tenants located in the proposed first floor retail space to include a possible high-turnover restaurant, a financial lending office, and a gift store use.

Parking for tenants of the building will be provided off-site at the existing Ocean Gateway Garage located at 167 Fore Street.

Based on the City's Zoning Ordinance, the proposed project requires a minimum of 258 parking spaces.

This document provides a determination of parking demand for the proposed 0 Hancock Street building appropriately combining both local parking utilization data and national parking trends. A forecast of available parking supply was developed for the Ocean Gateway Garage to ensure that the full parking demand of the proposed project could be accommodated at the existing garage facility.

PARKING DEMAND

Parking utilization data was collected at the WEX office building located at 225 Gorham Road in South Portland to establish peak hourly parking requirements of the principal building tenant. A total of 377 employees currently work from the existing office building.

The total number of parked vehicles were recorded hourly between 7:00 AM and 5:00 PM on the campus of the existing WEX office building. The results of the survey are presented as follows:

**Existing WEX Office
Hourly Parking Space Occupancy Trends
225 Gorham Road, South Portland**

<u>Time of Day</u>	<u>Total Occupied Spaces</u>	<u>Percent of Peak Parking Demand</u>
7:00 to 8:00 AM	18	06.7%
8:00 to 9:00 AM	121	45.3%
9:00 to 10:00 AM	216	80.9%
10:00 to 11:00 AM	245	91.8%
11:00 AM to 12:00 PM	263	98.5%
12:00 PM to 1:00 PM	243	91.0%
1:00 PM to 2:00 PM	248	92.9%
2:00 PM to 3:00 PM	267 Peak Parking Demand	100.0%
3:00 PM to 4:00 PM	257	96.3%
4:00 PM to 5:00 PM	229	85.8%
5:00 PM to 6:00 PM	140	52.4%

As highlighted in the preceding chart, the peak hourly parking demand for the existing WEX office building occurs between 2:00 and 3:00 PM with a total of 267 parked vehicles. This value results in an average peak hourly parking demand of 0.71 parking spaces per employee.

This report assumes that the projected 450 employees located at the 0 Hancock Street office will generate a similar parking demand. Accordingly, the peak parking demand of the proposed WEX office portion of the site is estimated at 320 spaces.

Parking demand for the remaining retail uses were developed based upon a combination of parking rates presented in the 4th edition of the institute of Transportation Engineers **PARKING GENERATION** publication and other parking requirement assumptions. The peak parking demand requirements of the remaining retail uses is estimated at 19 spaces.

Table 1, as follows, summarizes the process and assumptions applied in estimating the peak parking demand of the proposed 0 Hancock Street building. Further the chart identifies and completes three appropriate transportation adjustments establishing an adjusted peak parking demand for the proposed 0 Hancock Street building.

Table 1

**0 Hancock Street Building
Parking Demand Determination**

<u>Proposed Use</u>	<u>Parking Variable</u>	<u>Parking Rate</u>	<u>Total Parking Demand</u>
WEX Building	450 employees	0.71 spaces/employee ⁽¹⁾	320 spaces
High Turn-over Restaurant	2,500 square feet	5.55 spaces per 1,000sf	14 spaces
Financial Loan Agency	4 employees ⁽²⁾	1 space/employee	4 spaces
Gift Shop	n/a	n/a	1 space ⁽³⁾
TOTAL Parking Demand	-	-	339 spaces
Other Modes Adjustment	12.8% ⁽⁴⁾	-	-41
TDM Plan Adjustment	5% ⁽⁵⁾	-	-14
Pass-By Trip Adjustment	70% ⁽⁶⁾	-	-10
Adjusted Parking Demand	-	-	274

NOTES:

- (1) Parking rate is based upon parking trends measured at existing WEX office building located at 225 Gorham Road, South Portland.
- (2) Secured parking will only be provided to principals of firm; administrative staff will be required to seek other parking options.
- (3) Secured parking will only be provided to owner of gift store; other staff will be required to seek other parking options.
- (4) Other Modes Adjustment of 12.8% determined for project, applied to WEX parking demand requirements only.
- (5) The TDM Plan developed for the proposed WEX office, submitted separately, supports a 5% reduction in parking demand applied to WEX parking demand requirements only.
- (6) “Pass-By” adjustment of 70% applied to parking demand requirements of proposed restaurant building use only.

This report is projecting a peak hourly parking demand of 274 spaces for the proposed 0 Hancock Street building.

The City’s Transportation Consultant has reviewed the parking demand forecast for the proposed site and stated that he was unable to support the noted “pass-by” trip adjustment of 10 spaces applied to the proposed restaurant use. The minor correction has been applied to the projected parking demand for the proposed site resulting in a total peak parking demand of **284** vehicles.

PARKING SUPPLY

0 Hancock Street, LLC will accommodate the parking demand requirements of the proposed building at the Ocean Gateway Parking garage located at 167 Fore Street. The existing garage facility has a parking capacity of 720 spaces.

Existing and Pending Monthly Lease Agreements: A number of existing and pending development projects in the general vicinity of the parking garage meet their respective parking demand requirements through long-term parking lease agreements with the Ocean Gateway Garage. Each current and pending parking lease agreement is identified along with the required number of parking spaces in the following Table 2:

Table 2

**OCEAN GATEWAY PARKING GARAGE
PARKING SPACE LEASE OBLIGATIONS**

<u>Current Active Parking Leases</u>	<u>Total Spaces Leased</u>
CIEE	145 spaces (daytime)
Residence Inn (Marriot Inn)	140 spaces (4:00 PM to 9:00 AM)
Bayhouse	13 spaces (daytime)
185 Fore Street	44 spaces (daytime)
167 Fore Street	24 spaces (daytime)
Sub Total	366 spaces

<u>Pending/Future Parking Leases</u>	<u>Total Spaces Leased</u>
AC Hotel	100 spaces (4:00 PM to 9:00 AM)
18 Middle Street	140 spaces (daytime)
20 Thames Street	45 spaces (daytime)
170 Fore Street	150 spaces (daytime)
5 India Street	30 spaces (daytime)
Sub Total	465 spaces
TOTAL Leased Parking Spaces	831 spaces

As depicted in the preceding chart, the number of leased parking spaces at the Ocean Gateway Garage, including both existing and pending agreements, is 831 spaces. *“The reader is cautioned that the lease agreements with both the Residence Inn and AC Hotel are limited to evening and early morning hours only.”*

Existing Ocean Gateway Garage Operation Practices: Ocean Gateway operates the parking garage daily knowing that a large percentage of the monthly parking spaces will not be occupied. These empty spaces are filled with other monthly users or transient parkers, a practice utilized at most major parking facilities, which significantly increases the overall daily capacity of the parking garage. The following Table 3 shows the existing 2017 monthly parking utilization records for the Ocean Gateway Garage in support of this common garage management practice:

Table 3

**OCEAN GATEWAY GARAGE
LEASED SPACE(S)
2017 MONTHLY CARD UTILIZATION**

<u>Month of Year</u>	<u>Total Cards Used</u>	<u>Total Business Days</u>	<u>Total Cards Billed</u>	<u>Total</u>	<u>Percent Usage</u>
January	5,532	22	418	9,196	60.2%
February	4,724	20	423	8,460	55.8%
March	6,001	23	433	9,959	60.3%
April	5,027	20	433	8,660	58.1%
May	5,360	23	433	9,959	53.8%
June	5,739	23	433	9,959	57.7%
July	4,622	21	433	9,093	50.8%
August	5,421	23	435	9,982	54.3%
Average	5,303	-	-	9,409	56.4%

The data presented in the chart shows that the present average daily occupancy of the existing monthly parking spaces is **56.4** percent leaving a balance of roughly 44% of the spaces empty throughout a typical day. Appropriately, by “*double filling*” these empty spaces the overall capacity of the Ocean Gateway Garage is increased.

Parking Demand vs. Parking Supply: Table 4 presents the adjusted peak parking demand of all existing and pending lease agreements (applying the noted 56.4% percent adjustment); accounts for the expected very low early evening parking requirements found at a typical hotel (4:00 PM parking demand is 53% of peak parking demand) and, finally, includes the expected hourly parking demand requirements of the proposed 0 Hancock Street building (adjusted based upon existing hourly utilization information measured at the WEX South Portland office). The chart compares the adjusted peak parking demand value for each of the four “*key*” time periods with existing garage capacity to determine if sufficient parking spaces exist in the Ocean Gateway Garage to accommodate the forecast parking demand of the proposed 0 Hancock Street building.

Table 4

**OCEAN GATEWAY PARKING GARAGE
ESTIMATED PEAK HOUR
PARKING DEMAND**

<u>Parking Lease</u>	<u>Total Spaces</u>	<u>Estimate of Hourly Parking Demand</u>			
		<u>10:00 AM</u>	<u>12:00 PM</u>	<u>2:00 PM</u>	<u>4:00 PM</u>
<u>Current Lease(s)</u>					
CIEE	145 spaces	82 spaces ⁽¹⁾	82 spaces ⁽¹⁾	82 spaces ⁽¹⁾	82 spaces ⁽¹⁾
Residence Inn	140 spaces	N/A	N/A	N/A	74 spaces ⁽²⁾
Bayhouse	13 spaces	7 spaces ⁽¹⁾	7 spaces ⁽¹⁾	7 spaces ⁽¹⁾	7 spaces ⁽¹⁾
185 Fore Street	44 spaces	25 spaces ⁽¹⁾	25 spaces ⁽¹⁾	25 spaces ⁽¹⁾	25 spaces ⁽¹⁾
167 Fore Street	24 spaces	14 spaces ⁽¹⁾	14 spaces ⁽¹⁾	14 spaces ⁽¹⁾	14 spaces ⁽¹⁾
<u>Pending/Future Lease(s)</u>					
AC Hotel	100 spaces	N/A	N/A	N/A	53 spaces ⁽¹⁾
18 Middle Street	140 spaces	79 spaces ⁽¹⁾	79 spaces ⁽¹⁾	79 spaces ⁽¹⁾	79 spaces ⁽¹⁾
20 Thames Street	45 spaces	25 spaces ⁽¹⁾	25 spaces ⁽¹⁾	25 spaces ⁽¹⁾	25 spaces ⁽¹⁾
170 Fore Street	150 spaces	85 spaces ⁽¹⁾	85 spaces ⁽¹⁾	85 spaces ⁽¹⁾	85 spaces ⁽¹⁾
5 India Street	30 spaces	17 spaces ⁽¹⁾	17 spaces ⁽¹⁾	17 spaces ⁽¹⁾	17 spaces ⁽¹⁾
0 Hancock Street	284 spaces	261 spaces ⁽³⁾	258 spaces ⁽³⁾	284 spaces ⁽³⁾	244 spaces ⁽³⁾
Total Hourly Parking Demand	—	595 spaces	592 spaces	618 spaces	705 spaces
Garage Capacity	720 spaces	720 spaces	720 spaces	720 spaces	720 spaces
Parking Space Differential		+125 spaces	+128 spaces	+102 spaces	+15 spaces

NOTES:

- (1) Parking demand reduced by monthly utilization rate of 56.4%
- (2) ITE Parking Generation publication estimates peak parking demand for a hotel land use is at 53% at 4:00 PM.
- (3) Adjustments reflect current hourly parking trends recorded at WEX South Portland office building.

As highlighted in the preceding chart, there is sufficient parking supply within the Ocean Gateway Garage to accommodate the projected parking demand of the proposed 0 Hancock Street building. The greatest hourly peak parking demand is projected to occur at 4:00 PM when the parking requirements of the two hotels must be accounted for. During this single hourly time period, the combined peak parking demand (including the projected parking needs of the proposed site) is estimated at 705 parking spaces leaving a balance 15 spaces in the garage.

SUMMARY

- The proposed 0 Hancock Street building site can be expected to generate a peak hour parking demand of 284 parking spaces. The full parking needs of the proposed project will be provided at the Ocean Gateway Parking Garage located at 167 Fore Street.
- Through executed and/or pending parking lease agreements Ocean Gateway Garage provides parking spaces within the garage to a total of ten development projects. The total number of parking spaces allocated to

these lease agreements is 831 spaces. *The reader is cautioned that two of the lease agreements only provide evening parking spaces reducing the actual parking demand occurring during the daytime hours.*

- Garage operators at Ocean Gateway Garage use a very common practice of “double-filling” parking spaces within the parking garage knowing, based upon detailed daily utilization records, that a very large percentage of the monthly parking spaces are not filled. This practice significantly increases the overall capacity of the parking garage. The parking utilization records show that on average only 54.6% of the parking spaces are filled on any one given day.
- Estimated peak parking demand values were developed for the Ocean Gateway Garage for four “key” hourly time periods. The process accounts for the adjusted peak parking demand of all identified existing and pending parking lease agreements and the projected parking demand of the proposed 0 Hancock Street building. During each of the four hourly time periods, a balance of spaces was determined to exist within the Ocean Gateway Garage. The highest peak parking demand occurs at 4:00 PM when the parking requirements of both hotel sites are included in the estimate of parking demand. At this time period a balance of 15 parking spaces is projected to exist in the garage.



The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.
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Landscape Architects, Inc.
18 Pleasant Street
Portland, Maine 04101
207-871-0003

1	FINAL SITE PLAN REVIEW	M&S	S&M	17.09.25
Revision		By	Appd.	YY.MM.DD

Permit-Seal



0 HANCOCK LLC

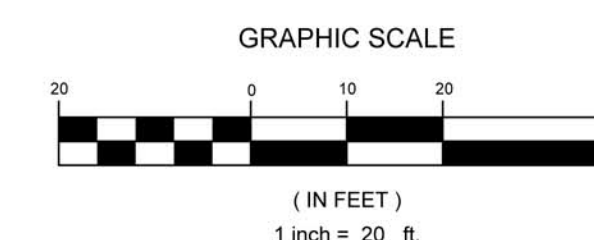
THAMES STREET SITE
PORTLAND, MAINE

Title
LANDSCAPE PLAN

Project No.	Scale
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Sheet

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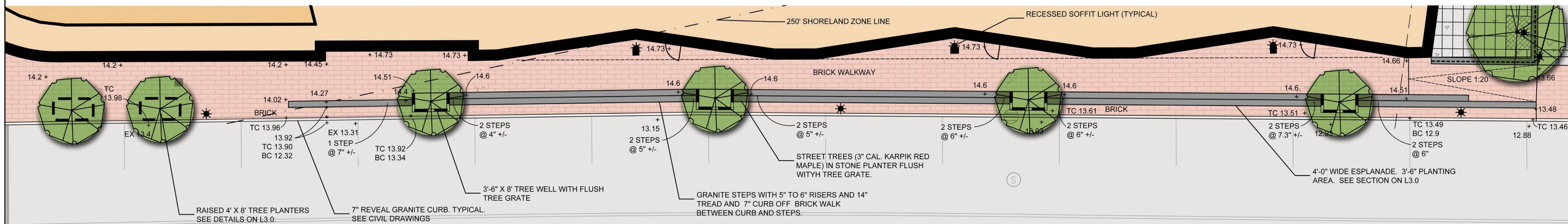
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Consultants

MOHR & SEREDIN
Landscape Architects, Inc.
18 Pleasant Street
Portland, Maine 04101
207-871-0003

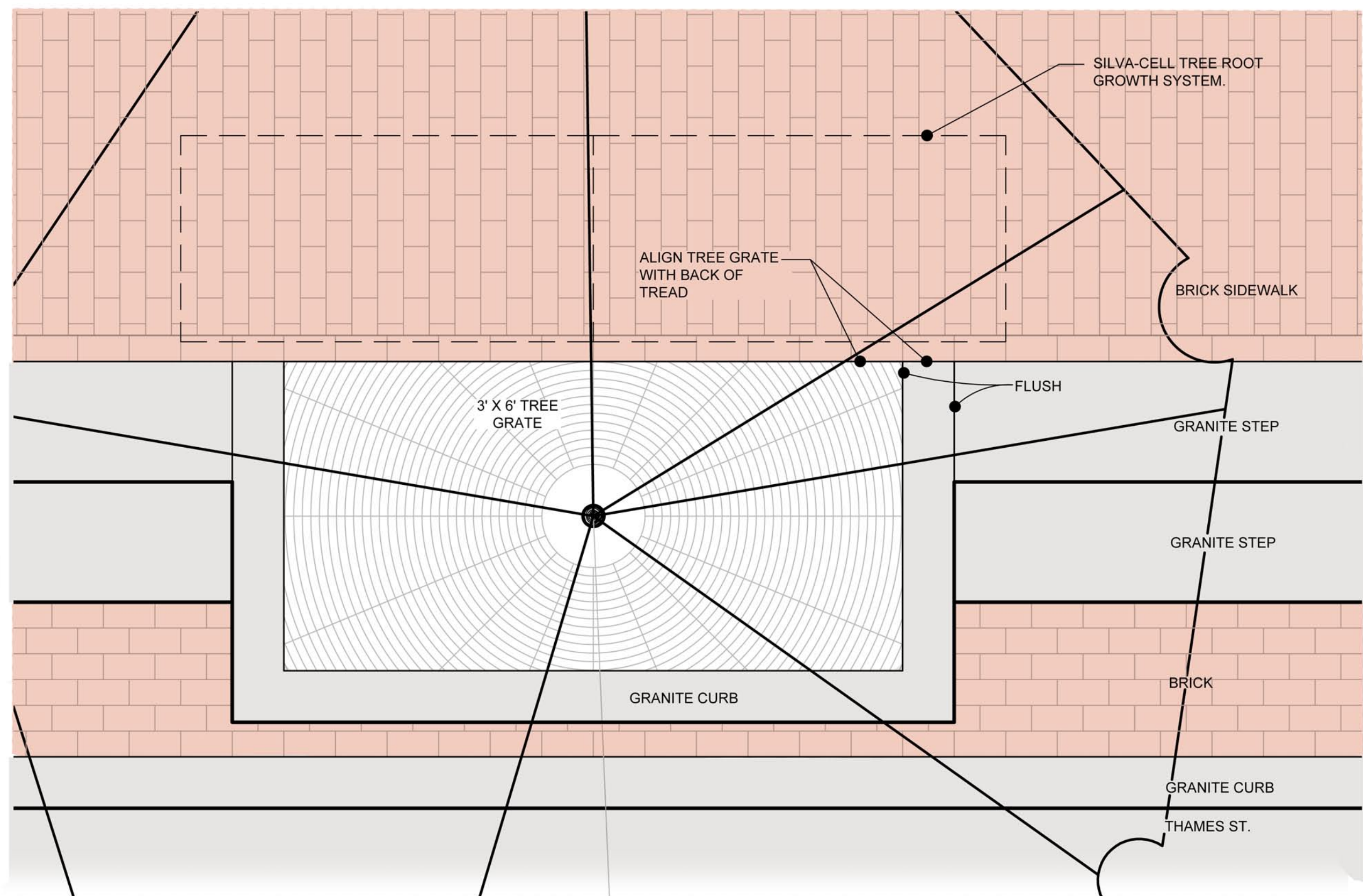
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THAMES STREET

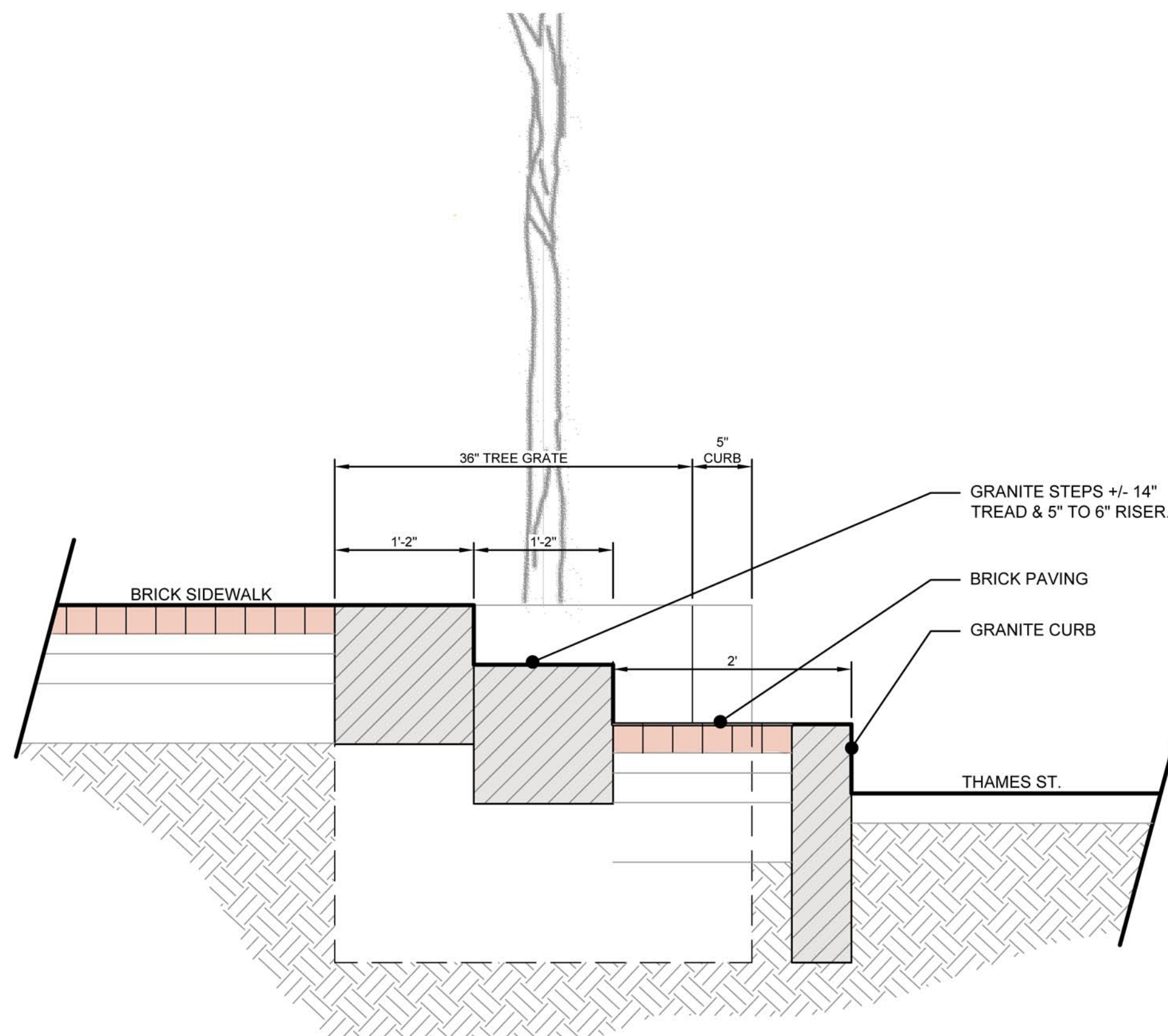
DOUBLE CURB AND ESPLANADE PLAN VIEW

Scale: 1" = 10'-0"



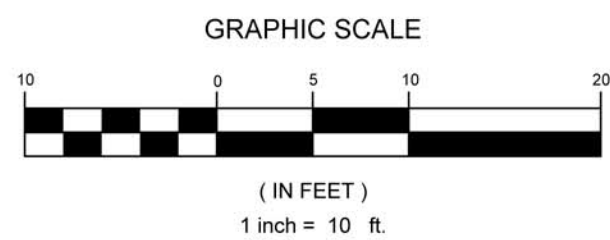
DETAIL PLAN VIEW

Scale: 1" = 1'-0"



DETAIL SECTION

Scale: 1" = 1'-0"



File Name: 978-Base-MS 10-2-17	M&S	SBM	TS	17.10.2
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
O HANCOCK LLC

THAMES STREET SITE
PORTLAND, MAINE

Title
THAMES STREETScape DETAIL PLAN

Project No. 195350450
Scale 1" = 10'

Sheet

L-2.0



PLANNING BOARD REPORT PORTLAND, MAINE

Knight Farms Subdivision (Nine Lots)
1728 Washington Avenue
Level III and Subdivision
2017-058
Greenlight Enterprises, LLC, Applicant

Submitted to: Portland Planning Board:
Public Hearing Date: October 4, 2017

Prepared by: Shukria Wiar, Planner
Date: September 29, 2017

I. INTRODUCTION

Greenlight Enterprises, LLC is proposing a nine-lot single-family subdivision on land along outer Washington Avenue. The site includes an existing house at 1728 Washington Avenue that will remain and be a separate lot (Lot #9). As part of the development, a street will be constructed, with a 50' right-of-way (ROW), to the City Standards including the installation of underground utility services, granite curbs, lighting, and street trees. The applicant is seeking a waiver of a sidewalk on one side of the proposed street. The Planning Board is being requested to review the application under Portland's Subdivision Ordinance.

The total site has 2.15 acres, of which approximately two thirds of the property is in the Residential R-3 zone, including the frontage on Washington Avenue and the south property line, and the remainder is within the Residential R-2 zone.

A total of 134 notices were sent out to neighbors and interested parties within Portland, and the public notice appeared in the October 2nd and October 3rd, 2017 editions of the *Portland Press-Herald*.

Applicant: Greenlight Enterprises, LLC
Consultants: Robert McSorley, Sebago Technics

Figure 1: Proposed Site



II. REQUIRED REVIEWS

<i>Waiver Requests</i>	<i>Applicable Standards</i>
Sidewalk and Curbing Waivers	Section 14-498 8a: Sidewalks and curbs: 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 walks away from streets in common open space in block interiors.

Review	Applicable Standards
Subdivision (creation of 3 or lots)	Section 14-497

III. PROJECT DATA

Existing Zoning	Residential R-2 and R-3		
Existing Use	Single-family home		
Proposed Use	Nine single-family lots		
Parcel Size	2.15 acres		
	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Impervious Surface Area	10,010 SF	35,270 SF	25,260 SF
Building Footprint	7,447 SF	15,268 SF (All the proposed homes)	7,821 SF
Number of Residential Units	One Lot	9 New Lots	8 Lots
Proposed Bedroom Mix	Three-bedroom homes		
Estimated Cost of Project	\$350,000		

IV. EXISTING CONDITIONS

The 2.15 acres tract of land is located on outer Washington Avenue, just south of Shepherd Lane. The site is



partially developed with an existing farmhouse on the property, which will remain on a separate lot. A existing barn and outbuildings were removed a few months ago. The development site abuts Washington Avenue to the east, and single family

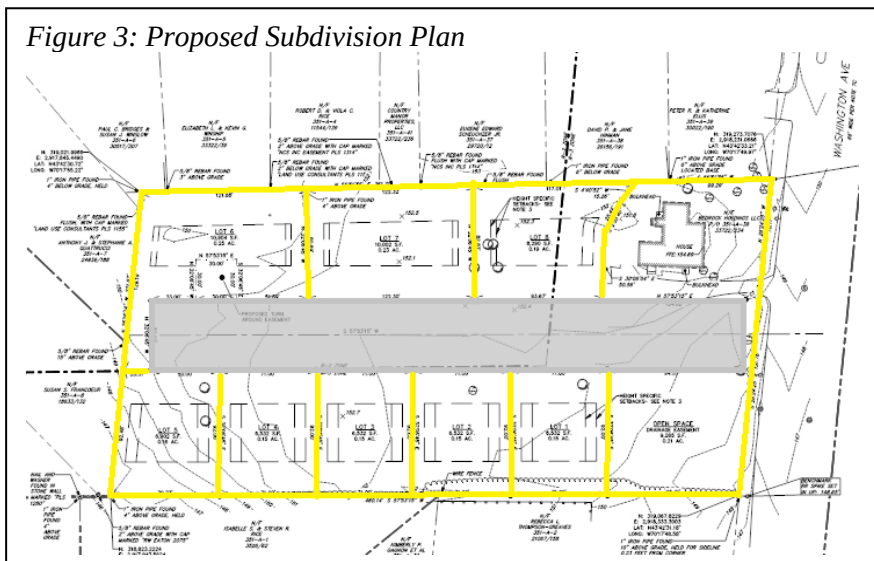
residential structures to the north, south and west.

V. PROPOSED DEVELOPMENT

The applicant has submitted a final application with site plans (Attachments B and Plan 3) and requested a final review of the subdivision. The lots will be between 6,500 and 10,000 sq. ft. to meet the dimensional requirements of each zone. The applicant has confirmed that the existing structure and garage on Lot #9 at the eastern end of the parcel will remain. This lot is included in the review as it was all one parcel and under State law the new division for the lot must be included in the review.

A new street, Abner Lane, is proposed with approximately 450 linear feet, which intersects Washington Avenue. The proposed street is designed to meet

Figure 3: Proposed Subdivision Plan



City standards, except the applicant has requested a waiver of the sidewalk on one side of the street (Attachment I) and a portion along the frontage on Washington Ave. Sewer and water lines are proposed in the street and will be served by a water main and sanitary sewer line in Washington Avenue.

The proposed subdivision includes a total of approximately 9,265 sq. ft. of open space. The stormwater analysis has been submitted that states this area is where stormwater management systems will be located. According to the applicant, the maintenance of the common area will be done per a homeowners' document for the property. As a condition of approval, this Homeowners Association Bylaws will have to be submitted for review and approval by Corporation Counsel and noted on the subdivision plat.

VI. PUBLIC COMMENT

The Planning Division received one request for information about the project, and received two written comments (Attachment 4) prior to the workshop; no public comment has been received since then. The main concerns of these comments are the green space, used by the neighborhood, will be eliminated and the increase in traffic.

VII. RIGHT, TITLE, & INTEREST AND FINANCIAL & TECHNICAL CAPACITY

a. The owner of the property is Greenlight Enterprises LLC. The applicant has provided a copy of a quitclaim deed, recorded at the Cumberland County Registry of Deeds (Book 33874 Page 149), which demonstrates their right, title and interest in the property.

b. The estimated cost of the development is \$350,000. The applicant has submitted a letter from Machias Saving Bank, dated March 13, 2017, as demonstration of their financial and technical capacity to complete the proposed development.

VIII. ZONING ANALYSIS

The proposed subdivision is within the Residential R-2 and R-3 zones. This is considered a nine-lot subdivision with one lot of "open space" that is not intended for development of residential structures. This open space lot is not counted in the number of subdivisions. All proposed lots are meeting the minimum lot size, street frontage, and lot width standards of the applicable zone. Each lot has the potential to meet all of the other building setback, parking, lot coverage, and building height standards of the applicable residential zone. When a building permit comes in for the construction on the individual lots, it must meet all the dimensional standards for the zone.

IX. SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The final submission has a subdivision plat that addresses the requirements of the subdivision ordinance. The final plat will need to be revised to reflect any waivers and conditions of approval that relate to the subdivision plan. Any waivers granted must be recorded at the Registry of Deeds within 90 days of a Planning Board decision.

X. SUBDIVISION REVIEW (14-497(a). Review Criteria; 14-198. Technical and Design Standards; & 14-499. Required Improvements)

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 plan and finds it acceptable. This standard is being met.

2. Sufficient Water Available (Section 14-497 (a) 2 and 3)

Public water will be installed in Abner Lane and will be served by a public water main located within Washington Avenue. The Applicant has contacted the Portland Water District and the City Department of Public Services requesting ability to serve water and sewer demand, and awaits response. Confirmation of ability to serve water and sewer from PWD and DPS should be forwarded to the Planning Authority upon receipt.

3. Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)

A. Traffic Impacts

The proposed street intersects with Washington Avenue and dead ends with a turnaround near the boundary to the north. The Fire Department has reviewed the layout of the turnaround and states that it has sufficient turning radius for a ladder truck. A condition of approval is proposed that states:

The applicant shall submit for review and approval by Corporation Counsel, the deed for Lot 6 and the homeowners documents, which shall include provisions that the public turn-around will not be used for parking or as a driveway for Lot 6 and the turn-around will remain open for public and emergency vehicle use at all times.

The street has been designed to meet City of Portland standards with a paved travel way of 28 feet in width. The Fire Department has indicated that 28 feet is needed for emergency access.

The applicant submitted a Traffic Generation Assessment (Attachment L) which projects 76.56 daily vehicle trips, 6.16 AM peak hour trips, and 8.16 PM peak hour trips from the proposed subdivision. The City's Traffic Engineering Reviewer Tom Errico has commented (Attachment 1):

The applicant has conducted a trip generation estimate and less than 10 peak hour trips will be generated by the project. This level of traffic would not be expected to create traffic or safety deficiencies.

The project is not expected to generate significant traffic volumes or have a major impact on existing or proposed public roads.

Mr. Errico had identified other transportation impact that applicant have addressed as part of the final plan, see below:

- *A detailed construction management plan for activities that impact Washington Avenue traffic and pedestrians shall be provided.*
Status: The applicant has provided a conceptual construction management plan that I find to be acceptable. I would note that the start and end times of the one lane alternating lane configuration will need to be determined at the preconstruction meeting.
- *The applicant shall provide sight distance information at the new intersection with Washington Avenue.*
Status: The applicant has indicated that adequate sight distance can be provided with some vegetation removal. This shall be noted on the plans and field verified during construction. I have no further comment.
- *The City has been implementing traffic calming recommendations along Washington Avenue over a number of years and I need to review conditions in the vicinity of the project and whether any specific actions or monetary contributions are required by the applicant.*
Status: No improvements were identified and not implemented in the vicinity of the project. No requirement is suggested for the applicant.

B. Street Lighting

Street lighting is required improvement for a subdivision. The applicant is proposing to install street lights, as required. The City is in completing a study to convert all street lights to LED luminaires and fixtures. The consultant is currently evaluating a specification for the town and country fixtures and a final recommendation is expected shortly. The staff is recommending a condition of approval that the applicant submit a final plan and specification that is in compliance with the proposed LED fixtures prior to the issuance of a building permit.

C. Sidewalk and Curbing Requirement

At the pre-application meeting, the consulting team asked about a waiver of a sidewalk on one side of the proposed street. The staff advised that they would need to address the sidewalk criteria for the Board's

consideration. In addition, the staff discussed the street calming goals for Washington Avenue and asked the applicant to include a continuous sidewalk from the intersection of Abner Lane to Shepard Lane along Washington Avenue. This includes extending the sidewalk across the adjoining lot to Shepard Lane. The staff felt this was a more important pedestrian gap to fill than the short section of frontage to the south of the new street. Therefore, the applicant is proposing a sidewalk on Washington Avenue on the development side from Abner Lane to Shepard Lane (north of the proposed road), but is not along the segment south of the road. The Subdivision Ordinance requires the following Section 14-498 8a:

Sidewalks and curbs: 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 walks away from streets in common open space in block interiors.

In addition, the Subdivision Ordinance contains the following waiver criteria for sidewalks under Section 14-506 Modifications:

SIDEWALK WAIVER CRITERIA:

1. *There is no reasonable expectation for pedestrian usage coming from, going to and traversing the site.*
2. *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.*
3. *A safe alternative-walking route is reasonably and safely available, for example, by way of a sidewalk on the other side of the street that is lightly traveled.*
4. *The reconstruction of the street is specifically identified and approved in the first or second year of the current capital improvement program or has been funded through an earlier CIP or through other sources.*
5. *The street has been constructed or reconstructed without sidewalks within the last 24 months.*
6. *Strict adherence to the sidewalk requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.*

A sidewalk, on one side of the new street, is also proposed. The Traffic Engineer and DPW have recommended that the applicant should have the sidewalk on the south side of the street instead of the north side. One of the reason for the change is the street lights are being proposed on the south side and for safety reasons, the sidewalk should be on the same side. Mr. Errico also states that there is greater number of houses on the south side; below are his comments in regard to the sidewalk:

- *It is suggested that the sidewalk be located on the south side of the proposed roadway given the greater number of housing lots on the south side.*
Status: If only one sidewalk is provided, a southerly sidewalk is recommended. The plans have been revised to provide a southerly sidewalk only.
- *Greater detail is required for the sidewalk connection to Shepherd Lane as it relates to utility location and impacts. I also continue to review general pedestrian safety and connectivity.*
Status: The applicant has provided a response and I have no further comment.

Mr. Errico also stated that the applicant would need to address the sidewalk and curbing waiver criteria both in respect to the sidewalks on proposed street and curbing on Washington Avenue. Mr Robert McSorley, P.E. with Sebago Technics, provided the following responses that addresses three of the waiver criteria for the Board's consideration. A sidewalk may be waived when 2 criteria are met

Mr. McSorley's response, dated 9/29/17

1. There is no reasonable expectation for pedestrian usage coming from, going to **AND** traversing the site.

The street is a dead end street and there is no expectation that pedestrians will traverse through the site to get from or to another property (THERE ARE THREE PARTS TO THIS CRITERIA. WHILE WE DO HAVE THE EXPECTATION THAT PEDESTRIANS WILL COME OR GO TO THE SIGHT, THERE IS NO EXPECTATION THAT PEOPLE WILL TRAVERSE THE SITE AS IT IS A DEAD END ROAD). The sidewalk will be used for the most part only by the residents or people visiting the residents.

3. A safe alternative-walking route is reasonably and safely available, for example, by way of a sidewalk on the other side of the street that is lightly traveled.

A sidewalk will be provided on the south side of the roadway which is a safe alternative-walking route is reasonably and safely available by crossing the proposed dead end street.

6. Strict adherence to the sidewalk requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value

The project's roadway, Abner Lane, is proposed where it is based certain restrictions. First, the access road had to be place to the south to get the minimum required setback from the existing house and secondly, not too far to the south such that the access way lines up with the house across Washington Avenue and have impacts from car headlight coming down Abner Lane. The result is that the lots on the north side of Abner Way are not as deep as the southern lots. In order, to have a more balanced street from a landscaping and yard perspective, it is necessary to provide the additional green space in the right-way adjacent to the lots on the north side of Abner Way. The public will see a benefit from the deletion of the sidewalk from a more balanced neighborhood street frontage and the reduction of headlight impacts to the existing house on Washington Avenue)

Furthermore, the project is within the Fall Brook Watershed and as such we have designed the site to minimize impervious areas and maximize the stormwater management detention for the project. This is achieved through providing sidewalk on only one side of the roadway, which is sufficient for the 9 homes to be built or exist in the subdivision, and designing the system for the 100 year storm event in lieu of the required 25 year event. The additional impervious area from the sidewalk will result in more water quality volume needing to be provided (detained pool volume). The result is the pond will not provide the all the proposed additional stormwater volume from the 100 year storm. Having less impervious area within the Fall Brook Watershed and providing additional stormwater storage is of greater public good than the construction of the dead end sidewalk along 4 residences.

Tom Errico reviewed the applicant's responses and his comments are below:

- *The sidewalk waiver request shall comply with the City's sidewalk waiver criteria.*
Final Status: The applicant has conducted a waiver criteria analysis per City requirements. The applicant has noted that given the layout of the subdivision, the lots on the north side of the road have less depth and construction of the sidewalk would limit streetscape and site features. I find these criteria to be reasonably met and therefore the project meets the requirement for waiving a sidewalk on the north side of the street.
- *A sidewalk waiver request is required for the property frontage on Washington Avenue towards the south.*
Final Status: The applicant has conducted a curb waiver analysis per City requirements and in my professional opinion two criteria are met (Washington Avenue is to being paved in the near future and curbing is not required for drainage purposes). Accordingly, curbing is not required along Washington Avenue where the sidewalk is being constructed to Shepard Lane.

D. Granit Curbing Requirement

The applicant is seeking a waiver from the granite curbing requirement along Washington Avenue. Granit curbing is proposed on both sides of Abner Lane. The granite curbing waiver criteria in the subdivision ordinance is as follows:

CURBING WAIVER CRITERIA:

1. The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost.
2. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program or has been funded through an earlier CIP or through other sources.
3. The street has been rehabilitated without curbing in the last 60 months.
4. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.

5. *Runoff from the development site or within the street does not require curbing for stormwater management. [In no event shall the waiver have the effect of creating potentially hazardous vehicle and pedestrian conflict or nullifying the intent and purpose and policies of the land development plan relating to transportation and pedestrian infrastructure and the regulations of this article.]*

Sebago Technics submitted documentation for the waiver and this has been reviewed by both Tom Errico and Lauren Swett. In reviewing the criteria, both Tom and Lauren believe the last two standards have been met for a waiver.

Robert McSorely's Response to Waiver Criteria – 9/29/17 and City Staff Responses

1. The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost.

Applicant: We estimate the cost to construct the sidewalk (clearing, base and pavement installation and restoration) to be \$6,000 - \$7,000; the cost to install granite along this length would be more than twice the cost of the sidewalk.

Staff Comment: The calculation should be based on the entire project.

2. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program or has been funded through an earlier CIP or through other sources.

Applicant: We have contacted DPW to determine if the repaving of Washington Avenue is in the CIP budget for the next two year cycle.

3. The street has been rehabilitated without curbing in the last 60 months.

Applicant: The city has not done an rehabilitation of Washington Avenue in the last 60 months

Staff Comment: The City is planning to repave but the year has not yet been set.

4. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.

Applicant: Because of flat grades in the right-of-way outside of the pavement, installation of curbing will result in a lack of positive drainage from the lot which the sidewalk is being constructed in from of.

Staff Comment: Washington Avenue in this vicinity does not have granite curbing and the reviewers agree with the assessment that this would require significant regrading and impact on the adjacent lots to make drainage work.

5. Runoff from the development site or within the street does not require curbing for stormwater management.

Applicant: Runoff from the site and the roadway currently adequately drains to inlet in right-of-way along the frontage of the property without curbing. The development of the property will result in the majority of the area that presently drains directly to the right-of-way being conveyed it through the treatment system. The outfall from the treatment system is a direct connection to the municipal system.

Staff Comment: Agreed – there is no existing curbing in the area and stormwater management is adequately accomplished.

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 has submitted a wastewater capacity application to the Department of Public Services requesting confirmation of adequate sewer capacity (Attachment B). A letter from DPW confirming sewer capacity has been included as a condition of approval. Solid waste and snow removal will be handled by the City after the street is built to City standards and accepted by the City Council.

Under Section 5 of the City of Portland Technical Manual, a 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. The MDEP Chapter 500 rules describe stormwater management requirements for new development projects. The City's Peer Engineering Review (Attachment 2) and offer the following comments:

- a) Basic Standard: The Applicant has provided plans, notes, and details to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500.*
- b) General Standard: The Applicant has proposed to install an underdrained soil filter to provide treatment for the subdivision. This system will provide adequate treatment for the subdivision.*
- c) Flooding Standard: The proposed underdrained soil filter will provide for adequate flood control within the subdivision.*

All prior comments have been addressed at this time.

5. Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)

The proposal site is not within an historic district. It is in a neighborhood surrounded by a single family and some two family residential types. The proposed lots do not impact the natural beauty of the area or adversely affect any significant wildlife habitat, rare or irreplaceable natural areas, or any public access to the shoreline.

This parcel is an open field and not forested, but there are mature trees along the southern boundary that will need to be saved as part of this development. The applicant is proposing to plant twenty-two street trees. The proposed subdivision includes a total of 9,265 SF of open space, located along Washington Avenue and is co-located with the proposed stormwater management or "drainage easement" area. The maintenance and management of this open space area needs to be clarified in the context of the Subdivision Ordinance (14-498):

(i) *Public open space:*

- 1. *In all subdivisions open space may be provided for parks, recreational and other public areas. Where no public open space or recreational areas exist in close proximity to the subdivision, or where a lack of such areas in the subdivision would require its disapproval under section 14-497(a), general requirements, the Planning Board may require provision of land for park or recreational purposes. Such lands may be designated for public or private ownership in accordance with the conditions stated in this section, subject to the approval of the Planning Board.*

If a tract or parcel is designed or intended to be owned and used in common for recreational or other public or semipublic purposes and such intent is so designated on the subdivision plat, appropriate documents in form approved by the corporation counsel shall be submitted to the Planning Board. Such documents shall clearly:

- a. Set forth the nature of the permanent organization under which common ownership is to be established, including its purpose; how it shall be governed and administered; the provisions made for permanent care and maintenance of the common property for its share of the cost of administering and maintaining such common property;*
- b. Set forth the extent of common interest held by the owner of each individual parcel in the tract held in common with others.*

6. Comprehensive Plan (Section 14-497 (a) 9)

The staff has identified goals and policies which are relevant to the proposed housing development and finds the proposal in conformance with the adapted Comprehensive Plan.

Housing: A Livable City

State Goals: To encourage and promote affordable decent, housing opportunities for all Maine citizens

Local Goals:

- Increase, preserve, and modify the overall supply of housing City-wide to meet the needs, preferences and financial capabilities of all Portland households.
- 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.
- Pursue policies to enable people who work in Portland to have the option to live in Portland.
- Encourage quality, sustainable design in new housing development.

Goals from Future Strategies:

9. Adopt Affordable Housing

- Pursue new opportunities for increased energy efficiency, increased densities, mixed incomes, and greater connectivity to surrounding neighborhoods.

7. Financial Capability (Section 14-497 (a) 10)

As noted above, the applicant has submitted a letter from Machias Saving Bank indicating the intent to finance the project.

8. Wetland and Groundwater Impacts, Flood-Prone Area

There are no anticipated impacts to wetlands and groundwater supplies, and is located in a flood-prone area.

XI. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed development.

XII. 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 October 4, 2017 for application 2017-058 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing:

1. Sidewalks

The Planning Board finds that two of the following criteria **do/do not** apply, (namely 1 and 6, as per applicant's request) and therefore **waives/does not waive** the requirement for a sidewalk along the north side of the new street within the 9-lot new subdivision:

2. Curbing:

The Planning Board finds that two of the following criteria **do/do not** apply, (namely 4 and 5, as per applicant's request) and therefore **waives/does not waive** the requirement for curbing along the frontage side of Washington Avenue:

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 October 4, 2017 for application 2017-058 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, subject to the following conditions of approval, which must be met prior to the signing of the plat:

1. The applicant shall submit Homeowner Association Documents for review and approval by Corporation Counsel that address:
 - a. the deed for Lot 6, which shall include provisions that the public turn-around will not be used for parking or as a driveway for Lot 6 and the turn-around will remain open for public and emergency vehicle use at all times; and
 - b. the Stormwater maintenance agreements/easements for the open space lot: and
2. That the Subdivision Plat shall be finalized to the satisfaction of the Planning Authority, Department of Public Services and Corporation Counsel and to include references to stormwater management and the emergency turnaround on Lot 6; and
3. Prior to the issuance of a building permit, the applicant submit a final plan and specifications, for review and approval by the Planning Authority and the Department of Public Works, that are in conformance with the proposed LED fixture specifications.
4. 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. That the applicant shall provide a stormwater maintenance agreement for the stormwater drainage system, shall be submitted, signed, and recorded prior to the issuance of a building permit with a copy to the Department of Public Services; and
5. Confirmation of ability to serve water and sewer from PWD and DPS shall be submitted to the Planning Division prior to the issuance of a building permit.

XIII. ATTACHMENTS:

Attachments to Memorandum

1. Traffic Engineering (Tom Errico) comments 05.26.2017
2. Peer Engineering Review comments (Lauren Swett) 05.26.2017
Att. 2a Lauren Swett Review of Curbing
3. Fire Department (Capt. Keith Gautreau) comments 06.08.2017
4. Public Comment
PC1 - Sean Fitzpatrick 5.03.17
PC2 - 1728 Washington Ave 5.6.2017

Applicant's Submittal

- A. Cover Letter, dated March 2017
- B. Section 1. Application Forms
- C. Section 2. Location Map
- D. Section 3. Tax Map
- E. Section 4. Right, Title and Interest
- F. Section 5. Statement of State and Federal Permits
- G. Section 6. Zoning Assessment
- H. Section 7. Summary of Existing-Proposed Easements
- I. Section 8. Waiver Requests
- J. Section 9. Evidence of Financial and Technical Ability
- K. Section 10. Construction Management Plan
- L. Section 11. Statement of Traffic Generation
- M. Section 12. Summary of Significant Natural Features

- N. Section 13. Stormwater Management Plan
- O. Section 14. Statement of Project Consistency with City Master Plans
- P. Section 15. Ability to Serve Letters
- Q. Section 16. Statement of Solid Waste Generation
- R. Section 17. NFPA Fire Department Standards
- S. Section 18. Assessment of Consistency with Design Standards
- T. Section 19. Soils Report
- U. Section 20. City of Portland authorization letter
- V. Section 20. Site-Subdivision Plans
- W. Section 21. Neighborhood Meeting Documentation
- X. Section 22. Draft Stormwater Drainage System Maintenance Agreement
- Y. Section 23. Staff Comments Response Letter 07.14.17
- Z. Section 24. Knight Farm Subdivision waiver

Plans

- 1. C1. Cover Sheet
- 2. C2. Existing Conditions Plan
- 3. C3. Subdivision Plan
- 4. C4. Grading & Utility Plan
- 5. C5. Profile
- 6. C6. Details Sheet 1
- 7. C7. Details Sheet 2
- 8. C8. Details Sheet 3
- 9. C9. Pre Dev Watershed Plan
- 10. C10. Post Dev Watershed Plan



Shukria Wiar <shukriaw@portlandmaine.gov>

Knight Farm - Final Traffic Comments

1 message

Tom Errico <thomas.errico@tylin.com>

Fri, Sep 29, 2017 at 10:46 AM

To: Shukria Wiar <shukriaw@portlandmaine.gov>

Cc: "kgray@portlandmaine.gov" <kgray@portlandmaine.gov>, Katherine Earley <kas@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>, "Swett, Lauren" <lswett@woodardcurran.com>

Hi Shukria – The following presents a status update of prior traffic comments following a review of the revised application materials and represent final traffic comments.

- The applicant has conducted a trip generation estimate and less than 10 peak hour trips will be generated by the project. This level of traffic would not be expected to create traffic or safety deficiencies.

Final Status: I have no further comment.

- A detailed construction management plan for activities that impact Washington Avenue traffic and pedestrians shall be provided.

Final Status: The applicant has provided a conceptual construction management plan that I find to be acceptable. I would note that the start and end times of the one lane alternating lane configuration will need to be determined at the preconstruction meeting.

- The sidewalk waiver request shall comply with the City's sidewalk waiver criteria.

Status: The applicant has noted in their waiver analysis that there is no expectation for pedestrian usage coming from, going to, or traversing the site. In my professional opinion this criteria does not qualify and thus the applicant shall revise their waiver evaluation.

Final Status: The applicant has conducted a waiver criteria analysis per City requirements. The applicant has noted that given the layout of the subdivision, the lots on the north side of the road have less depth and construction of the sidewalk would limit streetscape and site features. I find this criteria to be reasonably met and therefore the project meets the requirement for waiving a sidewalk on the north side of the street.

- It is suggested that the sidewalk be located on the south side of the proposed roadway given the greater number of housing lots on the south side.

Final Status: If only one sidewalk is provided, a southerly sidewalk is recommended. The plans have been revised to provide a southerly sidewalk only.

- The applicant shall provide sight distance information at the new intersection with Washington Avenue.

Final Status: The applicant has indicated that adequate sight distance can be provided with some vegetation removal. This shall be noted on the plans and field verified during construction. I have no further comment.

- A sidewalk waiver request is required for the property frontage on Washington Avenue towards the south.

Status: In lieu of constructing a sidewalk along the property frontage only, the applicant is proposing to construct a sidewalk from the proposed project roadway to Sheperd Lane where a crosswalk provides a safe crossing to the existing sidewalk located on the opposite side of Washington Avenue. The total length of sidewalk construction proposed is approximately the property frontage length and therefore I find the applicants plan to be acceptable. The applicant has conducted a curb waiver evaluation and I do not find the methods to be acceptable. The applicant shall conduct the waiver according to City criteria.

Final Status: The applicant has conducted a curb waiver analysis per City requirements and in my professional opinion two criteria are met (Washington Avenue is to being paved in the near future and curbing is not required for drainage purposes). Accordingly, curbing is not required along Washington Avenue where the sidewalk is being constructed to Sheperd Lane.

- The City has been implementing traffic calming recommendations along Washington Avenue over a number of years and I need to review conditions in the vicinity of the project and whether any specific actions or monetary contributions are required by the applicant.

Final Status: No improvements were identified and not implemented in the vicinity of the project. No requirement is suggested for the applicant.

- Greater detail is required for the sidewalk connection to Sheperd Lane as it relates to utility location and impacts. I also continue to review general pedestrian safety and connectivity.

Final Status: The applicant has provided a response and I have no further comment.

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"

MEMORANDUM



TO: Shukria Wiar, Planner
FROM: Lauren Swett, P.E.
DATE: September 21, 2017
RE: 1728 Washington Ave – Knight Farm Subdivision – Level III Site Plan Response to Comments

Woodard & Curran has reviewed the Level III Site Plan Response to Comments for the Knight Farm Subdivision located at 1728 Washington Avenue in Portland. The property is being subdivided for the construction of 8 single-family house lots with a new road to be accepted by the City of Portland.

Documents Reviewed by Woodard & Curran

- Response to comments and attachments, dated July 28, 2017, prepared by Sebago Technics, on behalf of Greenlight Enterprises, LLC.
- Engineering Plans, REV. dated July 14, 2017, prepared by Sebago Technics, on behalf of Greenlight Enterprises, LLC.

Comments

- 1) The City of Portland requires that all Level III site plan applications 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 (Technical Manual, Section 5. II. Applicability in Portland. C. a. and City of Portland Code of Ordinances Sec. 14-526 site plan standards (b). 3. b.). We offer the following comments:
 - a) Basic Standard: The Applicant has provided plans, notes, and details to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500.
 - b) General Standard: The Applicant has proposed to install an underdrained soil filter to provide treatment for the subdivision. This system will provide adequate treatment for the subdivision.
 - c) Flooding Standard: The proposed underdrained soil filter will provide for adequate flood control within the subdivision.
- 2) All prior comments have been addressed at this time.



Shukria Wiar <shukriaw@portlandmaine.gov>

RE: 1728 Washington Avenue - Status Traffic Comments r

Lauren Swett <lswett@woodardcurran.com>

Fri, Sep 29, 2017 at 1:46 PM

To: Shukria Wiar <shukriaw@portlandmaine.gov>

Cc: Tom Errico <thomas.errico@tylin.com>, Barbara Barhydt <bab@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>

Hi,

I reviewed the curb waiver items related to the site. My comments are in green below. They won't meet criteria 1 and 3. I don't remember the timing of the street reconstruction, but I thought there was one planned soon, so they may meet criteria 2. They meet criteria 4 and 5. From a site/drainage perspective, a curb waiver makes sense for the sidewalk on Washington Avenue.

Thanks,

Lauren

1. The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost.

Applicant: ***We estimate the cost to construct the sidewalk (clearing, base and pavement installation and restoration) to be \$6,000 - \$7,000; the cost to install granite along this length would be more than twice the cost of the sidewalk.***

Tom: ***This should be calculated for the entire project. Probably not met.***

Lauren: ***Agree with Tom, this likely won't be met relative to overall project cost.***

2. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program or has been funded through an earlier CIP or through other sources.

Applicant: ***We have contacted DPW to determine if the repaving of Washington Avenue is in the CIP budget for the next two year cycle.***

Tom: ***There is a paving project proposed. Not sure of schedule***

3. The street has been rehabilitated without curbing in the last 60 months.

Not met

4. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.

Because of flat grades in the right-of-way outside of the pavement, installation of curbing will result in a lack of positive drainage from the lot which the sidewalk is being constructed in from of.

Seems reasonable

Lauren: ***Agreed – this would require significant regrading and impact on the adjacent lots to make drainage work.***

5. Runoff from the development site or within the street does not require curbing for stormwater management.

Runoff from the site and the roadway currently adequately drains to inlet in right-of-way along the frontage of the property without curbing. The development of the property will result in the majority of the area that presently drains directly to the right-of-way being conveyed it through the treatment system. The outfall from the treatment system is a direct connection to the municipal system.

[Seems reasonable](#)

Lauren: Agreed – there is no existing curbing in the area and stormwater management is adequately accomplished.

From: Keith Gray [mailto:kgray@portlandmaine.gov]
Sent: Tuesday, September 26, 2017 2:22 PM
To: Lauren Swett <lszett@woodardcurran.com>; Barbara Barhydt <bab@portlandmaine.gov>
Subject: Fwd: FW: [1728 Washington Avenue](#) - Status Traffic Comments r

----- Forwarded message -----

From: **Tom Errico** <thomas.errico@tylin.com>

[Quoted text hidden]

[Quoted text hidden]

--

Keith D. Gray, PE
Senior Engineer
Dept. of Public Works
City of Portland Maine

[207.874.8834](tel:207.874.8834)
kgray@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.



Shukria Wiar <shukriaw@portlandmaine.gov>

RE: 1728 Washington Avenue - Status Traffic Comments a

John Brennan <brennanj@portlandmaine.gov>
To: Shukria Wiar <shukriaw@portlandmaine.gov>

Thu, Sep 28, 2017 at 4:54 PM

Hey,

Our Ladder truck lengths are 40-43 ft long and 8-9 feet wide. The proposed drawing appears to address Chief Gautreau's concern and has moved towards lot 7. FD approves that plan as drawn.

Let me know if you need anything further.

John

[Quoted text hidden]

--

John Brennan, Fire Captain
Portland Fire Department
Fire Prevention &
Community Outreach Branch
[380 Congress St](#)
[Portland, ME 04101](#)
Office: [\(207\) 874-8400](#)
Cell: [\(207\) 747-9280](#)
Fax: [\(207\) 874-8410](#)
brennanj@portlandmaine.gov



SITE PLAN APPLICATION

**To
City of Portland**

For

**Knight Farm Subdivision
Abner Lane
Portland, ME 04103**

Prepared for

Greenlight Enterprises, LLC
P.O. Box 963
Gray, ME 04039

March 2017

Site Plan Application

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March 13, 2017
16533

Barbara Barhydt, Development Review Manager
City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, Maine 04101

Re: Site Plan Submittal – Knight Farm Subdivision
1728 Washington Avenue, Portland, ME, Map 351, Lot A003001

Dear Barbara:

On behalf of our client, Greenlight Enterprises, LLC, we are pleased to submit the enclosed Level III Site Plan Application for the above referenced project. Greenlight Enterprises, LLC proposes to subdivide the property for the construction of 8 single-family house lots. A separate lot has been designated for the existing farmhouse.

The property is located on the easterly side of Washington Avenue and is approximately 2.15 acres. Approximately two thirds of the property is in the R-3 Residential Zoning District of Portland including the frontage on Washington Avenue and the south property line, with the balance of the 2.15-acre lot within the R-2 Residential Zoning District. Development of the property will require the construction of a street, with a 50' right-of-way (ROW), to the City of Portland Standards including the installation of underground utility services, granite curbs, lighting, sidewalks and street trees.

As depicted on the enclosed plan set, the applicant proposed to develop 8 new single family lots. The existing farmhouse on the property will remain on a standalone lot. The existing barn and outbuildings will be removed.

The City Zoning ordinance allows the request for a waiver of sidewalk construction. As such, the applicant is requesting elimination of the sidewalk on one side of the right-of-way. A sidewalk is proposed on the northerly side of the new roadway with an extension of the sidewalk along Washington Avenue to connect to the existing sidewalk on Shepherd Lane. Justification for the waiver is included within the application submission.

The site will be served by public water supplied by Portland Water District and the City's combined sewer system located within Washington Avenue. Underground electric service is proposed to extend from an existing pole on Washington Avenue. A gas main is proposed to extend through the new roadway from the existing main in Washington Avenue.

If you have any questions, relative to this submission, do not hesitate to contact me. Thank you for your time relative to our application.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink, appearing to read 'R. McSorley', written over a horizontal line.

Robert A. McSorley, P.E.
Senior Project Manager

RAM:llg
Enc.

cc: Ron Goddard, Greenlight Enterprises, LLC

Section 1. Application Forms

- Site Plan Application
- Site Plan Checklist



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 sf or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sf 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 sf or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sf or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sf 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 sf of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sf and/or facilities encompassing 20,000 sf. 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) which is available on our website:

Land Use Code: <http://me-portland.civicplus.com/DocumentCenter/Home/View/1080>

Design Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2355>

Technical Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2356>

Planning Division

Fourth Floor, City Hall

389 Congress Street

p.m. (207) 874-8719

planning@portlandmaine.gov

Office Hours

Monday thru Friday

8:00 a.m. – 4:30 p.m.

PROJECT NAME:

Knight Farm Subdivision

PROPOSED DEVELOPMENT ADDRESS:

1728 Washington Avenue

PROJECT DESCRIPTION:

The Applicant is proposing an 8 lot residential subdivision. The existing colonial farmhouse was recently divided from the subdivision parcel.

CHART/BLOCK/LOT: 351 A003001 PRELIMINARY PLAN _____ (date)
FINAL PLAN 3/13/17 (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Ron Goddard Business Name, if applicable: Greenlight Enterprises, LLC Address: P.O. Box 963 City/State : Gray, Maine Zip Code: 04039	Applicant Contact Information Work # Home# Cell # 207-730-2103 Fax# e-mail: rgoddard71@yahoo.com
Owner – (if different from Applicant) Name: Same as Above Address: City/State : Zip Code:	Owner Contact Information Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE Address: 75 John Roberts Road, Suite 1A City/State : South Portland, ME Zip Code: 04106	Agent/Representative Contact information Work # 207-200-2074 Cell # 207-939-1809 e-mail: rmcsorley@sebagotechnics.com
Billing Information Name: Address: City/State : Zip Code:	Billing Information Work # Cell # Fax# e-mail:

Engineer Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE Address: 75 John Roberts Road, Suite 1A City/State : South Portland, ME Zip Code: 04106	Engineer Contact Information Work # 207-200-2074 Cell # 207-939-1809 Fax# 207-856-2206 e-mail: rmcsorley@sebagotechnics.com
Surveyor Name: Sebago Technics, Inc, c/o Matthew W. Ek, PLS Address: Same as Above City/State : Zip Code:	Surveyor Contact Information Work # 207-200-2058 Cell # Fax# 207-856-2206 e-mail: mek@sebagotechnics.com
Architect Name: Address: City/State : Zip Code:	Architect Contact Information Work # Cell # Fax# e-mail:
Attorney Name: Address: City/State : Zip Code:	Attorney Contact Information Work # Cell # Fax# e-mail:
Designated person/person(s) for uploading to e-Plan: Name: Robert A. McSorley, P.E. e-mail: rmcsorley@sebagotechnics.com Name: Glissen Havu, E.I. e-mail: ghavu@sebagotechnics.com Name: e-mail:	

APPLICATION FEES:

Level III Development (check applicable reviews) ☒ Less than 50,000 sq. ft. (\$750.00) ☐ 50,000 - 100,000 sq. ft. (\$1,000) ☐ 100,000 – 200,000 sq. ft. (\$2,000) ☐ 200,000 – 300,000 sq. ft. (\$3,000) ☐ over 300,000 sq. ft. (\$5,000) ☐ Parking lots over 11 spaces (\$1,000) ☐ After-the-fact Review (\$1,000.00 plus applicable application fee) Plan Amendments (check applicable reviews) ☐ Planning Staff Review (\$250) ☐ Planning Board Review (\$500) The City invoices separately for the following: • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$50.00 hour) • Legal Review (\$75.00 hour) Third party review is assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	Other Reviews (check applicable reviews) ☐ Traffic Movement (\$1,000) ☒ Stormwater Quality (\$250) ☒ Subdivisions (\$500 + \$25/lot) # of Lots 8 x \$25/lot = <u>200</u> ☐ Site Location (\$3,500, except for residential projects which shall be \$200/lot) # of Lots x \$200/lot = ☐ Other ☐ Change of Use ☐ Flood Plain ☐ Shoreland ☐ Design Review ☐ Housing Replacement ☐ Historic Preservation
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INSTRUCTIONS FOR ELECTRONIC SUBMISSION:

Please refer to the application checklist (attached) for a detailed list of submission requirements.

1. Fill out the application completely and e-mail the **application only** to planning@portlandmaine.gov (Please be sure to designate a person who will be responsible for uploading documents and drawings.) This step will generate the project ID number for your project.
2. An invoice for the application fee will be e-mail to you. Payments can be made on-line at [Pay Your Invoice](#), by mail or in person at City Hall, 4th Floor. Please reference the Application Number when submitting your payment which is located in the upper left hand corner of the invoice.
3. The designated person responsible for uploading documents and drawings will receive an email from epplan@portlandmaine.gov with an invitation into the project. At this time, you will upload all corresponding documents and plans into the project. For first time users you will receive a temporary password which you must change on entry. Make note of your username and password for any future projects.

Reminder: Before the project can move forward, the application fee shall be paid in full and all required documents and drawings shall be uploaded into e-plan correctly.

4. Follow the link below (Applying Online Instructions) for step by step instructions on how to do the following:
Tab 1 - Setting up the appropriate compatibility settings for your PC and getting started in e-plan.
Tab 2 - Preparing your drawings, documents and photos for uploading using the correct naming conventions
Tab 3 - Preparing and uploading revised drawings and documents

[Applying Online Instructions](#)

5. When ready, upload your files and documents into the following folders:
"Application Submittal – Drawings"
"Application Submittal – Documents"

6. Once a preliminary check has been made of the submittal documents and drawings, staff will move them to permanent folders labeled Drawings and Documents. As the process evolves you will be able to log in and see markups, comments and upload revisions as requested into these folders.

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: 	Date: 3/13/17
---	-----------------------------

who's signature?

PROJECT DATA

(The following information is required where applicable, in order complete the application)

Total Site Area	93,637 sq. ft.
Proposed Total Disturbed Area of the Site	91,912 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)	10,010 sq. ft.
Impervious Area (Total Proposed)	35,270 sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	7,447 sq. ft.
Building Footprint (Total Proposed)	Approximately 15,268 sq. ft.
Building Floor Area (Total Existing)	Unknown sq. ft.
Building Floor Area (Total Proposed)	Unknown sq. ft.
Zoning	
Existing	Residential R-2 & R-3
Proposed, if applicable	N/A
Land Use	
Existing	Vacant Remaining Land
Proposed	8 lot residential subdivision
Residential, if applicable	
# of Residential Units (Total Existing)	0
# of Residential Units (Total Proposed)	8
# of Lots (Total Proposed)	8
# of Affordable Housing Units (Total Proposed)	0
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	0
# of One-Bedroom Units (Total Proposed)	0
# of Two-Bedroom Units (Total Proposed)	0
# of Three-Bedroom Units (Total Proposed)	8
Parking Spaces	
# of Parking Spaces (Total Existing)	0
# of Parking Spaces (Total Proposed)	0
# of Handicapped Parking Spaces (Total Proposed)	0
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	0
# of Bicycle Spaces (Total Proposed)	0
Estimated Cost Of Project	\$230,000.00

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
☐	☐	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 approval, if applicable.
☐	☐	1	Written assessment of proposed project's 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	Written requests for waivers from site plan and/or technical standards, if applicable.
☐	☐	1	Evidence of financial and technical ability
☐	☐	1	Traffic analysis (may be preliminary, in nature, during the preliminary plan phase).
☐	☐	1	Written summary of significant natural features located on the site.
☐	☐	1	Written summary of project's consistency with related city master plans.
☐	☐	1	Neighborhood Meeting Material (refer to page 13 of this application.)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMITTAL CHECKLIST
☐	☐	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
☐	☐	1	Preliminary Site Plan Including the following: (*information provided may be preliminary in nature during preliminary plan phase):
☐	☐		Proposed grading and contours;
☐	☐		Existing structures with distances from property line;
☐	☐		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;
☐	☐		Preliminary design of proposed stormwater management in accordance Section 5 of the Technical Manual (note that Portland has a separate applicability section);
☐	☐		Preliminary infrastructure improvements;
☐	☐		Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
☐	☐		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);
☐	☐		Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
☐	☐		Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
☐	☐		Exterior building elevations.

FINAL PLAN (Optional) - 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 approval, if applicable.
☒	☐	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 ability
☒	☐	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 the City of Portland Design Manual.
☐	☐	1	Manufacturer's verification that HVAC and manufacturing equipment meets applicable state and federal emissions requirements. N/A

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 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; N/A
☐	☐		Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications; N/A
☐	☐		Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information; N/A
☒	☐		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; 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; N/A
☐	☐		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; N/A
☐	☐		Existing soil conditions and location of test pits and test borings; N/A
☒	☐		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; 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; N/A
☐	☐	An exterior lighting plan in accordance with Section 12 of the Technical Manual; N/A
☐	☐	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.



**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. Ron Goddard (Greenlight Enterprises, LLC), P.O. Box 963, Gray, ME 04039, 207-730-2103
3. Name address, telephone number of architect
N/A
4. Proposed uses of any structures [NFPA and IBC classification]
5. Vacant remaining land
6. Square footage of all structures [total and per story]
Total: 13,500 SF; Lots 1-5 and Lot 8 proposed 1,500 SF structures; Lots 6 & 7 proposed 2,250 SF structures.
7. Elevation of all structures
Maximum of 2 stories.
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
Existing Hydrant adjacent to property.
10. Water main[s] size and location
Existing 6-inch main in Washington Avenue, Proposed 4-inch main in new road.
11. Access to all structures [min. 2 sides]
Access to 3 sides
12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.
See Section 17.

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: February 9, 2017

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

Site Address: 1728 Washington Avenue

Chart Block Lot Number: 351 A003001

Proposed Use: 8 lot residential subdivision

Previous Use: Vacant remaining land

Existing Sanitary Flows: 270 GPD

Existing Process Flows: GPD

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

12" clay sewer in Washington Avenue

Site Category

Commercial (see part 4 below)	☐
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: TBD Phone: TBD

Owner/Developer Name: Greenlight Enterprises, LLC

Owner/Developer Address: P.O. Box 963, Gray, Maine 04039

Phone: 207-730-2103 Fax: E-mail: rgoddard71@yahoo.com

Engineering Consultant Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE

Engineering Consultant
Address: 75 John Roberts Road, Suite 1A, South Portland, Maine 04106-6963

Phone: 207-200-2074 Fax: 207-856-2206 E-mail: rmcsorley@sebagotechnics.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: 2,430 GPD

Peaking Factor/ Peak Times: 2,430 GPD / 16 hrs/day / 60 min/hr X 5.8 = 15 GPM, Typical Residential

Specify the source of design guidelines: (i.e. ☒ "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:	N/A
Size of External Grease Interceptor:	N/A
Retention Time:	N/A
Peaking Factor/ Peak Times:	N/A

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

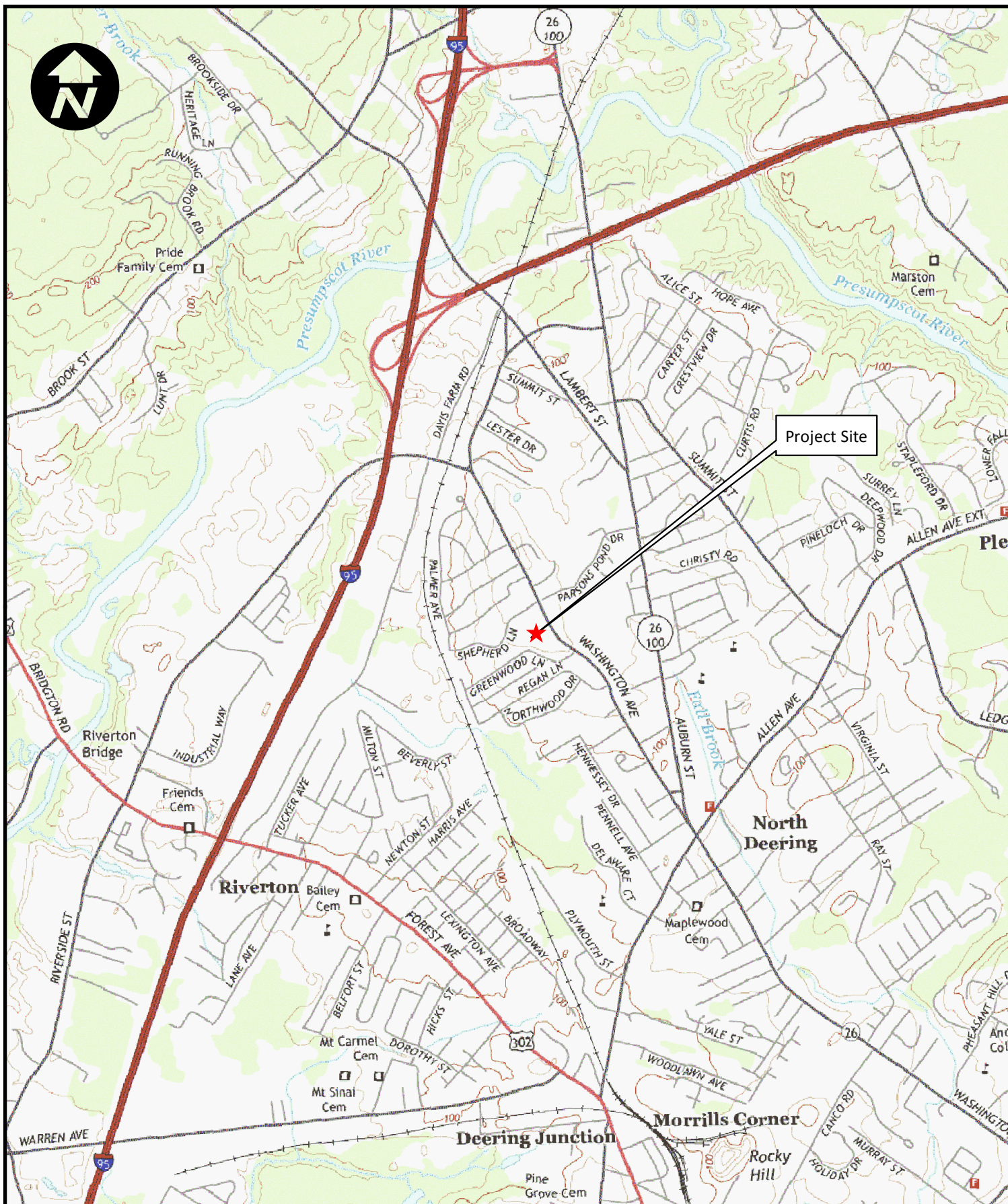
Estimated Industrial Process Wastewater Flows Generated:			N/A	GPD
Do you currently hold Federal or State discharge permits?	Yes	☐	No	☐
Is the process wastewater termed categorical under CFR 40?	Yes	☐	No	☐
OSHA Standard Industrial Code (SIC):	N/A	http://www.osha.gov/oshstats/sicser.html		
Peaking Factor/Peak Process Times:	N/A			

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 below, or attached, as a separate sheet.

Notes, Comments or Calculation

Section 2. Location Map



SEBAGO
TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-206-2100

250 Goddard Rd. - Suite B
Lewiston, ME 04240
Tel. 207-783-5656

Site Location Map of: 1728 Washington Ave

LOCATION: 1728 Washington Avenue
Portland, Maine

INFORMATION: USGS Quadrangle Portland West

SCALE: 1" = 2,000'

DATE: 2/8/2017

Section 3. Tax Map





Section 4. Right, Title and Interest (Deed)

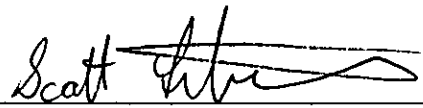
QUITCLAIM DEED WITH COVENANT

KNOW ALL PERSONS BY THESE PRESENTS, That BEDROCK HOLDINGS LLC, a Maine limited liability company with a mailing address of P.O. Box 963, Gray, Maine 04039, grants to GREENLIGHT ENTERPRISES LLC, a Maine limited liability company with a mailing address of P.O. Box 963, Gray, Maine 04039, with Quitclaim Covenant, all of its right, title and interest in a certain lot or parcel of land, with the improvements thereon, in the City of Portland, County of Cumberland, and State of Maine, and more particularly in Schedule A attached hereto and incorporated herein by this reference.

WITNESS my hand and seal this 10 day of March, 2017.

BEDROCK HOLDINGS LLC

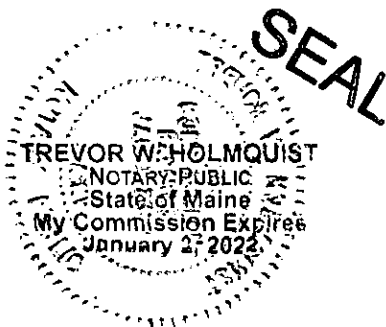

Witness
Printed Name Amanda Betts

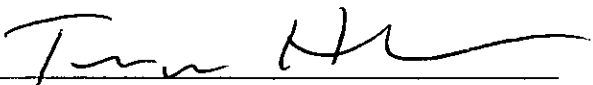

By: Scott L. Liberty
Its President

STATE OF MAINE
CUMBERLAND, ss.

10 March, 2017

Personally appeared before me on this day the above-named Scott A. Liberty, President of Bedrock Holdings LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Bedrock Holdings LLC.




Notary Public/Attorney-at-Law
Printed name: Trevor W Holmquist
My commission expires: 01/02/2022

SCHEDULE A

A certain lot or parcel of land, with the buildings thereon, on the southeasterly side of Washington Avenue, in the City of Portland, County of Cumberland, State of Maine bounded and described as follows:

Beginning at a point on the southeasterly sideline of Washington Avenue, at the northerly corner of land now or formerly of Rebecca L. Thompson-Greaves as described in deed recorded at the Cumberland County Registry of Deeds in Book 21067, Page 158, said point being S57°-53'-15"W, 0.23 feet from a 1 inch iron pipe 10 inches above grade;

Thence S57°-53'-15"W, along land of Rebecca L. Thompson-Greaves and land now or formerly of Isabelle S. & Steven R. Rice as described in deed recorded at the Cumberland County Registry of Deeds in Book 3526, Page 62, a distance of 460.14 feet to a 1 inch iron pipe found 4 inches above grade in a stone wall and land now or formerly of Susan S. Francoeur as described in deed recorded at the Cumberland County Registry of Deeds in Book 18633, Page 132;

Thence N26°-16'-14"W, along land of Susan S. Francoeur, land now or formerly of Anthony J. & Stephanie A. Quattrucci as described in deed recorded at the Cumberland County Registry of Deeds in Book 24939, Page 188, and land now or formerly of Paul C. Bridges & Susan J. Winslow as described in deed recorded at the Cumberland County Registry of Deeds in Book 30517, Page 307, a distance of 221.67 feet to a 1 inch iron pipe found 4 inches below grade;

Thence N56°-51'-56" E, along land of Paul C. Bridges & Susan J. Winslow, land now or formerly of Elizabeth L. & Kevin G. Winship as described in deed recorded at the Cumberland County Registry of Deeds in Book 33322, Page 39, land now or formerly of Robert D. & Viola C. Rice as described in deed recorded at the Cumberland County Registry of Deeds in Book 11544, Page 139, land now or formerly of Country Manor Properties, LLC as described in deed recorded at the Cumberland County Registry of Deeds in Book 33722, Page 236, land now or formerly of Eugene Edward Scheuchzer Jr. as described in deed recorded at the Cumberland County Registry of Deeds in Book 29720, Page 12, and land now or formerly of David P. & Jane Hinman as described in deed recorded at the Cumberland County Registry of Deeds in Book 26156, Page 191, a distance of 361.21 feet to an iron rod to be set and remaining land of Bedrock Holdings LLC;

Thence S04°-40'-52"W, along remaining land Bedrock Holdings LLC, a distance of 15.26 feet to an iron rod to be set;

Thence S02°-55'-40"E, along remaining land of Bedrock Holdings LLC, a distance of 25.44 feet to an iron rod to be set;

Thence S30°-06'-04"E, along remaining land of Bedrock Holdings LLC, a distance of 50.56 feet to an iron rod to be set;

Thence N57°-53'-15"E, along remaining land of Bedrock Holdings LLC, a distance of 104.88 feet to an iron rod to be set at a point of curvature;

Thence along a tangent curve concave to the northwest and along remaining land of Bedrock Holdings LLC as defined by the following curve data: having a radius of 10.00 feet, an arc length of 14.71 feet, and a chord which bears N15°-44'-25"E, 13.42 feet, to an iron rod to be set on the southwesterly sideline of Washington Avenue;

Thence S26°-24'-25"E, along Washington Avenue, a distance of 151.76 feet to the point of beginning. Containing 2.15 acres, more or less.

The above bearings refer to Grid North, Maine State Plane Coordinate System, West Zone 1802-NAD 83.

The above described iron rods to be set are 5/8th inch rebar with plastic survey caps marked "STI PLS 2513 NH RLS 1003"

Reference is made to a plan entitled "**Existing Conditions Survey of 1728 Washington**" dated November 16, 2016, and last revised on February 15, 2017 by Sebago Technics Inc.

Being a portion of the premises conveyed to Bedrock Holdings LLC by Deed of Personal Representative dated December 23, 2016 and recorded in the Cumberland County Registry of Deeds in Book 33722, Page 234.

Received
Recorded Register of Deeds
Mar 10, 2017 02:38:41P
Cumberland County
Nancy A. Lane

Section 5. Statement of State and Federal Permits/Agency Letters

- Maine Historic Preservation Commission (MHPC)
- Maine Inland Fisheries and Wildlife (MIFW)
- Maine Natural Areas Program (MNAP)

Statement of State and Federal Permits

The proposed project will create 0.81 acres of non-vegetated surface and therefore is not subject to the State of Maine Stormwater Law.

The project will not disturb any jurisdictional waters of the state (wetlands); therefore, project is not subject to State or Federal review of wetland impacts.

Copies of letters from other State of Maine agencies are enclosed.



February 8, 2017
16533

Ms. Lisa St. Hilaire
Maine Natural Areas Program
93 State House Station
Augusta, ME 04333-0093

Maine Natural Areas Program Review
1728 Washington Avenue
Portland, Maine

Dear Ms. St. Hilaire:

On behalf of our client, Bedrock Holdings LLC, we are currently in the process of filing a site plan application to the City of Portland. As part of this submittal, a review of the proposed site by the Maine Natural Areas Program for any lands that support rare and endangered plants, rare natural communities and ecosystems, and other natural communities and ecosystems is needed.

The site is identified as Lot A3 on City of Portland Tax Map 351. The property is approximately 2.37± acre parcel located on the west side of Washington Avenue approximately 0.5 miles south of the intersection of Washington Avenue with Riverside Street. The site is currently a single family colonial farmhouse with barns and outbuildings. The proposed development will subdivide the parcel into 9 residential lots. The existing farmhouse will remain on lot 9; however the barns and outbuildings will be removed.

The coordinates for this project are as follows:

Latitude:	43°42'32.51"N	Or	UTM	Zone 19T
Longitude:	70°17'50.46"W		Northing:	4840374
			Easting:	395479

For your reference, a copy of the USGS quadrangle and a plan depicting the proposed development have been enclosed. At your earliest convenience, please review and forward your findings. If you have any questions on this project, please do not hesitate to contact me at ghavu@sebagotechnics.com or on my direct line at (207) 200-2090. Thank you for your time and consideration.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink that reads "Glissen Havu". The signature is written in a cursive, flowing style.

Glissen Havu
Civil Engineer

GJH/Ilg
Enc.



PAUL R. LePAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

WALTER E. WHITCOMB
COMMISSIONER

February 28, 2017

Glissen Havu
Sebago Technics
75 John Roberts Road, Suite 1A
South Portland, ME 04106

Via email: ghavu@sebagotechnics.com

Re: Rare and exemplary botanical features in proximity to: 9-lot residential subdivision, 1728 Washington Avenue, Portland, Maine

Dear Ms. Havu:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received February 8, 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



PHONE: (207) 287-8044
FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

Letter to Glissen Havu, Sebago
Comments RE: 1728 Washington Ave, Portland
February 28, 2017
Page 2 of 2

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,

A handwritten signature in blue ink, appearing to read "Don Cameron", with a long, sweeping horizontal line extending to the right.

Don Cameron | Ecologist | Maine Natural Areas Program
207-287-8041 | don.s.cameron@maine.gov



February 8, 2017
16533

Kirk F. Mohny, Director
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065

**Re: Site Plan Submittal – 1728 Washington Avenue
Portland, Maine**

Dear Mr. Mohny:

On behalf of our client, Bedrock Holdings LLC, we are currently in the process of filing a site plan application to the City of Portland. As part of this submittal, a review of the proposed site by the Maine Historic Preservation Commission for any known historical sites, structures or archeological sites is required.

The site is identified as Lot A3 on City of Portland Tax Map 351. The property is a parcel of approximately 2.37± acres located on the west side of Washington Avenue approximately 0.5 miles south of the intersection of Washington Avenue with Riverside Street. The site is currently a single family colonial farmhouse with barns and outbuildings. The proposed development will subdivide the parcel into 9 residential lots. The existing farmhouse will remain on lot 9; however the barns and outbuildings will be removed.

For your reference, a copy of the USGS quadrangle and a plan depicting the proposed development have been enclosed. Also enclosed are photos of the farmhouse and outbuildings on site and a copy of the Historic Building/Structure Form. At your earliest convenience, please review and forward your findings. If you have any questions on this project, please do not hesitate to contact me at ghavu@sebagotechnics.com or on my direct line at (207) 200-2090. Thank you for your time and consideration.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink that reads "Glissen Havu".

Glissen Havu, E.I.
Civil Engineer

GJH/llg
Enc.

Glissen Havu

From: Mohney, Kirk <Kirk.Mohney@maine.gov>
Sent: Monday, February 27, 2017 3:14 PM
To: Glissen Havu
Subject: Site Plan Submittal - 1728 Washington Ave, MHPC #0194-17

Project: MHPC #0194-17 -- Proposed Subdivision, 1728 Washington Street
Town: Portland, ME

Dear Ms. Havu,

In response to your recent request, I have reviewed the information received February 10, 2017 to initiate consultation on the above referenced project. It is our understanding that your request is in preparation for filing a site plan application to the City of Portland.

The subject property is not presently listed in the National Register of Historic Places. However, we have no record in our files that the house and its associated outbuildings have ever been evaluated to determine if they are eligible for listing in the National Register. If you would like the Commission to make such an evaluation, the following additional information will need to be furnished in hard copy to us:

- Photographs of the interior of the house that show existing architectural features such as stair railings, window and door surrounds, doors, mantelpieces, etc.;
- Photographs of the interior of the barn; and
- Any historical information about the property including approximate construction dates of the buildings, and the function of the outbuildings.

If you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Kirk F. Mohney
Director
Maine Historic Preservation Commission



February 8, 2017
16533

John Perry, Environmental Coordinator
Maine Department of Inland Fisheries & Wildlife
41 State House Station
284 State Street
Augusta, ME 04333-0041

Department of Inland Fisheries and Wildlife Review
1728 Washington Avenue
Portland, Maine

Dear Mr. Perry:

On behalf of our client, Bedrock Holdings LLC, we are currently in the process of filing a site plan application to the City of Portland. As part of this submittal, a review of the proposed site by the Maine Department of Inland Fisheries and Wildlife for any lands that support rare, threatened and endangered species, designated essential and significant wildlife habitats, and fisheries habitat is required.

The site is identified as Lot A3 on City of Portland Tax Map 351. The property is a parcel of approximately 2.37± acres located on the west side of Washington Avenue approximately 0.5 miles south of the intersection of Washington Avenue with Riverside Street. The site is currently a single family colonial farmhouse with barns and outbuildings. The proposed development will subdivide the parcel into 9 residential lots. The existing farmhouse will remain on lot 9; however the barns and outbuildings will be removed.

The coordinates for this project are as follows:

Latitude:	43°42'32.51"N	Or	UTM	Zone 19T
Longitude:	70°17'50.46"W		Northing:	4840374
			Easting:	395479

For your reference, a copy of the USGS quadrangle and a plan depicting the proposed development have been enclosed. At your earliest convenience, please review and forward your findings. If you have any questions on this project, please do not hesitate to contact me at ghavu@sebagotechnics.com or on my direct line at (207) 200-2090. Thank you for your time and consideration.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink that reads "Glissen Havu".

Glissen Havu, E.I.
Civil Engineer

GJH/Ilg
Enc.



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

February 23, 2017

Glissen Havu
Sebago Technics, Inc.
75 John Roberts Road, Suite 1A
South Portland, ME 04106-6963

RE: Information Request - 1728 Washington Avenue Development, Portland

Dear Glissen:

Per your request received February 10, 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 *1728 Washington Avenue Development Project* in Portland. For purposes of this review, we are assuming the project will include tree removal.

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*).

While a comprehensive statewide inventory for bats has not been completed, it is likely that several of these species occur within the project area during migration and/or the breeding season. We recommend that you contact the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, 207-902-1569) for further guidance, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. Otherwise, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

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. The

installation of a one-way exclusion device may be necessary to prevent re-entry of bats into the structure after July 31 (see bat exclusion recommendations in the above website link).

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.

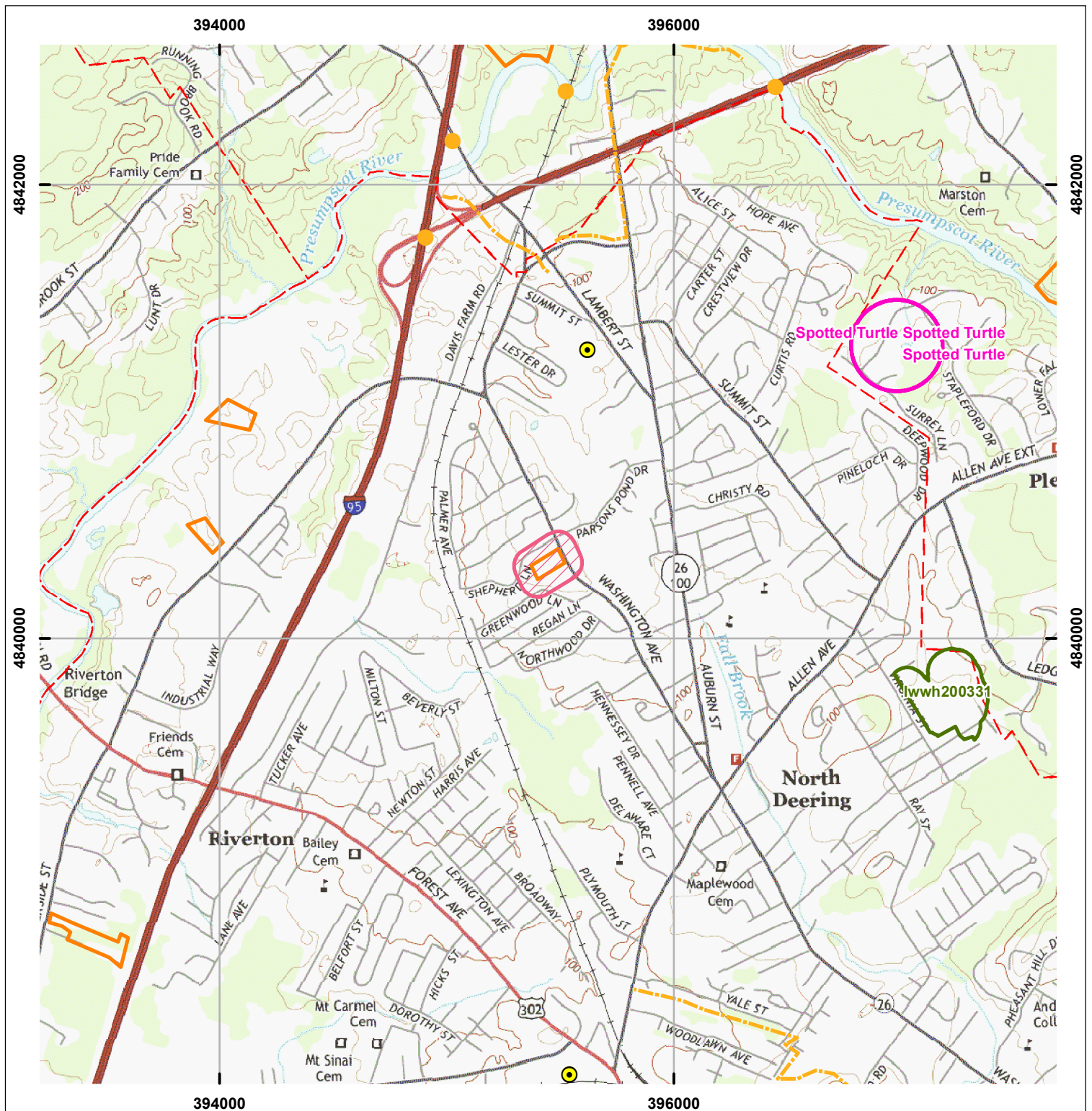
Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in black ink, appearing to read 'John Maclaine', with a stylized, cursive script.

John Maclaine
Biologist

¹“Living with Wildlife: Bats.” Maine Department of Inland Fisheries and Wildlife.
https://www1.maine.gov/ifw/wildlife/human/lww_information/bats.html

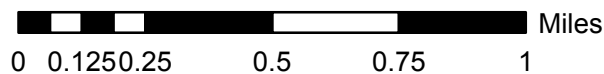


Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Portland, 1728 Washington Ave development (Version 1)



Maine Department of
Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 2/18/2017

- | | | |
|--------------------|-------------------------------|--|
| ProjectPoints | Deer Winter Area | Roseate Tern |
| ProjectLines | LUPC p-fw | Piping Plover/Least Tern |
| ProjectPolys | Cooperative DWAs | Aquatic ETSc (2.5 mi review) |
| ProjectSearchAreas | Seabird Nesting Islands | Rare Mussels (5 mi review) |
| | Shorebird Areas | Maine Heritage Fish Waters |
| | Inland Waterfowl/Wading Bird | Arctic Charr Habitat |
| | Shoreland Zoning_lwwh | E. Brook Trout Joint Venture Subwatershed Classification |
| | Tidal Waterfowl/Wading Bird | Redfin Pickerel/Swamp Darter Habitats (buffer100ft) |
| | Significant Vernal Pools | Special Concern-occupied habitats(100ft buffer) |
| | Environmental Review Polygons | Wild Lake Trout Habitats |



Section 6. Zoning Assessment

Zoning Assessment

The project site is bisected by a zone delineation for the residential zones R-2 and R-3. The lots have been situated such that all of the lots south of the proposed roadway are within the R-3 residential zone. Lots 6 and 7 are entirely located within the R-2 residential zone. Lot 8 is divided by the R-2 and R-3 zone line. As such, the lot has been sized to meet the minimum lot size requirement for both zones based on the percentage of the lot that lies in each zone. Other zoning requirements are as follows:

R-2 Zone Dimensional Requirements – Lots 6 & 7		
	Required	Proposed
Minimum Lot Size	10,000 SQ FT	> 10,000 SQ FT
Minimum Street Frontage	50 FT	> 50 FT
Minimum Front Yard	25 FT	25 FT
Minimum Side Yard: 1 & 1 ½ Story	12 FT	TBD
2 Story	14 FT	TBD
2 ½ Story	16 FT	TBD
Minimum Rear Yard	25 FT	25 FT
Maximum Building Height	35 F	< 35 FT
Maximum Lot Coverage	20 %	< 20%
Minimum Side Yard Side Street	20 FT	N/A
Minimum Lot Width	65 FT	> 65 FT

*See ordinance for more particular information

R-3 Zone Dimensional Requirements – Lot 1 - 5		
	Required	Proposed
Minimum Lot Size	6,500 SQ FT	> 6,500 SQ FT
Minimum Street Frontage	50 FT	> 50 FT
Minimum Front Yard	25 FT	25 FT
Minimum Side Yard: 1 & 1 ½ Story	8 FT	TBD
2 Story	14 FT	TBD
2 ½ Story	16 FT	TBD
Minimum Rear Yard	25 FT	25 FT
Maximum Building Height	35 FT	< 35 FT
Maximum Lot Coverage	35 %	< 35%
Minimum Side Yard Side Street	20 FT	N/A
Minimum Lot Width	65 FT	> 65 FT

R-2/R-3 Zone Dimensional Requirements – Lot 8		
	Required	Proposed
Minimum Lot Size	10,000/6,500 SQ FT	8,287 SQ FT
Minimum Street Frontage	50 FT	50 FT
Minimum Front Yard	25 FT	25 FT
Minimum Side Yard: 1 & 1 ½ Story	12/8 FT	TBD
2 Story	14 FT	TBD
2 ½ Story	16 FT	TBD
Minimum Rear Yard	25 FT	25 FT
Maximum Building Height	35 FT	> 35 FT
Maximum Lot Coverage	20 % / 35 %	TBD
Minimum Side Yard Side Street	20 FT	N/A
Minimum Lot Width	65 FT	93.67 FT

Lot 8 is split between both the R2 and R3 zones. The area calculations for Lot 8 are as follows: 3,197 SF is in the R3 zone with a 6,500 SF requirement, being 49.18 % of the lot requirement. 5,093 SF of Lot 8 is in the R2 zone with a 10,000 SF requirement, being 50.93% of the required lot area which calculates to a total of 100.11% lot requirement as directed by the City Zoning Administrator. The front and rear setbacks for Lot 8 are the same in each zone. The side setbacks for each zone shall meet the standards for each zone.

Section 7. Existing/Proposed Easements

Existing/Proposed Easements

There are no known existing and no proposed easements within the project site.

Section 8. Waiver Requests

Waiver Requests

The applicant requests the followings waiver:

1. Land Use Code, Chapter 14, Article 4, Sec. 14-498, Subsection 8, Paragraph 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 walks away from streets in common open space in block interiors.”

A sidewalk is proposed on the north side of the street as well as extending north along Washington Avenue and connecting to the existing sidewalk on Shepherd Lane. The applicant requests a waiver from constructing a sidewalk on the south side of the new public street.

2. The justifications for this waiver are: The proposed street is a 440 foot dead end street that provides no interconnection with other existing sidewalks.
3. Only 9 lots are proposed to front on the proposed street.
4. The project proposes a connection to the existing sidewalk system of the neighborhood by constructing a sidewalk along Washington Avenue to Shepherd Lane.

Section 9. Evidence of Financial and Technical Ability

Evidence of Financial and Technical Ability**A. Prior Experience**

The applicant for the development of this project is Greenlight Enterprises, LLC. The applicant has permitted and/or constructed a number of development projects within Cumberland County in Maine, including the following:

Granite Ridge – 12 lot subdivision; New Gloucester, Maine
Stave Mill – 10 lot subdivision; Gray, Maine
High View – 8 lot subdivision; New Gloucester, Maine
Hillside – 12 lot subdivision; New Gloucester, Maine
Crystal Clean Car Wash; Gray, Maine
McDonald's; Gray, Maine
Ace Hardware; New Gloucester, Maine
Housing Associates Development Company – 20 multi family dwellings;

B. Financial Capacity

A letter of commitment to fund from Funding Agency is attached, as well as a certificate of good standing.

C. Personnel

Greenlight Enterprises, LLC has retained Sebago Technics, Inc., a consulting engineering firm, to assist in the engineering, land planning and permitting of the development. A brief history of Sebago Technics along with qualifications of some of Sebago Technic's key personnel is attached.

Sebago Technics, Inc.Technical Ability

Sebago Technics has been retained to perform the civil engineering, stormwater management, and sediment and erosion control design for the proposed project. The technical phase of this project includes the preparation of a detailed grading design, taking into account hydrological considerations and stormwater management. The permitting phase of this project consists of the preparation of all state and local application packages and coordination throughout the entire review process from initial submission to final approval.

Company Background

The firm was established in 1981. The company as a whole has grown to approximately 50 professionals. The firm consists of civil/site engineers, surveyors, landscape architects, soil scientist, and computer-aided design drafting technicians. Sebago Technics, Inc. provides a full-range of technical assistance to developers, contractors and municipalities in the areas of commercial, residential and industrial developments.

Key Personnel**Matthew W. Ek, PLS, LLS – Director of Survey/GIS Advancement, and Project Manager**

A Registered Land Surveyor, he joined the firm in 1994. His expertise in boundary and topographic surveying provides comprehensive land planning and design services to clients.

Rob McSorley, PE - Senior Project Manager

A Registered Professional Engineer, he joined the firm in 2006 as a Senior Project Manager. His 31 years of practice in consulting engineering firms provides the required experience to allow for effective project management.

State of Maine



Department of the Secretary of State

I, the Secretary of State of Maine, certify that according to the provisions of the Constitution and Laws of the State of Maine, the Department of the Secretary of State is the legal custodian of the Great Seal of the State of Maine which is hereunto affixed and that the paper to which this is attached is a true copy from the records of this Department.

In testimony whereof, I have caused the Great Seal of the State of Maine to be hereunto affixed. Given under my hand at Augusta, Maine, this fourteenth day of March 2017.



A handwritten signature in black ink, appearing to read "Matthew Dunlap", written over a horizontal line.

Matthew Dunlap
Secretary of State

Additional Addresses

Legal Name	Title	Name	Charter #	Status
GREENLIGHT ENTERPRISES LLC	Registered Agent	JOHN H BRANSON	20161089DC	GOOD STANDING
Home Office Address (of foreign entity)		Other Mailing Address		
		482 CONGRESS STREET SUITE 304 PORTLAND, ME 04101		



Experienced people. Exceptional service.

March 13, 2017

Re: Greenlight Enterprises, LLC

Matthew Ek, PLS, LLS
Director of Survey / GIS Advancement
Sebago Technics
75 John Roberts Rd, Suite 1A
South Portland, ME 04106

Mr. Ek:

This letter is to notify you that Greenlight Enterprises, LLC has the financial capacity to complete the project known as "Knight Farm Subdivision" located at Abner Lane, Portland, Maine. If I can be of further assistance or if you need any additional information please do not hesitate to contact me at (207) 990-5914 or (207) 949-1974.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Dorr', is written over a horizontal line.

Andrew C. Dorr
Vice President
Business Banking

ACD/tlg

**Construction Management Plan
July 20, 2017
City of Portland
Knight Farm Subdivision**

Purpose:

Construction Management Plans shall depict the overall planning, coordination, and control of a construction site, including phases as applicable, from beginning to completion. The City's goal for a construction management plan is to support a safe construction site and protect the public safety, accessibility (including preserving accessible pedestrian, bicycle, and vehicular modes of transport throughout the city), and welfare during construction. In addition, the construction management plan shall minimize construction impacts in their duration and magnitude to the surrounding area and develop an effective communication process for resolving concerns and conflicts.

Project Narrative:

The applicant/developer is proposing a nine (9) lot subdivision of Washington Street in the City of Portland. This project will disturb approximately 2.11 acres and the work will include:

1. Install erosion control measures.
2. Strip and stockpile loam for reuse.
3. Excavate and stockpile borrow from road and under drained soil filter.
4. Upon cut Washington Avenue for connection of drainage and utilities.
5. Installation of roadway utilities and drainage.
6. Installation of roadway and sidewalk base rock courses including off-site sidewalk.
7. Installation of under drained soil filter.
8. Installation of binder course of asphalt for roadway and all courses for sidewalks.
9. Installation of trees and landscaping along under drained soils filter.
10. Re-apply the stripped loam, seed and mulch to disturbed areas.
11. Individual lot construction.
12. Final lift of roadway asphalt.

Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits:

As a Level III Site Plan review, the developer of the project will be required to submit a performance guarantee for the proposed infrastructure work. This performance guarantee and site development inspection fees will be based upon a cost estimate submitted and approved by the City. The form and of the guarantee will be a letter of credit from an approved bank or credit union, a deposit in a bank-held escrow account or a deposit in a City- held escrow account. These fees/guarantees will need to be paid/in place prior to scheduling the pre-construction meeting.

As this project involves work within the right-of-way, the contractor will be responsible for obtaining street opening and street occupancy permits from the Department of Public Works. All construction in the right-of-way shall conform to Chapter 25 and all sewer and stormwater construction/connections shall conform to Chapters 24 & 32 of the Land Use Code. These permits will be for the connection to existing utilities, the driveway connection and the sidewalk to be constructed in the Washington Avenue.

No blasting is anticipated for this project.

Construction Administration and Communication:

This project will be managed by a representation of the developer, Green Enterprises, LLC along with a project manager from the land development construction firm hired by the developer.

1. Contact Person and contact information:
 - Developer (Green Enterprises, LLC): Ron Goddard (Cell 730-2103).
 - Contractor: TBD.
 - Engineer (Sebago Technics, Inc.): Owens McCullough, P.E. (Direct Line, Work 200-2074).
2. Signage will be placed at the site that will include the above contact information. This signage will be removed when the infrastructure for the project are complete.
3. The representative for the contractor for the developer will reach out to adjacent abutter to notify them of the commencement of constructions and the proposed time frame to complete the infrastructure/roadway improvements for the project.

Construction Schedule:

- Site Plan Approval: Expected – August- September 2017.
- Preconstruction Meeting: September
- Construction of roadway: Approximately 12 weeks. Expected Completion – November/December. Paving – Spring 2018.

Estimated construction time: ----- 3 Months
 Erosion Control Measures Placed: ----- Week 1
 Site clearing and grubbing ----- Week 2
 Construction of road subbase for access ----- Week 3
 Stormwater management area construction ----- Week 4 – Week 9
 Utility Improvements and roadway construction ----- Week 5 – Week 9
 Road base and binder coarse ----- Week 10 – Week 11
 Sidewalks ----- Week 12
 Start final seeding on prepared areas (during growing season) ---- Week 10

Biweekly monitoring of vegetative growth-----Week 12

Re-seeding of areas, if needed -----Week 12

Removal of erosion control devices----- Upon Final Project Completion

1. From September 1st to May 31st, no person shall engage in construction activities generating noise exceeding fifty (50) decibels, between the hours of 7:00 p.m. and 7:00 a.m., of the following day within five hundred (500) feet of any buildings. From June 1st to August 31st construction activity may continue until 8:00 p.m.
2. Extended Hours or Night Work: Pursuant to Section 17-18, this section not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
3. Pursuant to Section 25-129: "Each permittee shall conduct and carry out excavation work in such manner as to avoid unnecessary inconvenience and annoyance to the general public and occupants of neighboring property. To the fullest extent practicable, the permittee shall take appropriate measures to reduce noise, dust and unsightly debris in the performance of the excavation work. Excavation work, including the use of any tool, appliance, or equipment, shall be performed between the hours of 7:00 a.m. and 10:00 p.m. only, exclusive of emergency work. Time waiver requests may be submitted to the public works authority for work outside of this time period and will be subject to neighborhood concerns. Excavation work shall not occur on Sundays, holidays or on major holiday weekends, unless expressly authorized by the public works authority or as a result of emergency need.
4. If allowed, no construction activity shall begin before 8:00 a.m. on a Saturday, Sunday or legal holiday.
5. All deliveries for materials will comply with the noise requirements listed above or be restricted to the hours allowed for construction work.

Security and Public Safety:

1. Prior to commencing construction, site contractor shall install a "Construction Ahead" sign for the southbound lane to warn bicyclists and motorists of construction with the area.
2. Contractor shall be responsible for the setup of construction staging area before construction begins. Contractor may provide fencing for staging area at their discretion. Fenced in areas shall be provided with gates passable by emergency vehicles and equipped with a Knox locking device.
3. Contractor shall be responsible for the safe storage of materials or equipment on-site.
4. Contractor shall have weekly tailgate meetings which shall include discussion relative to security and public security.

5. Contractor shall develop a fire safety and emergency protocol and contact the nearest fire station to advise them of the ongoing construction project.
6. All excavations with the right-of-way shall be filled or plated at night. Excavations within the site shall be provided with adequate barricades or warnings (i.e. construction area tape around excavation) at night.

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.
 - a. Contractor will be required to submit Maintenance of Traffic Plans for all construction within the right-of-way of Washington Avenue.
 - b. Flaggers will be required for temporary lane closures for construction.
 - c. Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.

Site Management and Controls:

1. The land development contractor shall be responsible for the site managements during construction of site infrastructure. Building contractors will be responsible for the site management on individual lots.
2. Contractor will be responsible for providing and maintaining a dumpster during construction.
3. Contractor will install and maintain the construction entrance as shown on the plans and will maintain Washington Avenue by including sweeping as necessary for removal of tracked materials.
4. Contractor shall be responsible for maintaining construction BMP's and executing good housekeeping measures as depicted on the approved plans and as included in the Inspection, Maintenance and Housekeeping Plan.

5. Dust controls: The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
6. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code (Attachment 1) and Section 25-129 on Noise, dust and debris Attachment 2). The Contractor and City will be responsible for adjusting work should noise become an issue.
7. Rodent Control is not expected for this project as it is limited to earthwork maintenance. Should it become necessary, it will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code or City of Portland Public Works.
8. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
 - 1) Snow/ice removal or 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 site 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.
9. Site management and controls shall be discussed at each tailgate meeting including maintenance of BMP's and good housekeeping measures.

Erosion Control and Preservation of Trees:

1. The site 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 site contractor shall maintain storage and of materials and equipment away from the tree line along the south property line.

Construction Staging Area:

1. The Construction Management Plan depicts the location of the material (open storage) and equipment storage area. The exact location of these areas shall be up to the contractor but should be long the south property line sufficiently away from the line of trees at the property line.
2. Delivery Truck Holding Areas On-Site: The delivery holding area shall be adjacent to the site storage area shown on the plan and shall not be blocked during construction. 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 the trucks until they can be unloaded. Once at the site all vehicles will be brought within the property and will make every attempt to avoid queueing on public streets.

3. Delivery Truck Holding Areas Off-Site: In the event that adequate on-site area for holding of trucks is not available, the contractor shall provide an area along the adjacent shoulder of Washington Avenue for offloading. This area shall be provided within the buffer area of a maintenance of traffic area with the appropriate cones, advanced warning signs and flaggers as necessary. All off-loading shall occur from the project side of the truck and not within the roadway.

Parking During Construction:

1. Construction Parking: Parking for construction workers shall be on the site as indicated on the Construction Management Plan. No parking shall occur along Washington Avenue. If sufficient space is not available on-site for parking, contractor shall make other parking arrangements and have workers brought or carpooled to the site.
2. Truck Routes and Volumes: All deliveries to and from site shall occur on the arterial roads to the ends of Washington Avenue and proceed up Washington Avenue to the site. Drivers for the contractor shall be advised weekly of the residential nature of Washington Avenue in the weekly tailgate meetings or by some other appropriate communication.

Prepared by:

Sebago Technics, Inc.



Robert A. McSorley, P.E.

Section 11. Statement of Traffic Generation

Statement of Traffic Generation

According to the Trip Generation Manual, 7th Edition, published by the Institute of Transportation Engineers (ITE), the propose use of the project would be Single Family Detached Housing (210). The generation rates for this used is 9.57, 0.77 & 1.02 for the average daily trips, AM peak trips and PM peak trips respectively. The 8 lot subdivision would be expected to generate 76.56 average daily trips, 6.16 AM peak hour trips and 8.16 PM peak hour trips. Accordingly, the resulting traffic is not expected to have a significant impact on the surrounding thoroughfares.

Section 12. Summary of Significant Natural Features

Summary of Significant Natural Features

See Section 5 containing copies of letters requesting review and responses from the Maine Inland Fisheries and Wildlife and Maine Natural Areas Program.

Section 13. Stormwater Management Plan



CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT PLAN

for

Knight Farm Subdivision Portland, Maine

Prepared for

Greenlight Enterprises, LLC
P.O. Box 963
Gray, ME 04039

March 2017
Revised July 2017

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Attachments

Attachment A: Stormwater Quality Calculations

Attachment B: HydroCAD Output-Pre-Development / Post Development TR-20 Model

Attachment C: Inspection, Maintenance, and Housekeeping Plan

STORMWATER MANAGEMENT PLAN

**1728 Washington Avenue
Portland, Maine**

Executive Summary

Greenlight Enterprises, LLC is submitting plans to develop within a 2.15 acre parcel off Washington Avenue into an 8 lot subdivision. The existing farmhouse will remain as a standalone lot. The existing barns and out-buildings will be removed. The property is shown as Lot A-3 on City of Portland Tax Map 351.

The development will create approximately 1.52 acres of new non-vegetated surface and 2.11 acres of new developed area as defined by the Maine Department of Environmental Protection (MDEP).

Roughly 18% of the site, is directly tributary to the combined sewer collection system in Washington Avenue. An additional 41% of the site is tributary to a ditch along the west side of Washington Avenue which eventually enters the combined sewer collection system through a downstream catch basin. The remaining 41% of the site, drains toward the western boundary of the site. As the proposed development is classified by the City of Portland as a Level III development, the site is required to comply with MaineDEP chapter 500 Standards, per Chapter 5 of City of Portland Technical Manual.

The project has been designed to provide treatment for 99.2% of the new non-vegetated area and 85.8% of the new developed area, which exceeds the required treatment level of Table 1 contained in MaineDEP Chapter 500, Section 4.C.(2)(a)(iii) amended date August 12, 2015. Treatment is achieved utilizing a grassed underdrained soil filter. Best Management Practices (BMPs) have been designed and sized in accordance with criteria published in Chapter 500 BMP's Technical Design Manual.

The project is within the watershed for Fall Brook, an urban impaired stream. This project does not trigger the Urban Impaired Stream Standard; however, the project discharges to a system within Washington Avenue that is a combined sewer system. Because of the combined sewer system is the only discharge available for the project, the project's detention system has been designed to meet the pre-construction discharge rates through the 100 year event.

STORMWATER MANAGEMENT PLAN

Knight Farm Subdivision Portland, Maine

I. Introduction

This Stormwater Management Plan has been prepared to address the potential impacts associated with this project due to the proposed modification in stormwater runoff characteristics. 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.

II. Existing Conditions

The project site is currently a colonial farmhouse with various outbuildings with primarily grass land cover comprising of 2.15 acres in Portland.

Land Cover: The site is partially developed land consisting of grass land cover. The development site abuts Washington Avenue to the east, and single family residential structures to the north, south and west.

Site Topography: 18% of the site drains to an existing catch basin which is tied to the combined sewer collection system in Washington Avenue. An additional 41% of the site drains to a ditch along the west side of Washington Avenue and eventually into the combined sewer collection system through a downstream catch basin. The remaining 41% drains to the western boundary of the site.

Slopes on site range from 1% to 30% in eastern portion of the site, relatively flat along the central portion of the site, and steepen to 5% to 10% slopes along the southwestern portion of the site.

Surface Water Features: A portion of the site drains to an existing combined sewerage system within Washington Avenue. This collection system flows to the East End Wastewater Treatment Plant and once treated is discharged into Casco Bay.

Soils: Soil characteristics were obtained from the Soil Conservation Service (SCS) Medium Intensity Soil Survey of Cumberland County. Soils identified on the site (or within close proximity) are identified below in Table 1. These soil boundaries are identified on the attached watershed maps.

Table 1 – Proximity Soil Types and Characteristics			
Soil Type	Symbol	HSG	K Factor
Hinckley loamy sand	HIB	A	0.17

The K factor is an erodibility index that relates each soil family based on a slight erosion potential of 0.10 to a high erosion potential of 0.64. An index number, greater than 0.32, indicates that a high level of erosion control measures must be taken in order to control erosion of this soil. The Hydrologic Soil Group (HSG) designation is based on a rating of the relative permeability of a soil, with Group “A” being extremely permeable such as coarse sand, to Group “D” having low permeability such as clay.

Historic Flooding: The Federal Emergency Management Agency (FEMA) lists the project site as Zone X, “Areas of 500 year flood based on the published Flood Insurance Rate Map (FEMA Community Panel Number 230051 0002C, dated December 8, 1998).

III. Proposed Development

The Applicant is proposing an 8 lot residential subdivision. The existing colonial farmhouse will remain as a standalone lot. The 8 new residential lots will be established along a 450-foot long roadway to be accepted as public road by the City of Portland.

Alterations to Land Cover: Completion of the proposed project will result in the creation of 1.52 acres of non-vegetated area and 2.11 acres of developed area.

IV. Downstream Ponds and Waterbodies

A majority of the project site is within the watershed for Fall Brook which is listed by the Maine Department of Environmental Protection as urban impaired stream.

V. Regulatory Requirements

A. City of Portland, Maine

The proposed development is classified as a Level III development and must comply with Section 5 of the City of Portland’s Technical Manual stating that this development “shall be required to submit a Stormwater Management Plan pursuant to the regulations of the MDEP Chapter 500 Stormwater Management Rules, including Basic, General and Flooding Standards. The MDEP Chapter 500

rules describe stormwater management requirements for new development projects.

The following sections describe how this project will address these stormwater management performance standards.

Basic Standards: These standards include various erosion and sedimentation controls, inspection and maintenance procedures, and general housekeeping requirements. These performance standards are addressed in the Erosion and Sedimentation Control Plan on Plan Sheet 6 of 8 and in the Inspection, Maintenance, and Housekeeping Plan attached in Attachment C. Please refer to these documents for more detailed information.

General Standards: This standard presents minimum treatment thresholds for new non-vegetated areas and new developed areas to be treated by stormwater Best Management Practices (BMPs). General Standard BMPs have been defined by the MDEP and are described thoroughly in their publication “Stormwater Management for Maine: Best Management Practices Manual”. Volume III of this manual contains additional information and sizing requirements for the treatment measures proposed for the proposed development.

Urban Impaired Stream Standard: This standard requires a payment of a compensation fee or mitigation of a project’s impact by treating, reducing, or eliminating an off-site or on-site pre-development imperious stormwater source.

Flooding Standards: The MDEP requires that projects creating impervious areas greater than three (3) acres, or developed areas greater than twenty (20) acres address various flooding standards. The proposed project will not exceed the MDEP thresholds, but is required to meet the flooding standards for the City of Portland. The development will be designed to “detain, retain or result in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project.” A detailed stormwater model has been provided to demonstrate compliance with these standards.

VI. Stormwater Management BMPs

In order to meet the applicable regulations, the project will utilize a grassed underdrained soil filter located adjacent to the roadway. The BMP location is indicated on the attached plans.

A grassed underdrained soil filter must detain a runoff volume equal to 1" times the tributary impervious area and 0.4" times the tributary landscaped areas. The surface area of the system must be at least equal to 5% the impervious area and 2% of the landscaped area. Pre-treatment of the runoff must be provided by a sediment forebay, adequately sized to retain the anticipated winter sanding load. The runoff volume shall be discharged over a period of time not less than 24 hours and not greater than 48 hours.

The areas treated by this BMP are summarized in the stormwater treatment calculations attached in Attachment A: Stormwater Quality Calculations.

VII. Peak Flow Analysis

This section has been prepared to discuss the proposed modifications to peak flow rates as a result of the development.

A. Modeling Technique

In order to evaluate drainage characteristics in pre and post-development conditions, a quantitative analysis was performed to determine peak rates of runoff for the 2, 10, 25 and 100-year storm events. Runoff calculations were performed following the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds, Technical Release #55" and HydroCAD Stormwater Modeling System Software. A 24-hour, SCS Type III storm distribution for the 2, 10, 25 and 100-year storm frequencies were used for analysis.

The 24-hour rainfall values utilized in the hydrologic model for Southeast Cumberland County are as follows:

Table 2 - Storm Frequency Precipitation (in./24 hr)	
2-year	3.1
10-year	4.6
25-year	5.8
100-year	8.1

*Appendix H, MDEP Chapter 500, amended date Aug 12, 2015

B. Drainage Characteristics (Pre and Post-Development Watershed Delineation)

Two watershed study points (SP1 and SP2) were established to evaluate the pre-development and post-development peak runoff conditions for compliance with the Flooding Standard.

SP1 is located at the south eastern property boundary which is the limit of the site's contribution into the existing combined sewerage collection system. This study point combined the flow from the site into the existing catch basin on Washington Avenue as well as the runoff flowing into the ditch along the western side of Washington Avenue which ultimately flows into the combined sewerage system.

SP2 is located along the western boundary of the property. The runoff from the western boundary enters the Presumpscot River Watershed.

C. Pre-Development

SP1: SP1 has 2 drainage areas tributary to it; subareas 1S and 2S. Subarea 1S represents the portion of the site containing the farmhouse, most of the paved driveway, and the surrounding landscaped area which is tributary to the catch basin on the west side of Washington Avenue. Subarea 2S represents the area containing the majority of the barn as well as both of the outbuildings. This area drains to a ditch along the western boundary of Washington Avenue and eventually enters the combined sewerage system through a downstream catch basin.

SP2: SP2 is located at the western property line where drainage crosses the property line in the southwest portion of the site.

Subarea 1S represents the north east portion of the site which is mainly comprised of the existing farmhouse and the existing driveway. This area is directly tributary to the existing catch basin in Washington Avenue. The footprint of the farmhouse remains the same in both pre- and post- development conditions, however the existing garage and barn will be demolished and the existing driveway will be removed, the existing driveway location will be the approximate location of the new proposed public road. A new driveway will be constructed to the farmhouse, from the new public road.

Subarea 2S represents the south eastern and central part of the site which currently drains to a ditch along the western side of Washington Avenue. This area contains a portion of the barn and two other outbuildings which will all be removed in the post-development condition.

Subarea 3S represents the western section of the site which is currently an undeveloped open field.

D. Post-Development

Pre-development subarea 1S has been divided into two subareas. Subarea 10S represents the portion of the site which contains the majority of the existing farmhouse and a small portion of the new proposed roadway which will drain to the existing catch basin in Washington Avenue. Subarea 12S represents the portion of pre-development area 1S, which has been regraded such that any runoff will discharge into the proposed grassed underdrained soil filter.

Pre-development subarea 2S has been divided into two subareas. Subarea 20S represents the portion of pre-development area 2S which will drain to the proposed grassed underdrained soil filter. This includes the majority of the proposed roadway, 4 driveways, and 3 of the proposed buildings. Subarea 23S is a small portion of the development which will drain towards the southern property boundary.

Subarea 3S in pre-development represented the area which drained to the western property boundary. This area has been divided into two subareas in post-development. Subarea 32S represents the portion of pre-development area 3S which will drain to the proposed grassed underdrained soil filter. This includes a portion of the proposed roadway, 4 driveways, and 4 of the proposed buildings. The remaining area is represented by subarea 30S which will drain to the outside borders of the property similar to pre-development conditions. In both pre- and post- development conditions this area is entirely landscaped with no impervious.

E. Comparison

The watershed areas and times of concentration of the post-development watersheds vary from the existing conditions based on the proposed site development and grading. Table 3 summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

Table 3 – Stormwater Runoff Summary Table Pre-Development vs. Post-Development												
Study Point	Total Watershed Area (Ac)		Percent Impervious		Peak Rates of Runoff (cfs)							
	Pre	Post	Pre	Post	2-year		10-year		25-year		100-year	
					Pre	Post	Pre	Post	Pre	Post	Pre	Post
SP1	1.44	2.18	26%	38%	0.04	0.06	0.30	0.26	0.91	0.90	2.61	2.56
SP2	0.93	0.19	0%	0%	0.00	0.00	0.02	0.00	0.14	0.03	0.87	0.18

As depicted in the above table, post-development peak runoff rates at study point one will be at or below pre-development levels for the 10-year 25-year and 100 year storm events. There is a minor increase in the peak runoff rate for the 2-year storm event, at Study Point 1, which is anticipated to be 0.02 cfs greater than the pre-development rate. The only discharge during the 2 year event is through the under drain system which has a minimum sized bleeder (1.25"). As stated previously, the detention system has been designed through the 100 year storm event to account for the combined sewer of Washington Avenue. The post-development condition for study point 2 is at or below pre-development rates for all storm events, due the 80% reduction in area.

VIII. Water Quality Analysis

To achieve the required water quality treatment, a grassed underdrained soil filter is proposed to treat the majority of the development. The grassed underdrained soil filter has been designed and sized in accordance with the current Maine DEP Stormwater Best Management Practices handbook. Note that the existing landscaped portions of the standalone lot has been included in the treatment calculations.

The development has been designed to provide water quality treatment through implementation of approved BMP's which provide for an impervious area treatment percentage of 99.2% and a developed area treatment percentage of 85.8%, which exceeds the required treatment levels of 95% and 80%, respectively, in accordance with MaineDEP Chapter 500, Section 4.C.(2)(a)(iii) amended date August 12, 2015.

Water Quality Volumes, BMP sizing volume calculations, and other supporting calculations are attached to this report.

X. Conclusions

The proposed development has been designed to meet the requirements of the City of Portland's Stormwater Technical Standards. The stormwater management system will treat 99.2% of the created impervious surface and 85.8% of the total developed area. The peak flow rates have been controlled to the greatest extent practical to be at pre-development levels. An anticipated increase of 0.02 cfs at Study Point 1 during the 2-year storm event is expected, but will not cause an unreasonable adverse effect on downstream the City's combined sewer system. Additionally, erosion and sedimentation controls have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

Prepared by,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink, appearing to read 'R. McSorley', is written over a horizontal line.

Robert A. McSorley, P.E.
Senior Project Manager

RAM

July 13, 2017

Attachment A

Stormwater Quality Calculations

Job #16533

0.81	1.52	2.33
------	------	------

TOTAL NEW IMPERVIOUS AREA (S.F.)	35,270	TOTAL DEVELOPED AREA (S.F.)	101,527
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	34,978	TOTAL DEV. AREA RECEIVING TREATMENT (S.F.)	87,145
% OF IMPERVIOUS AREA RECEIVING TREATMENT	99.2%	% OF DEV. AREA RECEIVING TREATMENT	85.8%

SEBAGO TECHNICS, INC.

75 John Roberts Road Suite 1A

South Portland, Maine 04106

Tel. (207) 200-2100

JOB 16533

SHEET NO.

1

OF

1

CALCULATED BY

GJH

DATE

1/27/2017

FILE NAME

PRINT DATE

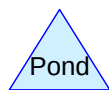
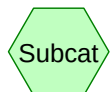
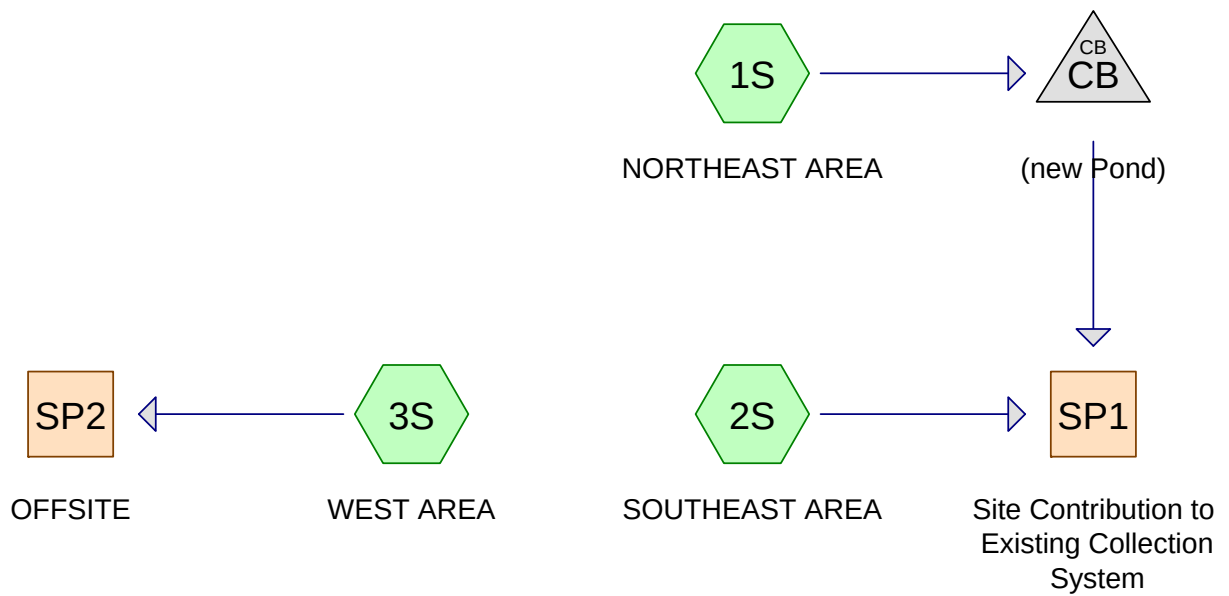
3/9/2017

UNDERDRAINED SOIL FILTER											
Task:	Calculate water quality volume per MDEP chapter 500 regulations										
References	1. Maine DEP Chapter 500, Section 4.B.(2)(b) a. "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 7.1 a. "surface should represent 5% of impervious area and 2% of landscaped area"										
Tributary to Underdrained Filter											
Landscaped Area	52,167.00	SF									
Impervious Area	34,978.00	SF									
Minimum Surface Area											
Required	(2% X Landscaped + 5% X Impervious)										
Total Landscaped Area	52,167.00	SF	Area	1,043.3	SF						
Total Impervious Area	34,978.00	SF	Area	1,748.9	SF						
Required Minimum Surface Area			2,792.2		SF						
Provided Surface Area			2,842.0		SF						
Channel Protection Volume (CPV)											
Required	(0.4" X Landscaped + 1.0" X Impervious)										
Landscaped Area	52,167.00	SF	Volume	1,738.9							
Impervious Area	34,978.00	SF	Volume	2,914.8							
CPV Required			4,653.7		CF	0.107	AF				
Provided CPV			4,654.0		CF	(Elevation 143.75 to 145.12)					
Sediment Pre-Treatment											
Per Reference 2, Chapter 7.13		"Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"									
Annual Sediment Load:	50 cubic feet per acre per year of sanded area										
Area to be sanded:	19462	SF									
Sediment Volume	22	CF									
Provided	28	CF	6 Inch Deep Forebay		with area of		55	sf			

Attachment B

HydroCAD Output

Predevelopment



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.101	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S)
0.059	98	Paved parking, HSG A (1S, 2S)
0.171	98	Roofs, HSG A (1S, 2S)
0.040	30	Woods, Good, HSG A (2S)
2.371	45	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.371	HSG A	1S, 2S, 3S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.371		TOTAL AREA

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Type III 24-hr 2-YR Rainfall=3.10"

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Page 4

Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NORTHEAST AREA Runoff Area=18,554 sf 26.29% Impervious Runoff Depth=0.22"
Tc=6.0 min CN=55 Runoff=0.04 cfs 0.008 af

Subcatchment2S: SOUTHEAST AREA Runoff Area=42,050 sf 12.21% Impervious Runoff Depth=0.05"
Flow Length=303' Tc=11.4 min CN=46 Runoff=0.01 cfs 0.004 af

Subcatchment3S: WEST AREA Runoff Area=42,693 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=153' Tc=6.2 min CN=39 Runoff=0.00 cfs 0.000 af

Reach SP1: Site Contribution to Avg. Flow Depth=0.08' Max Vel=1.13 fps Inflow=0.04 cfs 0.012 af
12.0" Round Pipe n=0.013 L=152.0' S=0.0047 '/' Capacity=2.45 cfs Outflow=0.04 cfs 0.012 af

Reach SP2: OFFSITE Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond CB: (new Pond) Peak Elev=140.43' Inflow=0.04 cfs 0.008 af
12.0" Round Culvert n=0.013 L=22.0' S=0.0100 '/' Outflow=0.04 cfs 0.008 af

Total Runoff Area = 2.371 ac Runoff Volume = 0.012 af Average Runoff Depth = 0.06"
90.31% Pervious = 2.142 ac 9.69% Impervious = 0.230 ac

Summary for Subcatchment 1S: NORTHEAST AREA

Runoff = 0.04 cfs @ 12.35 hrs, Volume= 0.008 af, Depth= 0.22"

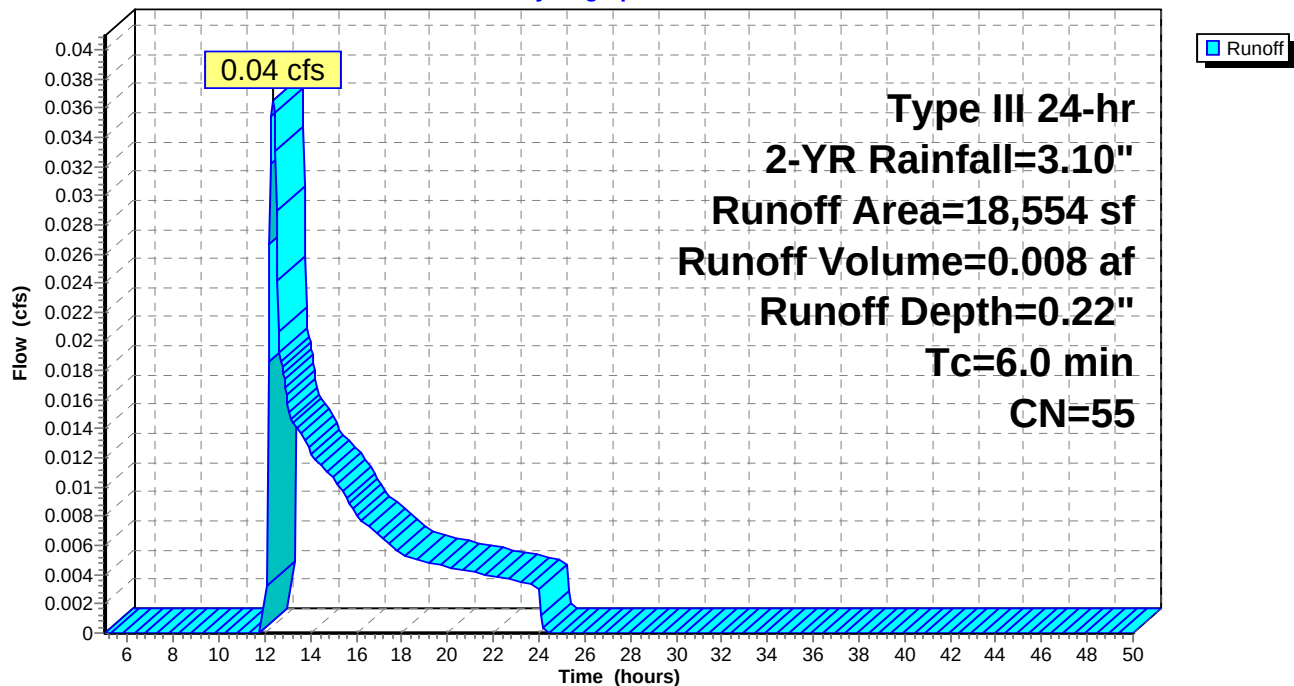
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
2,652	98	Roofs, HSG A
2,225	98	Paved parking, HSG A
13,677	39	>75% Grass cover, Good, HSG A
18,554	55	Weighted Average
13,677		73.71% Pervious Area
4,877		26.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, <6 Minutes

Subcatchment 1S: NORTHEAST AREA

Hydrograph



Summary for Subcatchment 2S: SOUTHEAST AREA

Runoff = 0.01 cfs @ 15.37 hrs, Volume= 0.004 af, Depth= 0.05"

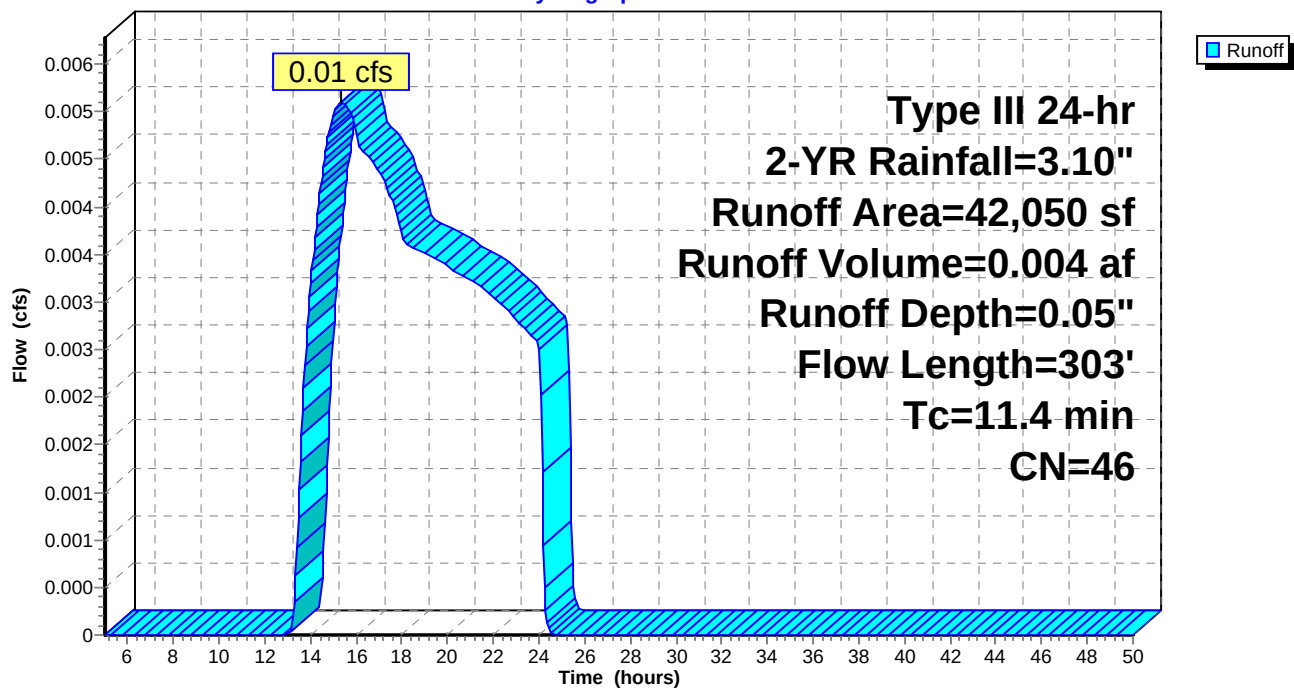
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
4,795	98	Roofs, HSG A
339	98	Paved parking, HSG A
35,160	39	>75% Grass cover, Good, HSG A
1,756	30	Woods, Good, HSG A
42,050	46	Weighted Average
36,916		87.79% Pervious Area
5,134		12.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0115	0.13		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
3.4	155	0.0115	0.75		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
1.6	98	0.0200	0.99		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
11.4	303	Total			

Subcatchment 2S: SOUTHEAST AREA

Hydrograph



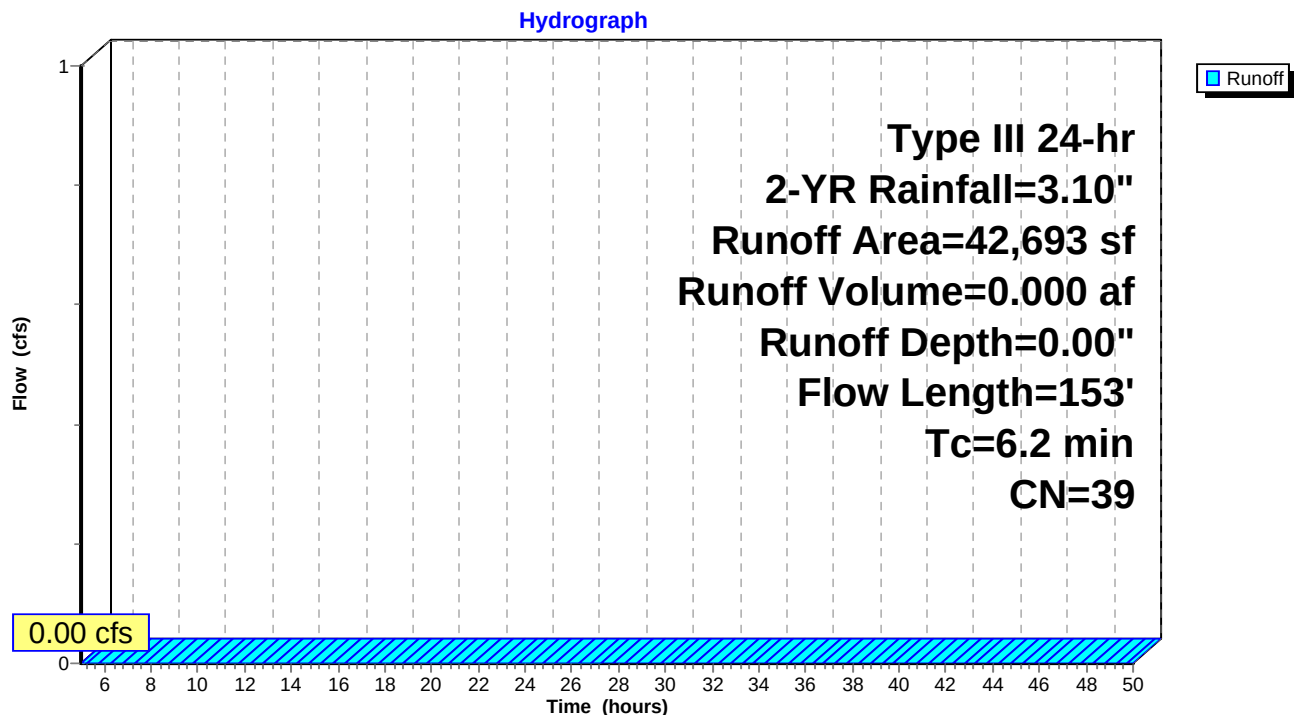
Summary for Subcatchment 3S: WEST AREA

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
42,693	39	>75% Grass cover, Good, HSG A
42,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0200	0.16		Sheet Flow, A-B
					Range n= 0.130 P2= 3.10"
1.3	106	0.0400	1.40		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
6.2	153	Total			

Subcatchment 3S: WEST AREA

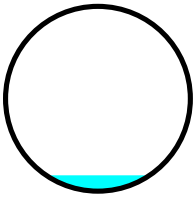
Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 1.391 ac, 16.52% Impervious, Inflow Depth = 0.10" for 2-YR event
 Inflow = 0.04 cfs @ 12.35 hrs, Volume= 0.012 af
 Outflow = 0.04 cfs @ 12.42 hrs, Volume= 0.012 af, Atten= 1%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.13 fps, Min. Travel Time= 2.2 min
 Avg. Velocity= 0.76 fps, Avg. Travel Time= 3.3 min

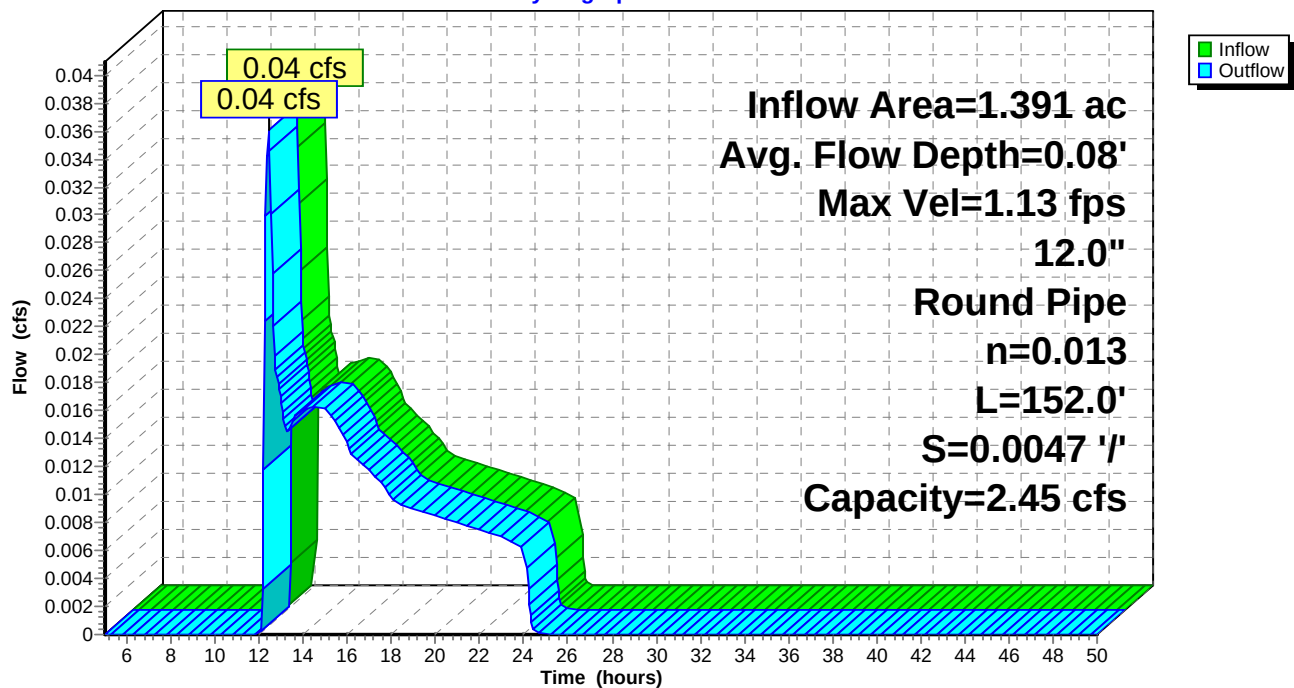
Peak Storage= 5 cf @ 12.38 hrs
 Average Depth at Peak Storage= 0.08'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe
 n= 0.013 Clay tile
 Length= 152.0' Slope= 0.0047 '/'
 Inlet Invert= 139.12', Outlet Invert= 138.40'



Reach SP1: Site Contribution to Existing Collection System

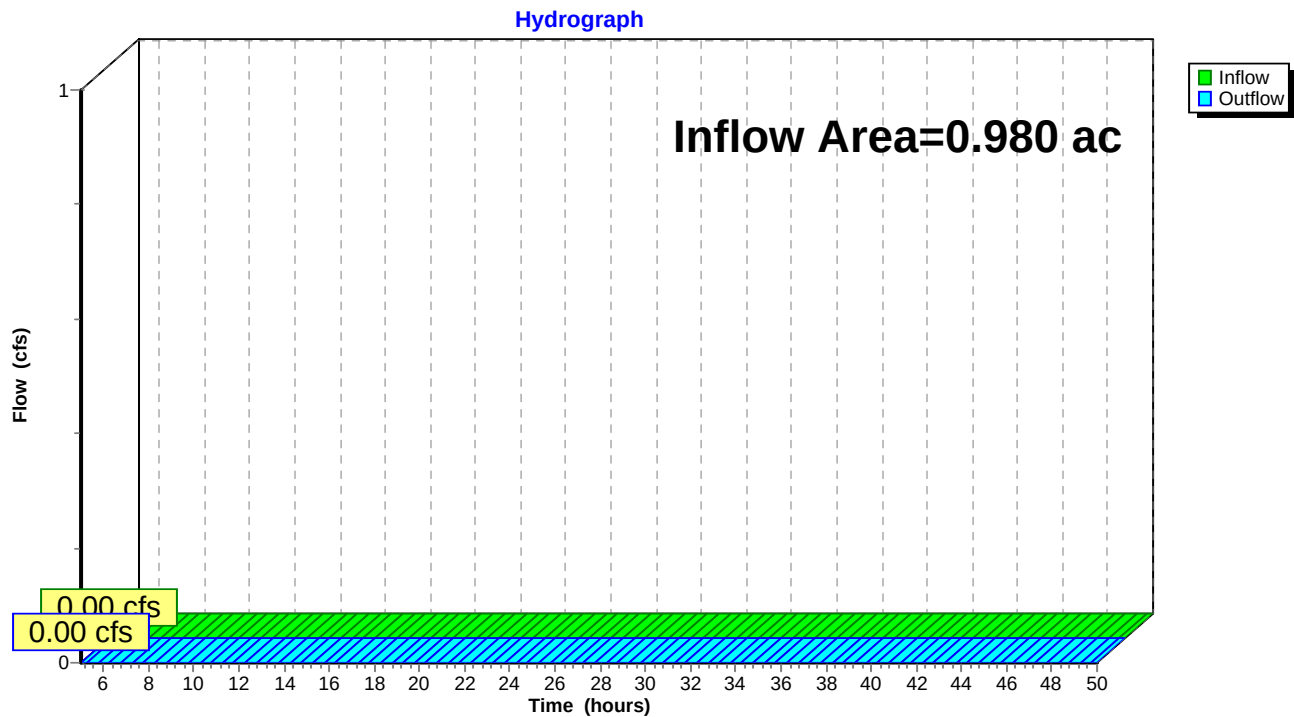
Hydrograph



Summary for Reach SP2: OFFSITE

Inflow Area = 0.980 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: OFFSITE

Summary for Pond CB: (new Pond)

Inflow Area = 0.426 ac, 26.29% Impervious, Inflow Depth = 0.22" for 2-YR event
 Inflow = 0.04 cfs @ 12.35 hrs, Volume= 0.008 af
 Outflow = 0.04 cfs @ 12.35 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.04 cfs @ 12.35 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.43' @ 12.35 hrs

Flood Elev= 146.58'

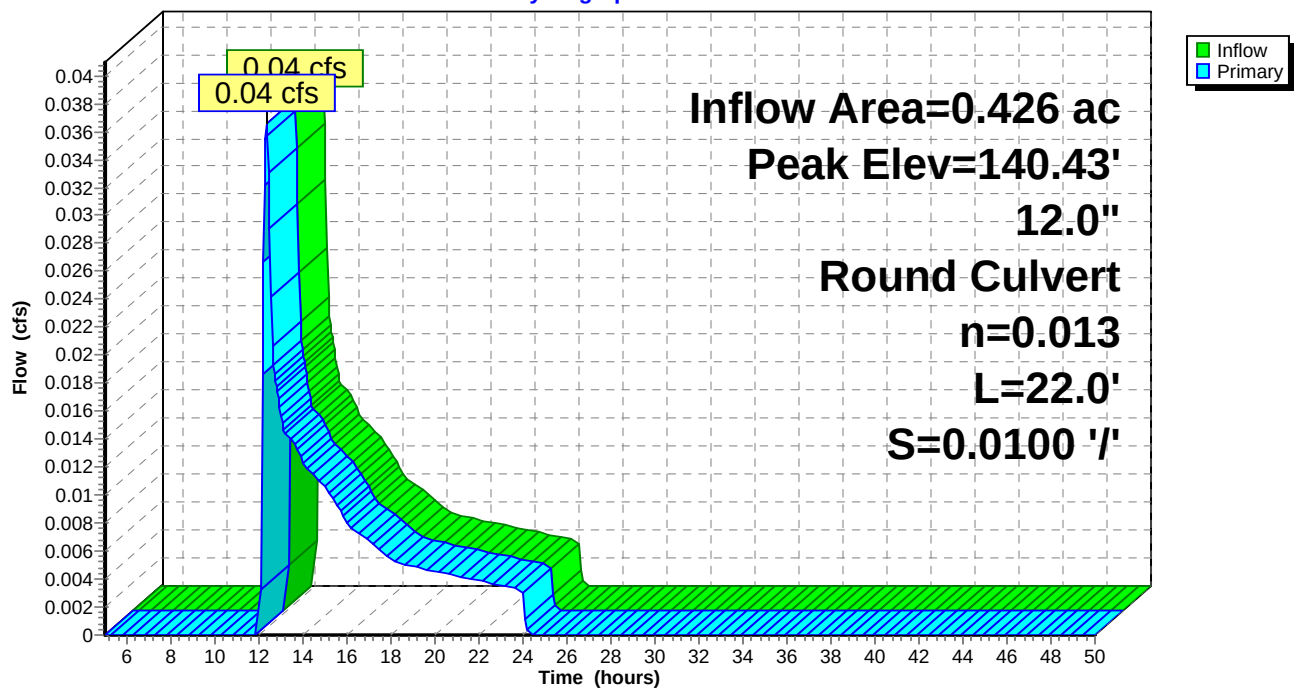
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.03 cfs @ 12.35 hrs HW=140.43' (Free Discharge)

↑**1=Culvert** (Barrel Controls 0.03 cfs @ 1.37 fps)

Pond CB: (new Pond)

Hydrograph



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Type III 24-hr 10-YR Rainfall=4.60"

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Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NORTHEAST AREA Runoff Area=18,554 sf 26.29% Impervious Runoff Depth=0.79"
Tc=6.0 min CN=55 Runoff=0.29 cfs 0.028 af

Subcatchment2S: SOUTHEAST AREA Runoff Area=42,050 sf 12.21% Impervious Runoff Depth=0.36"
Flow Length=303' Tc=11.4 min CN=46 Runoff=0.14 cfs 0.029 af

Subcatchment3S: WEST AREA Runoff Area=42,693 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=153' Tc=6.2 min CN=39 Runoff=0.02 cfs 0.010 af

Reach SP1: Site Contribution to Avg. Flow Depth=0.24' Max Vel=2.13 fps Inflow=0.30 cfs 0.057 af
12.0" Round Pipe n=0.013 L=152.0' S=0.0047 '/' Capacity=2.45 cfs Outflow=0.30 cfs 0.057 af

Reach SP2: OFFSITE Inflow=0.02 cfs 0.010 af
Outflow=0.02 cfs 0.010 af

Pond CB: (new Pond) Peak Elev=140.62' Inflow=0.29 cfs 0.028 af
12.0" Round Culvert n=0.013 L=22.0' S=0.0100 '/' Outflow=0.29 cfs 0.028 af

Total Runoff Area = 2.371 ac Runoff Volume = 0.067 af Average Runoff Depth = 0.34"
90.31% Pervious = 2.142 ac 9.69% Impervious = 0.230 ac

Summary for Subcatchment 1S: NORTHEAST AREA

Runoff = 0.29 cfs @ 12.12 hrs, Volume= 0.028 af, Depth= 0.79"

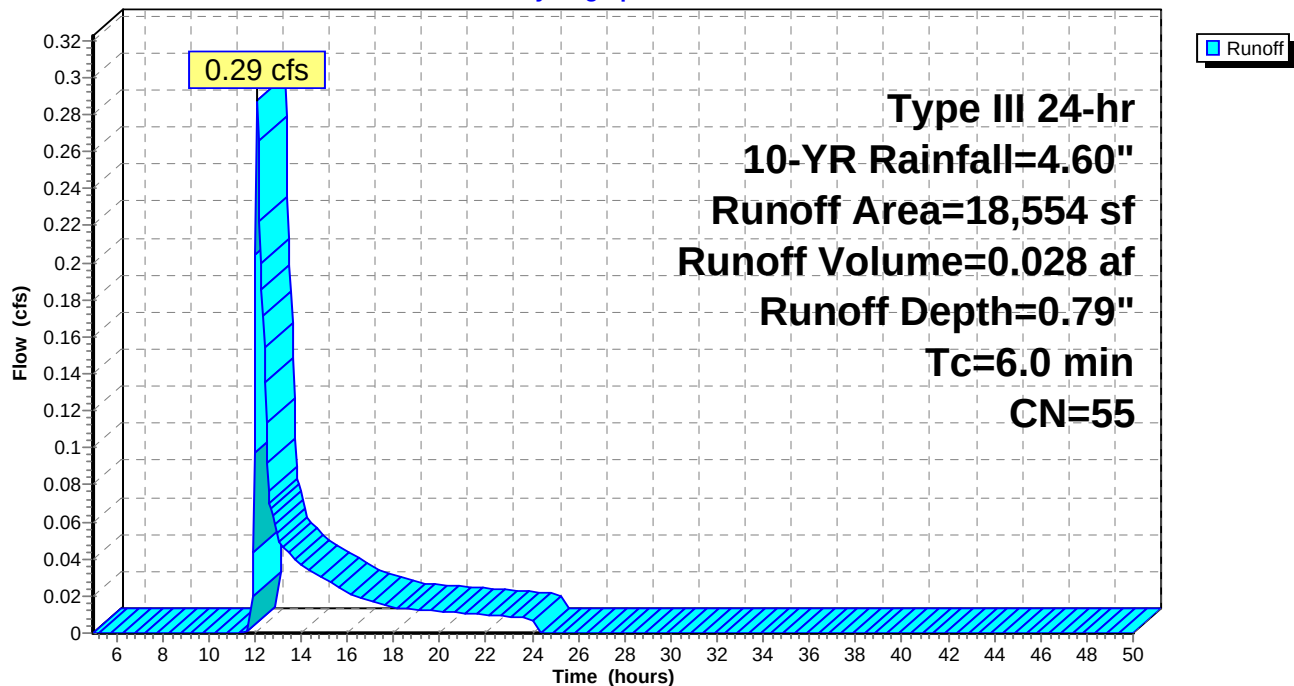
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
2,652	98	Roofs, HSG A
2,225	98	Paved parking, HSG A
13,677	39	>75% Grass cover, Good, HSG A
18,554	55	Weighted Average
13,677		73.71% Pervious Area
4,877		26.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, <6 Minutes

Subcatchment 1S: NORTHEAST AREA

Hydrograph



Summary for Subcatchment 2S: SOUTHEAST AREA

Runoff = 0.14 cfs @ 12.42 hrs, Volume= 0.029 af, Depth= 0.36"

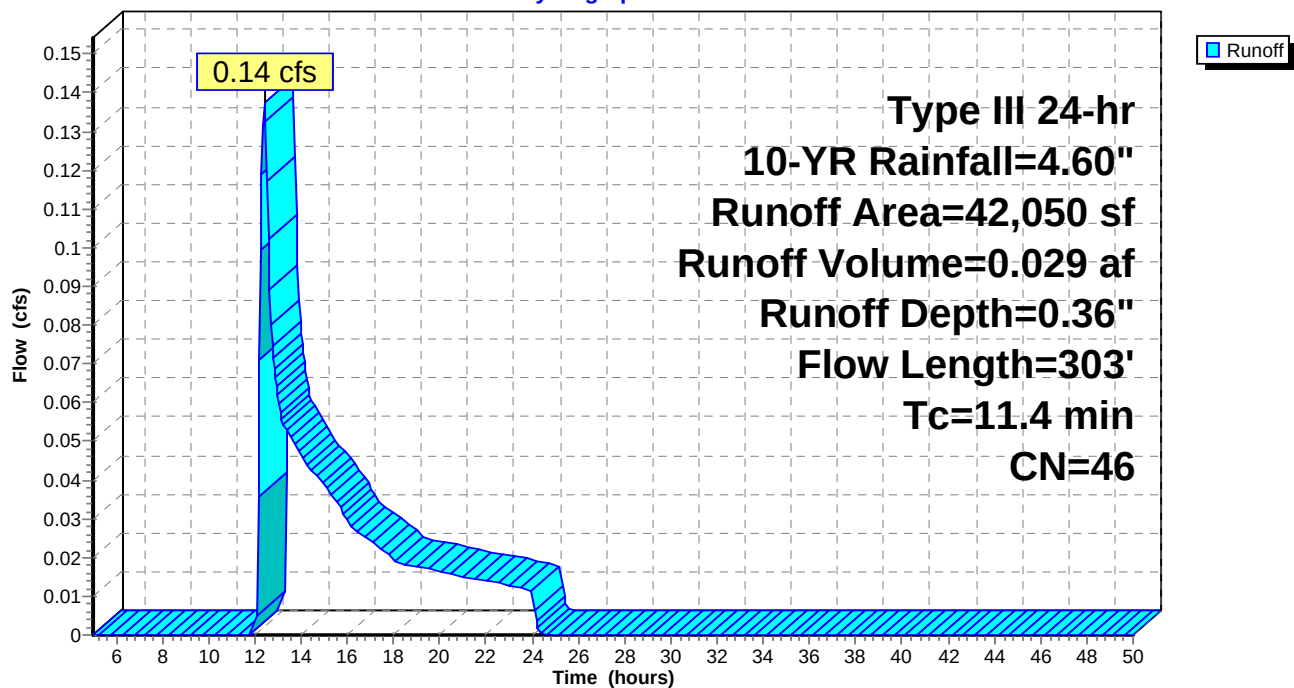
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
4,795	98	Roofs, HSG A
339	98	Paved parking, HSG A
35,160	39	>75% Grass cover, Good, HSG A
1,756	30	Woods, Good, HSG A
42,050	46	Weighted Average
36,916		87.79% Pervious Area
5,134		12.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0115	0.13		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
3.4	155	0.0115	0.75		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
1.6	98	0.0200	0.99		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
11.4	303	Total			

Subcatchment 2S: SOUTHEAST AREA

Hydrograph



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Type III 24-hr 10-YR Rainfall=4.60"

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Summary for Subcatchment 3S: WEST AREA

Runoff = 0.02 cfs @ 14.57 hrs, Volume= 0.010 af, Depth= 0.13"

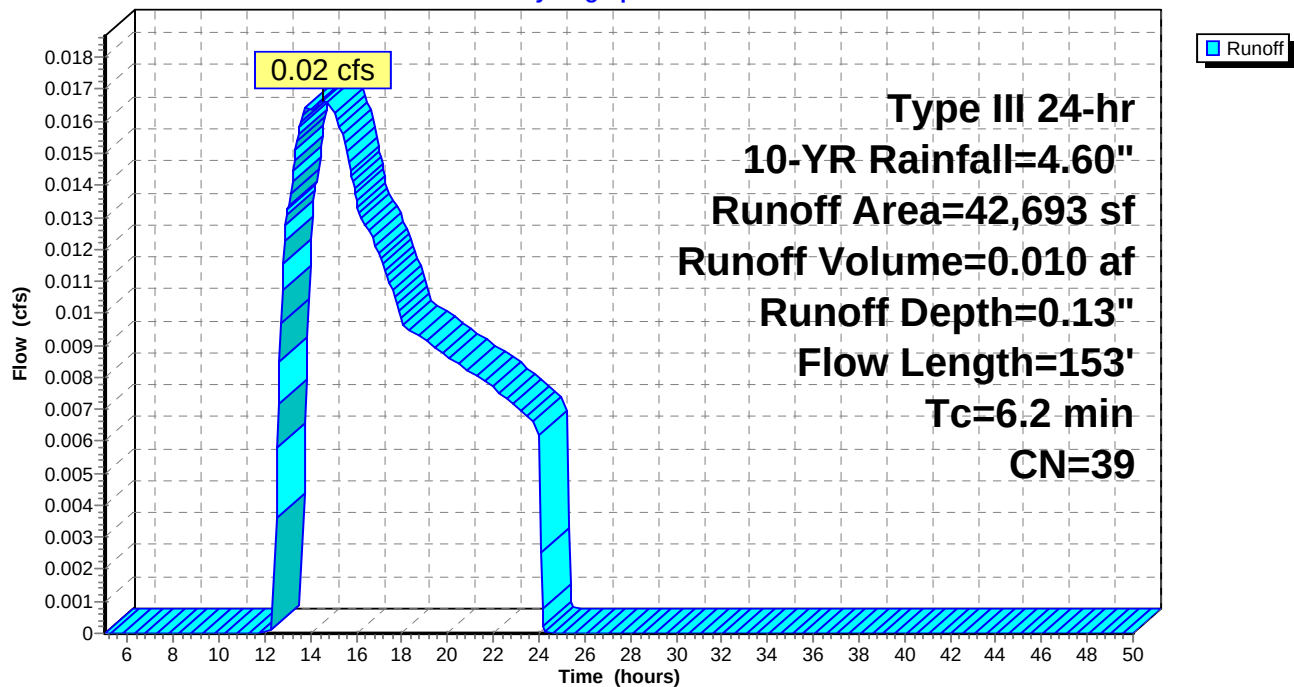
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
42,693	39	>75% Grass cover, Good, HSG A
42,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0200	0.16		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
1.3	106	0.0400	1.40		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
6.2	153	Total			

Subcatchment 3S: WEST AREA

Hydrograph



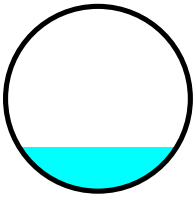
Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 1.391 ac, 16.52% Impervious, Inflow Depth = 0.49" for 10-YR event
 Inflow = 0.30 cfs @ 12.31 hrs, Volume= 0.057 af
 Outflow = 0.30 cfs @ 12.34 hrs, Volume= 0.057 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.13 fps, Min. Travel Time= 1.2 min
 Avg. Velocity= 1.16 fps, Avg. Travel Time= 2.2 min

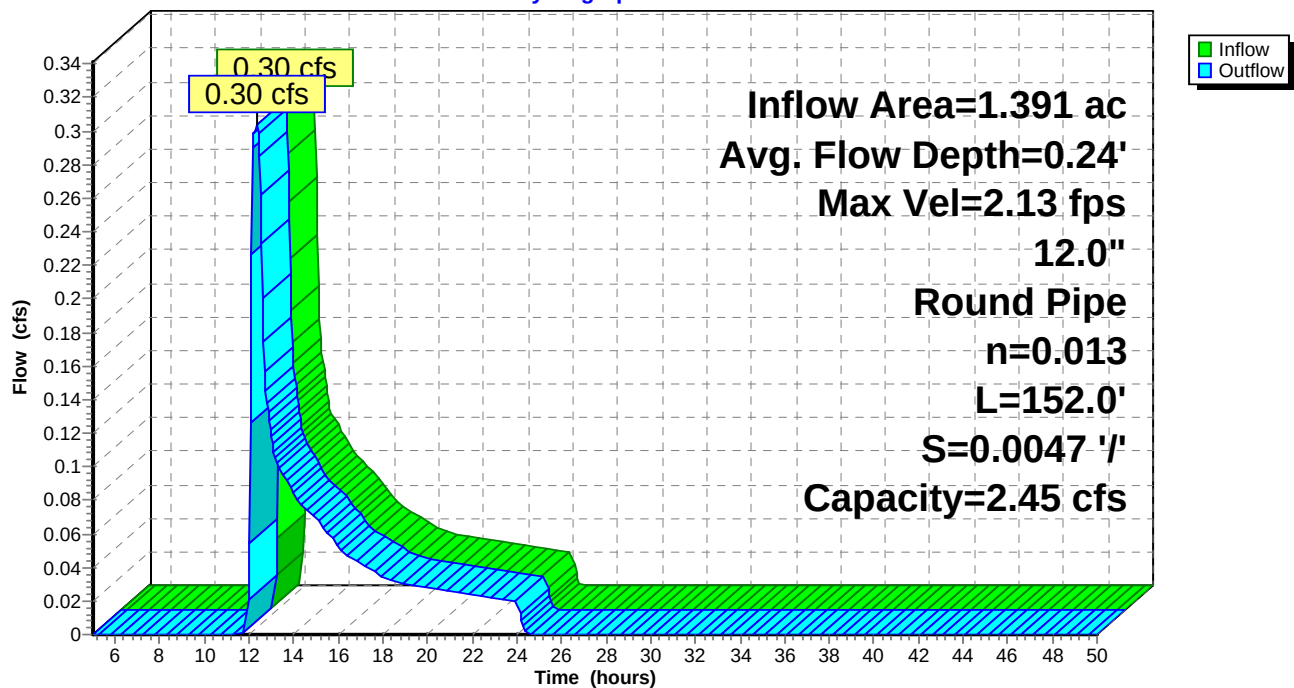
Peak Storage= 22 cf @ 12.16 hrs
 Average Depth at Peak Storage= 0.24'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe
 n= 0.013 Clay tile
 Length= 152.0' Slope= 0.0047 '/'
 Inlet Invert= 139.12', Outlet Invert= 138.40'



Reach SP1: Site Contribution to Existing Collection System

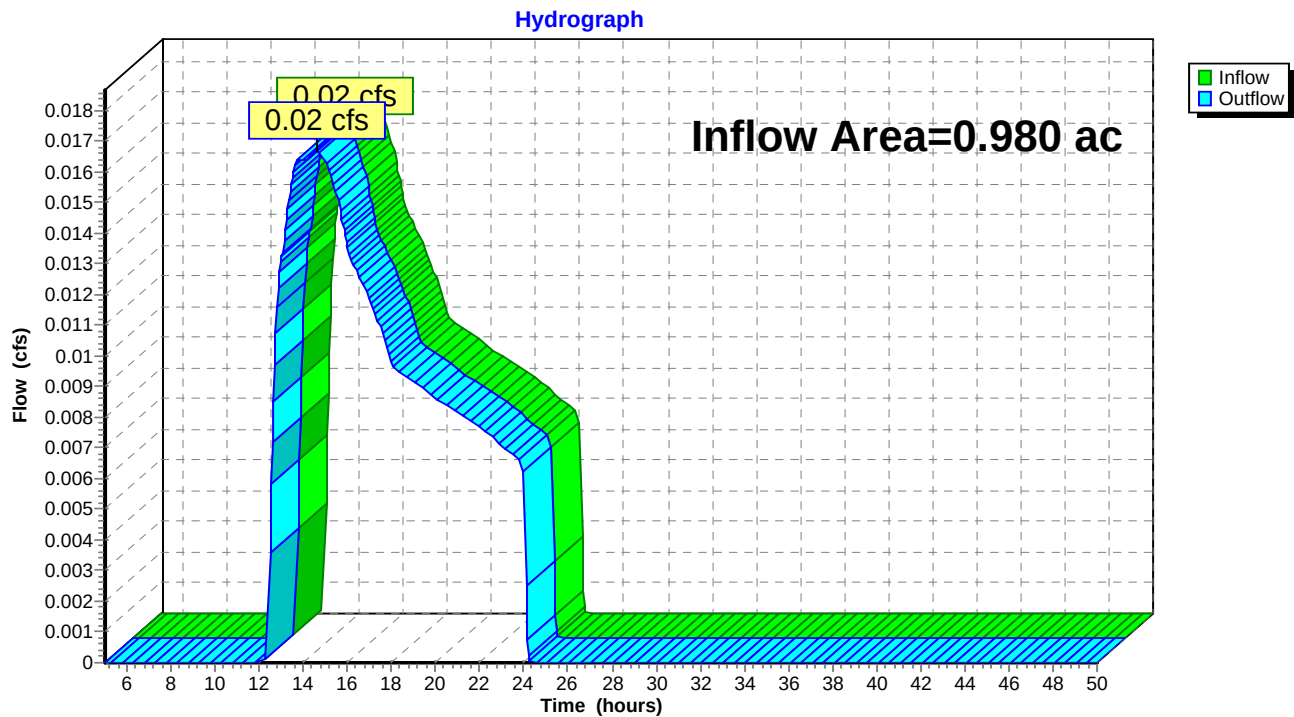
Hydrograph



Summary for Reach SP2: OFFSITE

Inflow Area = 0.980 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-YR event
Inflow = 0.02 cfs @ 14.57 hrs, Volume= 0.010 af
Outflow = 0.02 cfs @ 14.57 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: OFFSITE

Summary for Pond CB: (new Pond)

Inflow Area = 0.426 ac, 26.29% Impervious, Inflow Depth = 0.79" for 10-YR event
 Inflow = 0.29 cfs @ 12.12 hrs, Volume= 0.028 af
 Outflow = 0.29 cfs @ 12.12 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.29 cfs @ 12.12 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.62' @ 12.12 hrs

Flood Elev= 146.58'

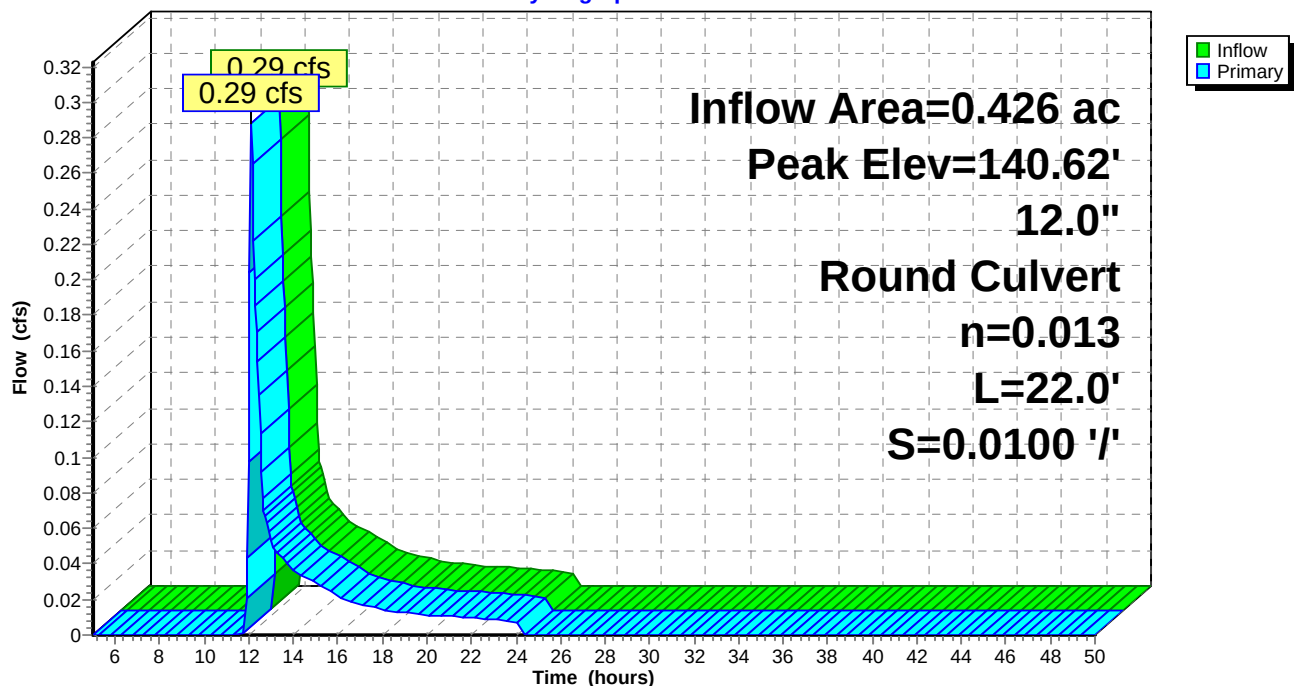
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.12 hrs HW=140.61' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 0.28 cfs @ 2.38 fps)

Pond CB: (new Pond)

Hydrograph



16533-PRE

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Type III 24-hr 25-YR Rainfall=5.80"

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Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NORTHEAST AREA Runoff Area=18,554 sf 26.29% Impervious Runoff Depth=1.40"
Tc=6.0 min CN=55 Runoff=0.61 cfs 0.050 af

Subcatchment2S: SOUTHEAST AREA Runoff Area=42,050 sf 12.21% Impervious Runoff Depth=0.78"
Flow Length=303' Tc=11.4 min CN=46 Runoff=0.44 cfs 0.063 af

Subcatchment3S: WEST AREA Runoff Area=42,693 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=153' Tc=6.2 min CN=39 Runoff=0.14 cfs 0.032 af

Reach SP1: Site Contribution to Avg. Flow Depth=0.42' Max Vel=2.89 fps Inflow=0.91 cfs 0.113 af
12.0" Round Pipe n=0.013 L=152.0' S=0.0047 '/' Capacity=2.45 cfs Outflow=0.89 cfs 0.113 af

Reach SP2: OFFSITE Inflow=0.14 cfs 0.032 af
Outflow=0.14 cfs 0.032 af

Pond CB: (new Pond) Peak Elev=140.76' Inflow=0.61 cfs 0.050 af
12.0" Round Culvert n=0.013 L=22.0' S=0.0100 '/' Outflow=0.61 cfs 0.050 af

Total Runoff Area = 2.371 ac Runoff Volume = 0.145 af Average Runoff Depth = 0.73"
90.31% Pervious = 2.142 ac 9.69% Impervious = 0.230 ac

Summary for Subcatchment 1S: NORTHEAST AREA

Runoff = 0.61 cfs @ 12.11 hrs, Volume= 0.050 af, Depth= 1.40"

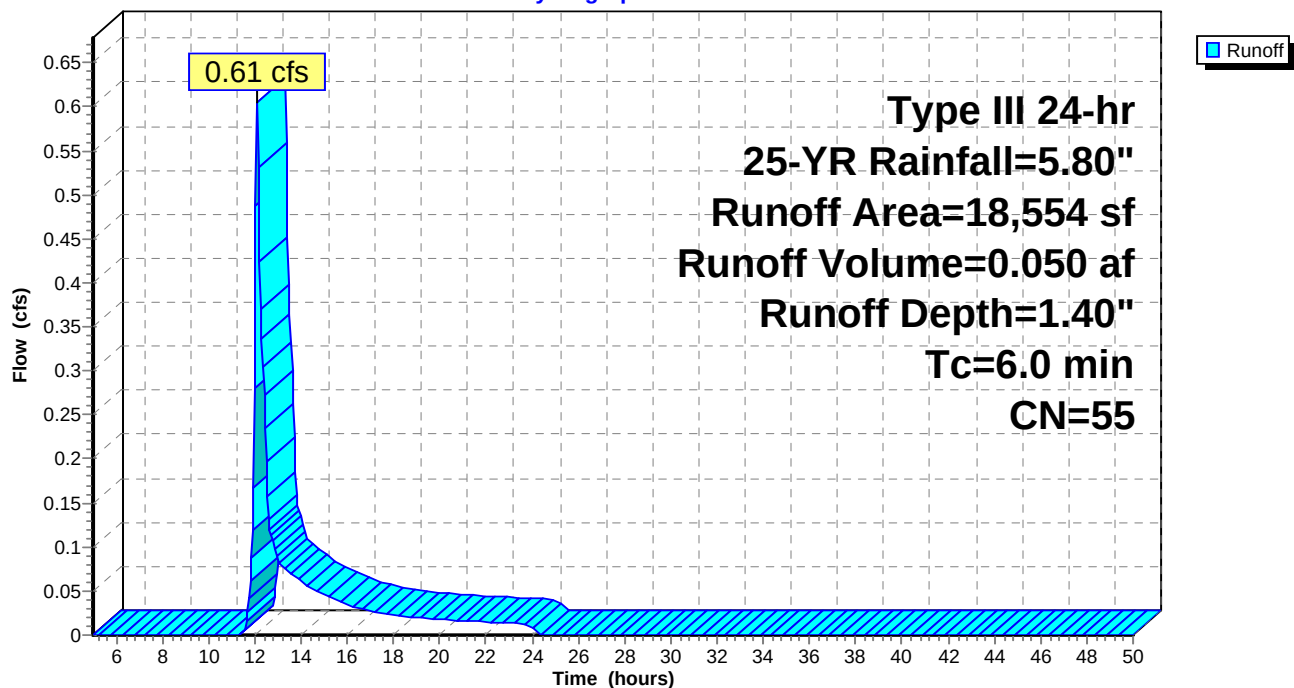
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
2,652	98	Roofs, HSG A
2,225	98	Paved parking, HSG A
13,677	39	>75% Grass cover, Good, HSG A
18,554	55	Weighted Average
13,677		73.71% Pervious Area
4,877		26.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, <6 Minutes

Subcatchment 1S: NORTHEAST AREA

Hydrograph



16533-PRE

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Type III 24-hr 25-YR Rainfall=5.80"

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Summary for Subcatchment 2S: SOUTHEAST AREA

Runoff = 0.44 cfs @ 12.23 hrs, Volume= 0.063 af, Depth= 0.78"

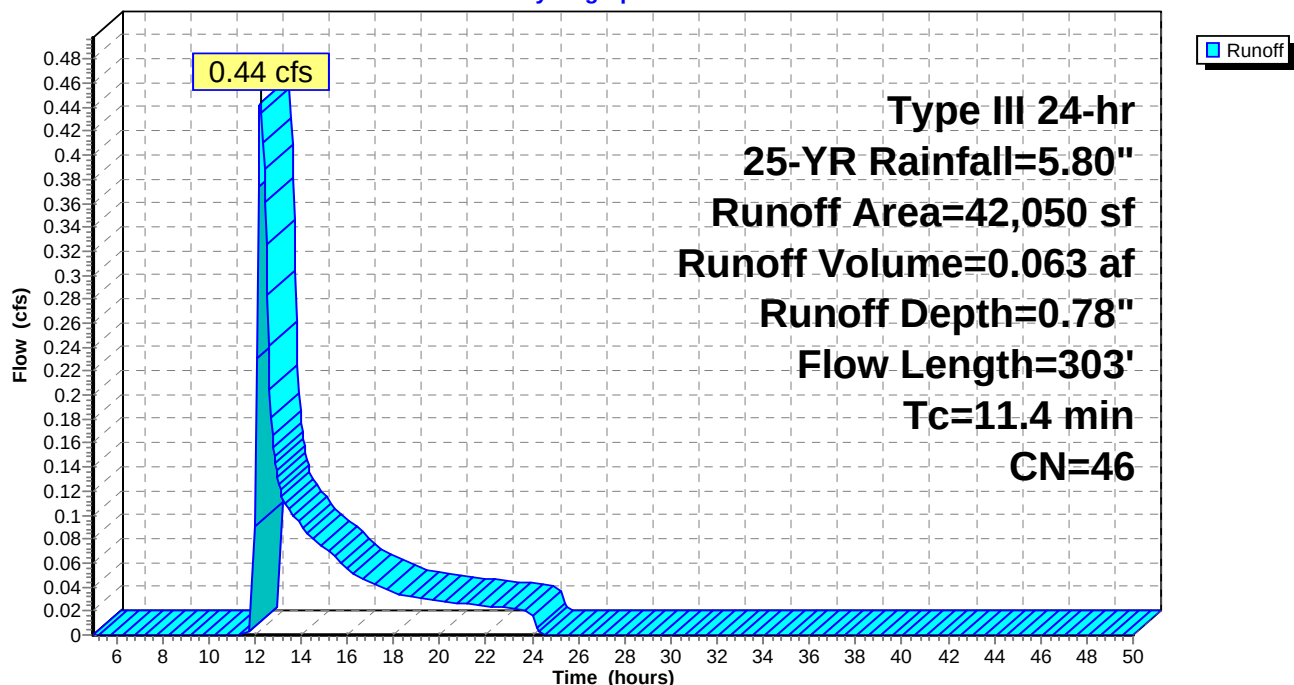
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
4,795	98	Roofs, HSG A
339	98	Paved parking, HSG A
35,160	39	>75% Grass cover, Good, HSG A
1,756	30	Woods, Good, HSG A
42,050	46	Weighted Average
36,916		87.79% Pervious Area
5,134		12.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0115	0.13		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
3.4	155	0.0115	0.75		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
1.6	98	0.0200	0.99		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
11.4	303	Total			

Subcatchment 2S: SOUTHEAST AREA

Hydrograph



Summary for Subcatchment 3S: WEST AREA

Runoff = 0.14 cfs @ 12.37 hrs, Volume= 0.032 af, Depth= 0.39"

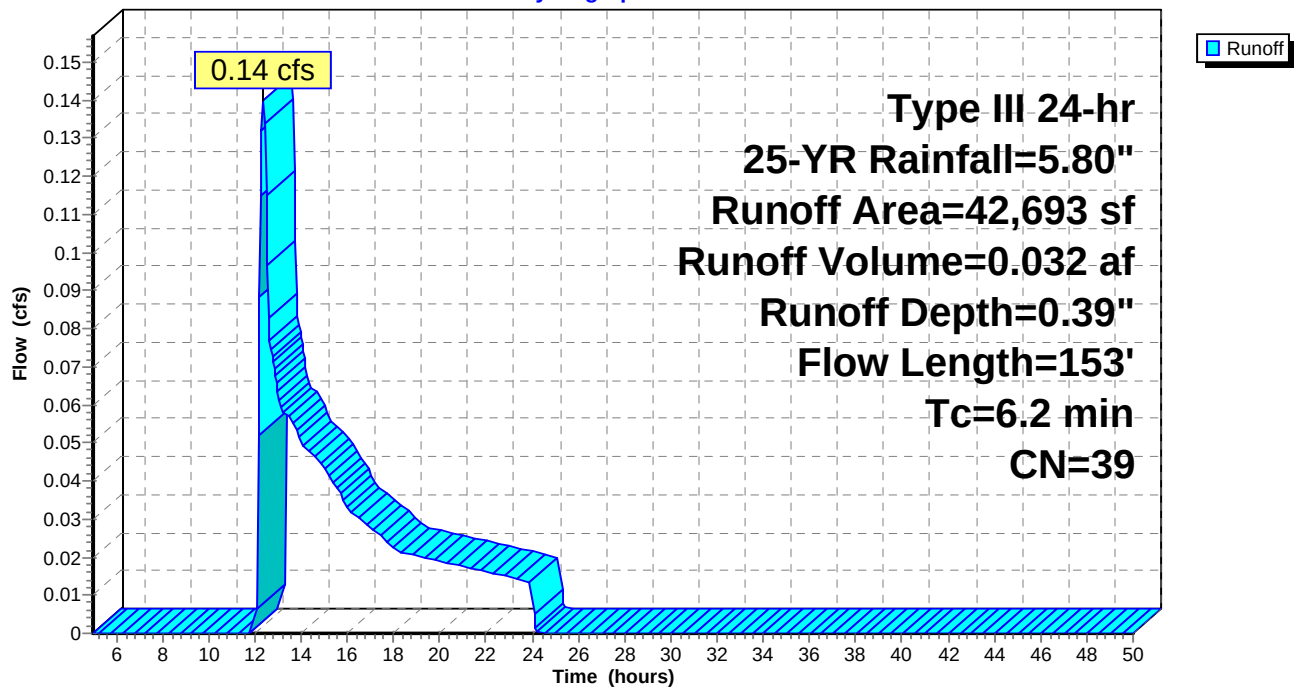
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
42,693	39	>75% Grass cover, Good, HSG A
42,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0200	0.16		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
1.3	106	0.0400	1.40		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
6.2	153	Total			

Subcatchment 3S: WEST AREA

Hydrograph



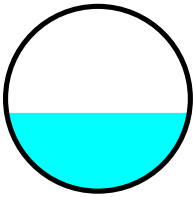
Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 1.391 ac, 16.52% Impervious, Inflow Depth = 0.97" for 25-YR event
 Inflow = 0.91 cfs @ 12.16 hrs, Volume= 0.113 af
 Outflow = 0.89 cfs @ 12.19 hrs, Volume= 0.113 af, Atten= 2%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.89 fps, Min. Travel Time= 0.9 min
 Avg. Velocity= 1.36 fps, Avg. Travel Time= 1.9 min

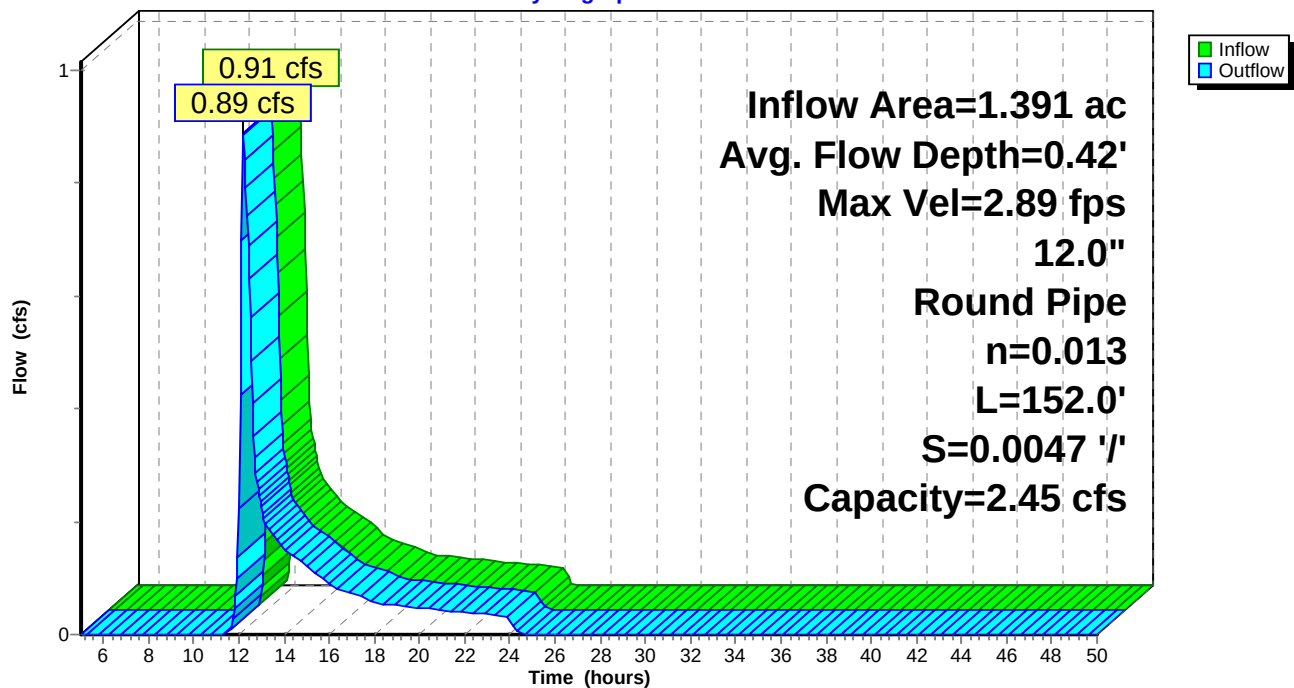
Peak Storage= 48 cf @ 12.17 hrs
 Average Depth at Peak Storage= 0.42'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe
 n= 0.013 Clay tile
 Length= 152.0' Slope= 0.0047 '/'
 Inlet Invert= 139.12', Outlet Invert= 138.40'



Reach SP1: Site Contribution to Existing Collection System

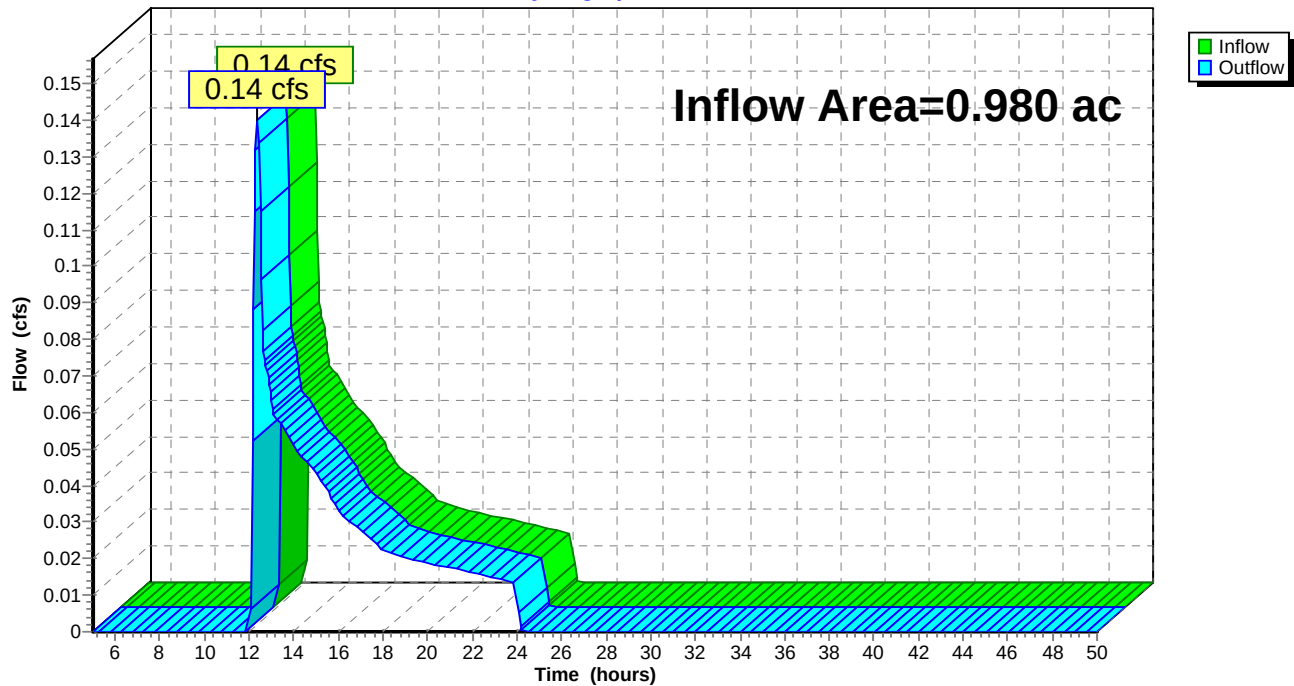
Hydrograph



Summary for Reach SP2: OFFSITE

Inflow Area = 0.980 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-YR event
Inflow = 0.14 cfs @ 12.37 hrs, Volume= 0.032 af
Outflow = 0.14 cfs @ 12.37 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: OFFSITE**Hydrograph**

Summary for Pond CB: (new Pond)

Inflow Area = 0.426 ac, 26.29% Impervious, Inflow Depth = 1.40" for 25-YR event
 Inflow = 0.61 cfs @ 12.11 hrs, Volume= 0.050 af
 Outflow = 0.61 cfs @ 12.11 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.61 cfs @ 12.11 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.76' @ 12.11 hrs

Flood Elev= 146.58'

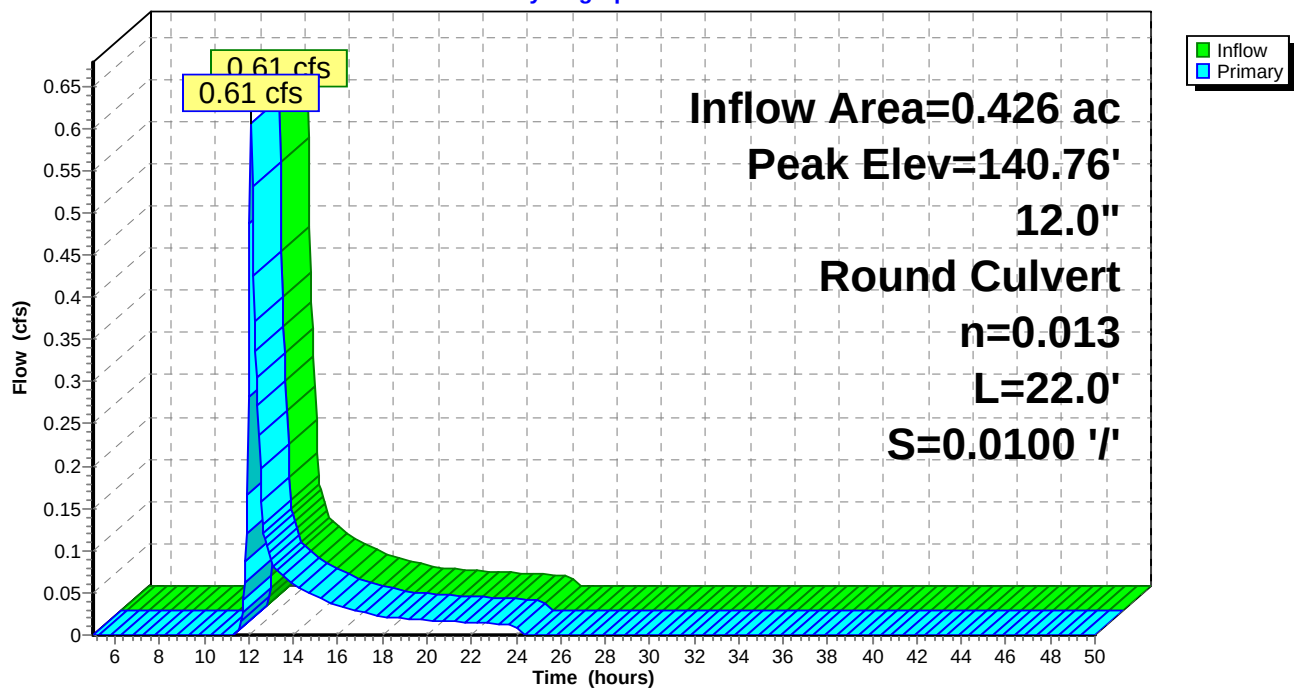
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.59 cfs @ 12.11 hrs HW=140.76' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 0.59 cfs @ 2.84 fps)

Pond CB: (new Pond)

Hydrograph



16533-PRE*Type III 24-hr 100-YR Rainfall=8.10"*

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Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NORTHEAST AREA Runoff Area=18,554 sf 26.29% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=55 Runoff=1.35 cfs 0.101 af

Subcatchment2S: SOUTHEAST AREA Runoff Area=42,050 sf 12.21% Impervious Runoff Depth=1.89"
Flow Length=303' Tc=11.4 min CN=46 Runoff=1.51 cfs 0.152 af

Subcatchment3S: WEST AREA Runoff Area=42,693 sf 0.00% Impervious Runoff Depth=1.20"
Flow Length=153' Tc=6.2 min CN=39 Runoff=0.87 cfs 0.098 af

Reach SP1: Site Contribution to Avg. Flow Depth=0.89' Max Vel=3.56 fps Inflow=2.61 cfs 0.253 af
12.0" Round Pipe n=0.013 L=152.0' S=0.0047 '/' Capacity=2.45 cfs Outflow=2.57 cfs 0.253 af

Reach SP2: OFFSITE Inflow=0.87 cfs 0.098 af
Outflow=0.87 cfs 0.098 af

Pond CB: (new Pond) Peak Elev=141.01' Inflow=1.35 cfs 0.101 af
12.0" Round Culvert n=0.013 L=22.0' S=0.0100 '/' Outflow=1.35 cfs 0.101 af

Total Runoff Area = 2.371 ac Runoff Volume = 0.351 af Average Runoff Depth = 1.78"
90.31% Pervious = 2.142 ac 9.69% Impervious = 0.230 ac

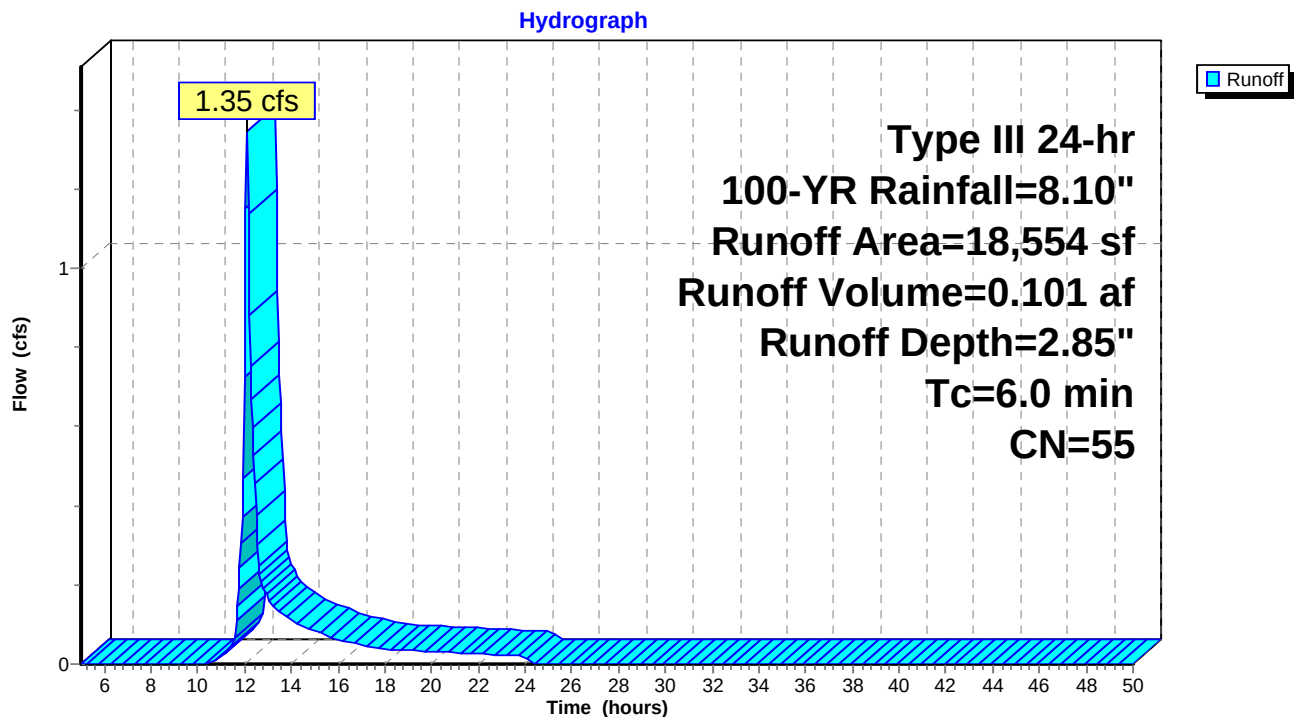
Summary for Subcatchment 1S: NORTHEAST AREA

Runoff = 1.35 cfs @ 12.10 hrs, Volume= 0.101 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

Area (sf)	CN	Description
2,652	98	Roofs, HSG A
2,225	98	Paved parking, HSG A
13,677	39	>75% Grass cover, Good, HSG A
18,554	55	Weighted Average
13,677		73.71% Pervious Area
4,877		26.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, <6 Minutes

Subcatchment 1S: NORTHEAST AREA

Summary for Subcatchment 2S: SOUTHEAST AREA

Runoff = 1.51 cfs @ 12.18 hrs, Volume= 0.152 af, Depth= 1.89"

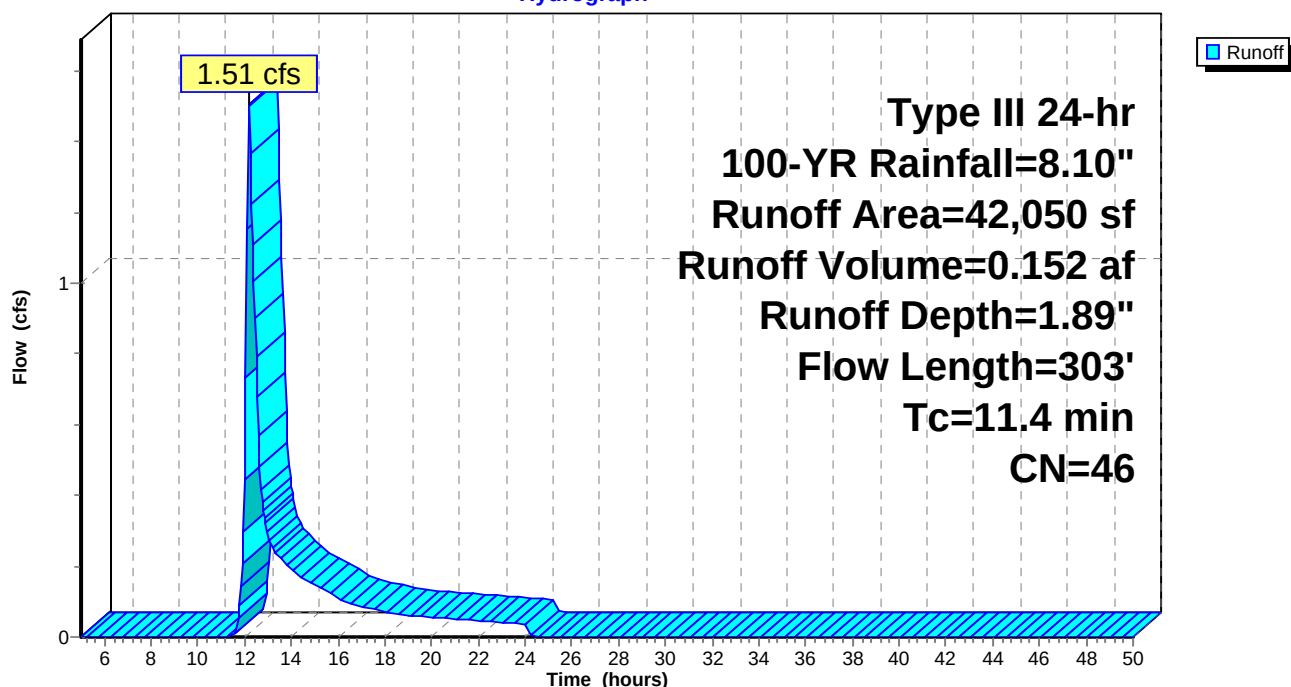
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

Area (sf)	CN	Description
4,795	98	Roofs, HSG A
339	98	Paved parking, HSG A
35,160	39	>75% Grass cover, Good, HSG A
1,756	30	Woods, Good, HSG A
42,050	46	Weighted Average
36,916		87.79% Pervious Area
5,134		12.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0115	0.13		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
3.4	155	0.0115	0.75		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
1.6	98	0.0200	0.99		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
11.4	303	Total			

Subcatchment 2S: SOUTHEAST AREA

Hydrograph



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Type III 24-hr 100-YR Rainfall=8.10"

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Summary for Subcatchment 3S: WEST AREA

Runoff = 0.87 cfs @ 12.13 hrs, Volume= 0.098 af, Depth= 1.20"

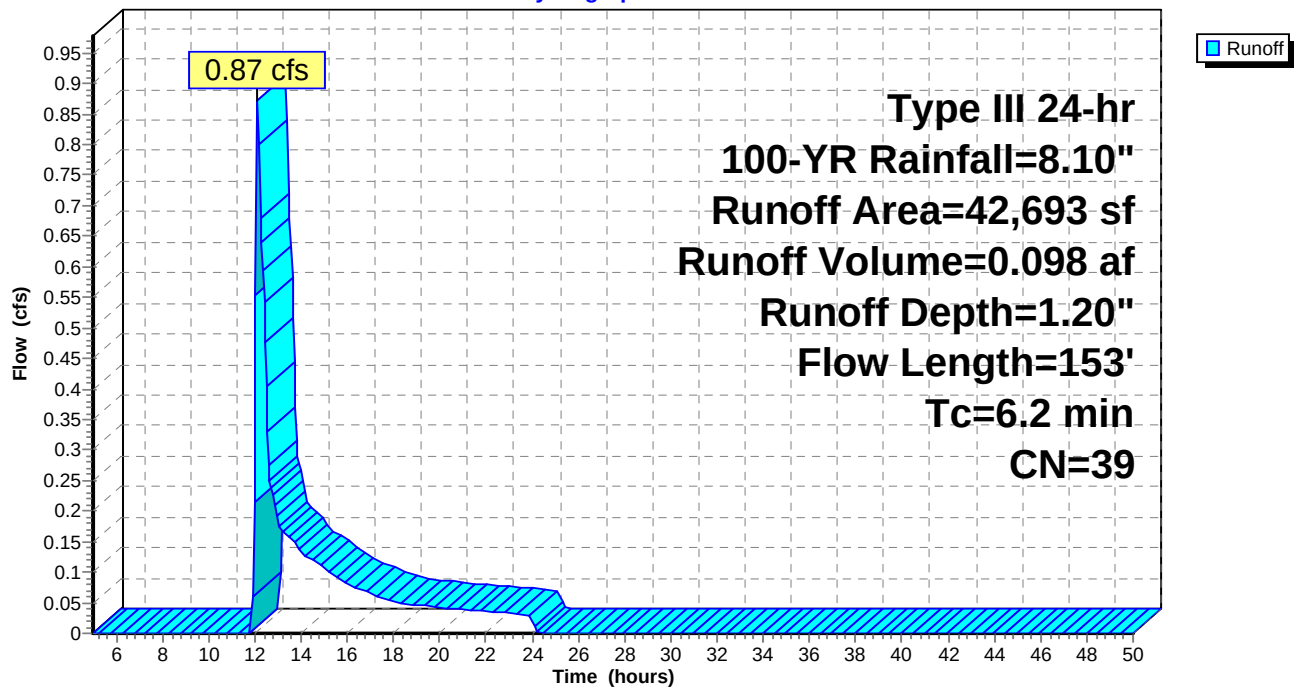
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

Area (sf)	CN	Description
42,693	39	>75% Grass cover, Good, HSG A
42,693		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0200	0.16		Sheet Flow, A-B Range n= 0.130 P2= 3.10"
1.3	106	0.0400	1.40		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
6.2	153	Total			

Subcatchment 3S: WEST AREA

Hydrograph



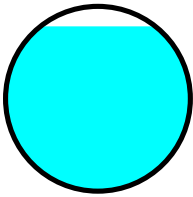
Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 1.391 ac, 16.52% Impervious, Inflow Depth = 2.19" for 100-YR event
 Inflow = 2.61 cfs @ 12.14 hrs, Volume= 0.253 af
 Outflow = 2.57 cfs @ 12.17 hrs, Volume= 0.253 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.56 fps, Min. Travel Time= 0.7 min
 Avg. Velocity= 1.61 fps, Avg. Travel Time= 1.6 min

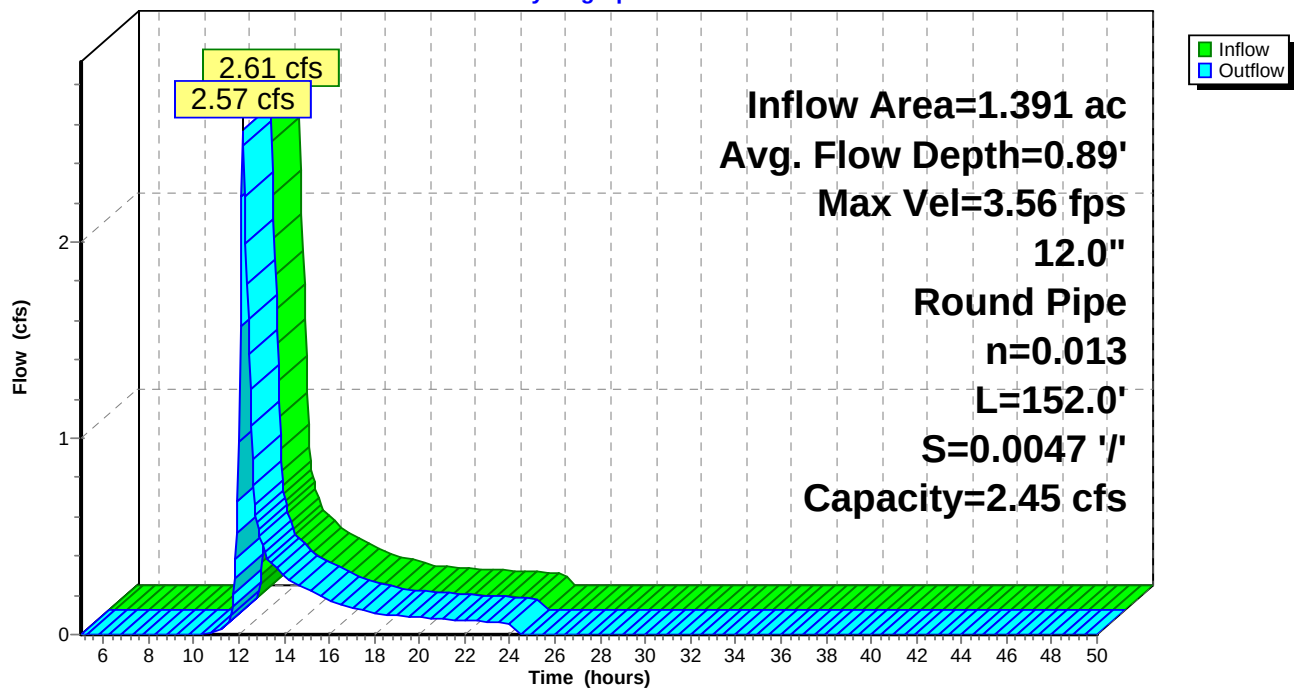
Peak Storage= 112 cf @ 12.15 hrs
 Average Depth at Peak Storage= 0.89'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe
 n= 0.013 Clay tile
 Length= 152.0' Slope= 0.0047 '/'
 Inlet Invert= 139.12', Outlet Invert= 138.40'



Reach SP1: Site Contribution to Existing Collection System

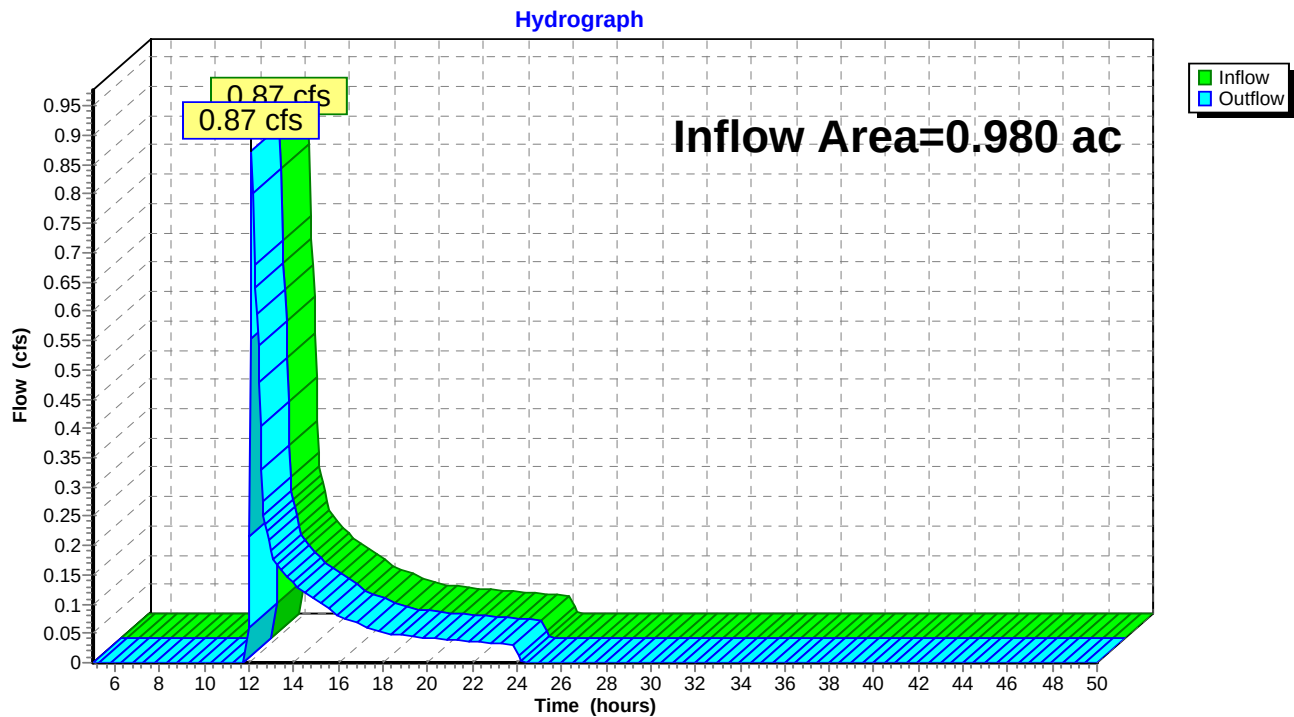
Hydrograph



Summary for Reach SP2: OFFSITE

Inflow Area = 0.980 ac, 0.00% Impervious, Inflow Depth = 1.20" for 100-YR event
Inflow = 0.87 cfs @ 12.13 hrs, Volume= 0.098 af
Outflow = 0.87 cfs @ 12.13 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: OFFSITE

Summary for Pond CB: (new Pond)

Inflow Area = 0.426 ac, 26.29% Impervious, Inflow Depth = 2.85" for 100-YR event
 Inflow = 1.35 cfs @ 12.10 hrs, Volume= 0.101 af
 Outflow = 1.35 cfs @ 12.10 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.35 cfs @ 12.10 hrs, Volume= 0.101 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 141.01' @ 12.10 hrs

Flood Elev= 146.58'

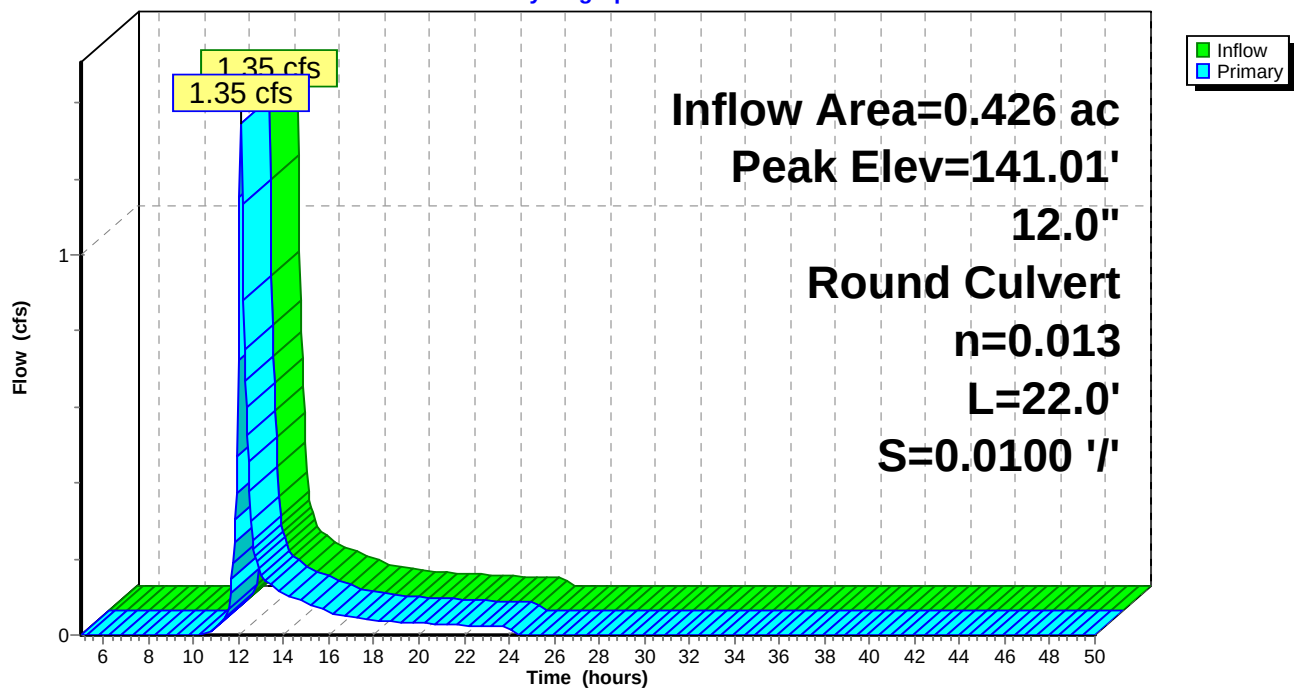
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.10 hrs HW=141.01' (Free Discharge)

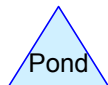
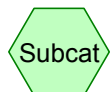
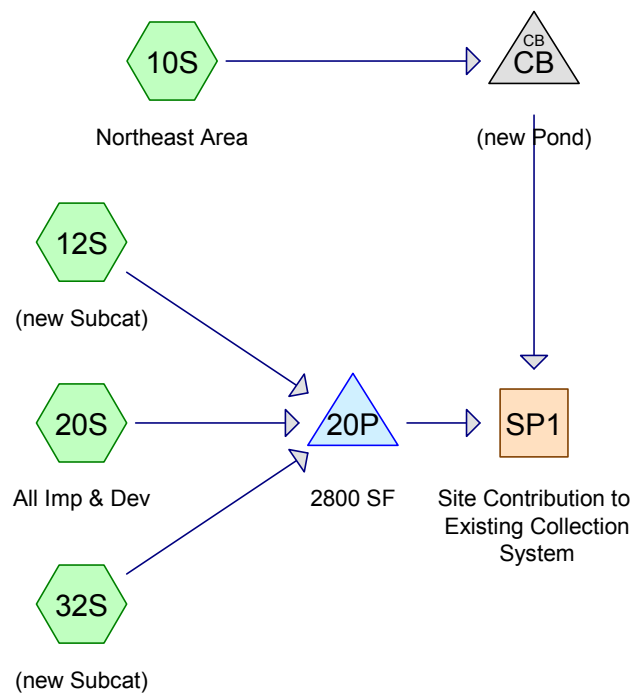
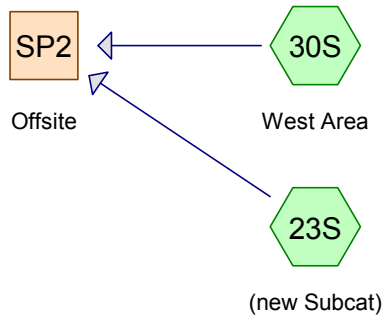
↑**1=Culvert** (Barrel Controls 1.34 cfs @ 3.38 fps)

Pond CB: (new Pond)

Hydrograph



Postdevelopment



Routing Diagram for 16533-POST 17-07-13

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Prepared by {enter your company name here}

Printed 7/13/2017

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.565	49	50-75% Grass cover, Fair, HSG A (20S)
0.956	39	>75% Grass cover, Good, HSG A (10S, 12S, 23S, 30S, 32S)
0.041	98	Existing Impervious (10S, 12S)
0.100	98	New Impervious (10S, 12S)
0.254	98	Paved parking, HSG A (20S)
0.171	98	Pavement (32S)
0.173	98	Roofs (32S)
0.112	98	Unconnected roofs, HSG A (20S)
2.371	63	TOTAL AREA

16533-POST 17-07-13

Prepared by {enter your company name here}

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.887	HSG A	10S, 12S, 20S, 23S, 30S, 32S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.485	Other	10S, 12S, 32S
2.371		TOTAL AREA

Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 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 10S: Northeast Area	Runoff Area=7,876 sf 26.17% Impervious Runoff Depth=0.20" Tc=6.0 min CN=54 Runoff=0.01 cfs 0.003 af
Subcatchment 12S: (new Subcat)	Runoff Area=10,678 sf 38.07% Impervious Runoff Depth=0.40" Tc=6.0 min CN=61 Runoff=0.07 cfs 0.008 af
Subcatchment 20S: All Imp & Dev	Runoff Area=40,524 sf 39.30% Impervious Runoff Depth=0.68" Tc=6.0 min CN=68 Runoff=0.62 cfs 0.053 af
Subcatchment 23S: (new Subcat)	Runoff Area=1,526 sf 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 30S: West Area	Runoff Area=6,749 sf 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 32S: (new Subcat)	Runoff Area=35,943 sf 41.69% Impervious Runoff Depth=0.51" Tc=6.0 min CN=64 Runoff=0.36 cfs 0.035 af
Reach SP1: Site Contribution to	Avg. Flow Depth=0.10' Max Vel=1.29 fps Inflow=0.06 cfs 0.099 af 12.0" Round Pipe n=0.013 L=152.0' S=0.0047 ' Capacity=2.45 cfs Outflow=0.06 cfs 0.099 af
Reach SP2: Offsite	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 20P: 2800 SF	Peak Elev=144.52' Storage=2,412 cf Inflow=1.04 cfs 0.096 af Primary=0.05 cfs 0.096 af Secondary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.096 af
Pond CB: (new Pond)	Peak Elev=140.39' Inflow=0.01 cfs 0.003 af 12.0" Round Culvert n=0.013 L=22.0' S=0.0100 ' Outflow=0.01 cfs 0.003 af
Total Runoff Area = 2.371 ac Runoff Volume = 0.099 af Average Runoff Depth = 0.50" 64.14% Pervious = 1.521 ac 35.86% Impervious = 0.850 ac	

Summary for Subcatchment 10S: Northeast Area

Runoff = 0.01 cfs @ 12.38 hrs, Volume= 0.003 af, Depth= 0.20"

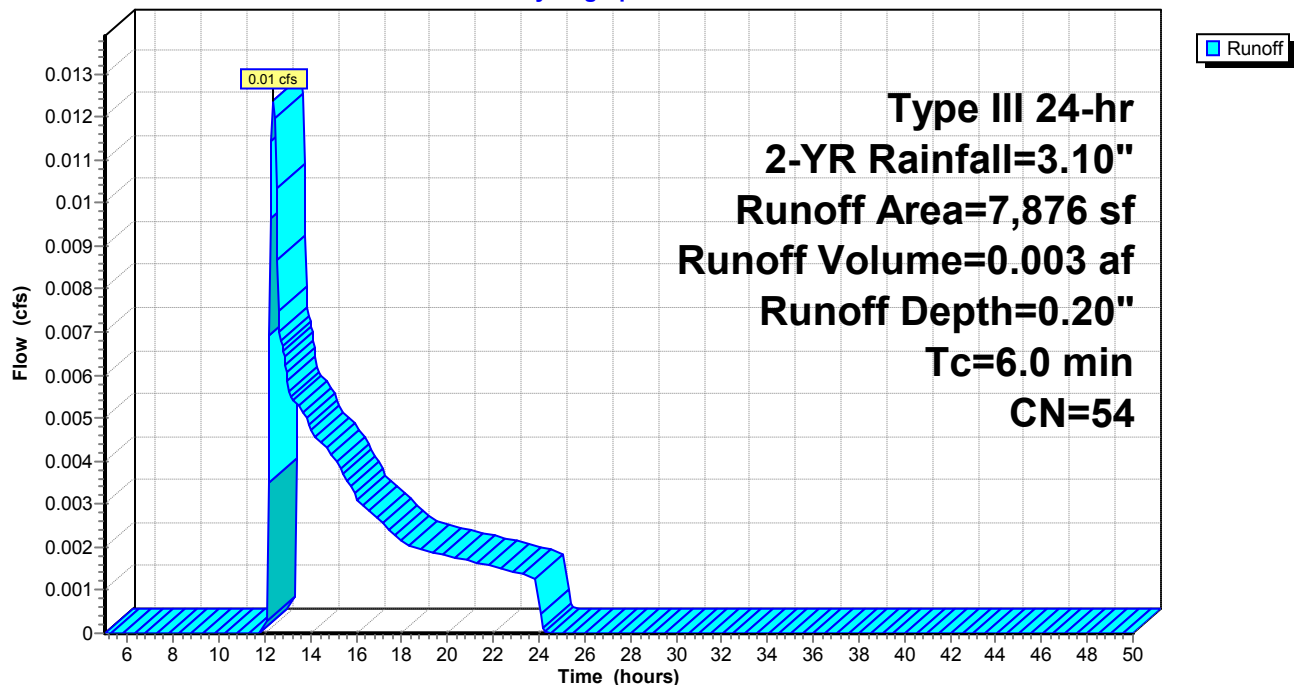
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	1,401	98	Existing Impervious
*	660	98	New Impervious
	5,815	39	>75% Grass cover, Good, HSG A
	7,876	54	Weighted Average
	5,815		73.83% Pervious Area
	2,061		26.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 10S: Northeast Area

Hydrograph



Summary for Subcatchment 12S: (new Subcat)

Runoff = 0.07 cfs @ 12.14 hrs, Volume= 0.008 af, Depth= 0.40"

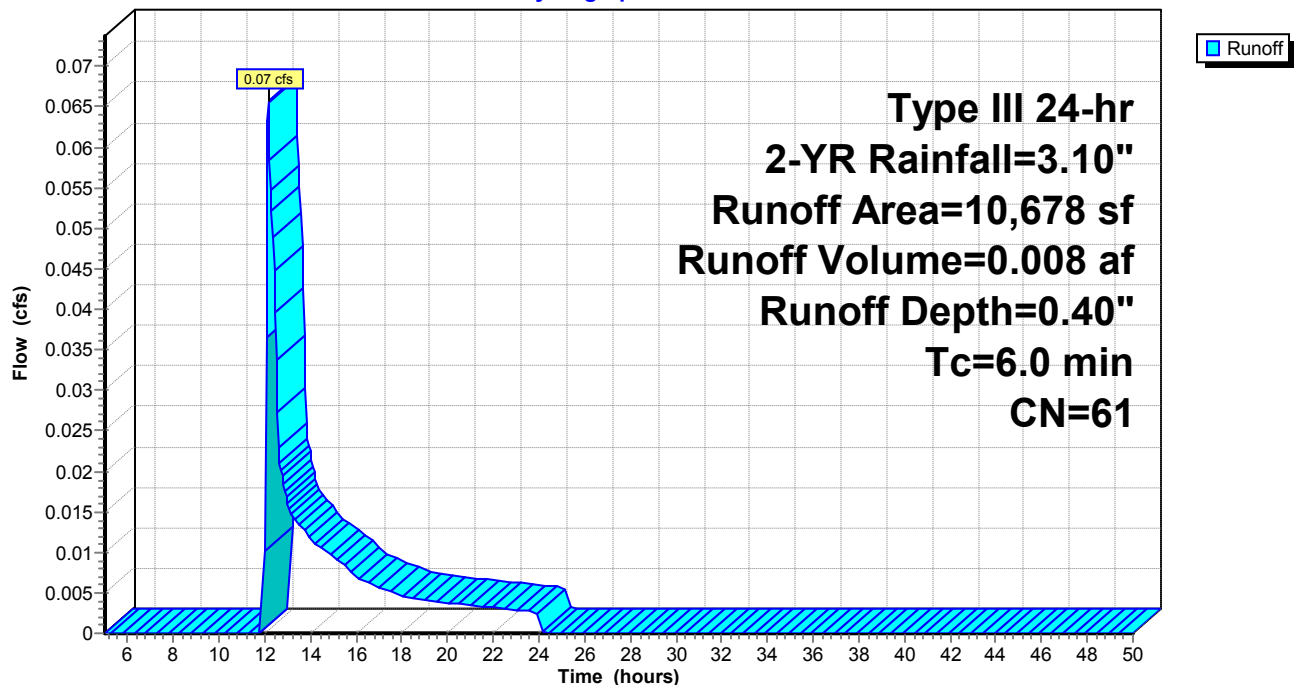
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	368	98	Existing Impervious
*	3,697	98	New Impervious
	6,613	39	>75% Grass cover, Good, HSG A
	10,678	61	Weighted Average
	6,613		61.93% Pervious Area
	4,065		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 12S: (new Subcat)

Hydrograph



Summary for Subcatchment 20S: All Imp & Dev

Runoff = 0.62 cfs @ 12.11 hrs, Volume= 0.053 af, Depth= 0.68"

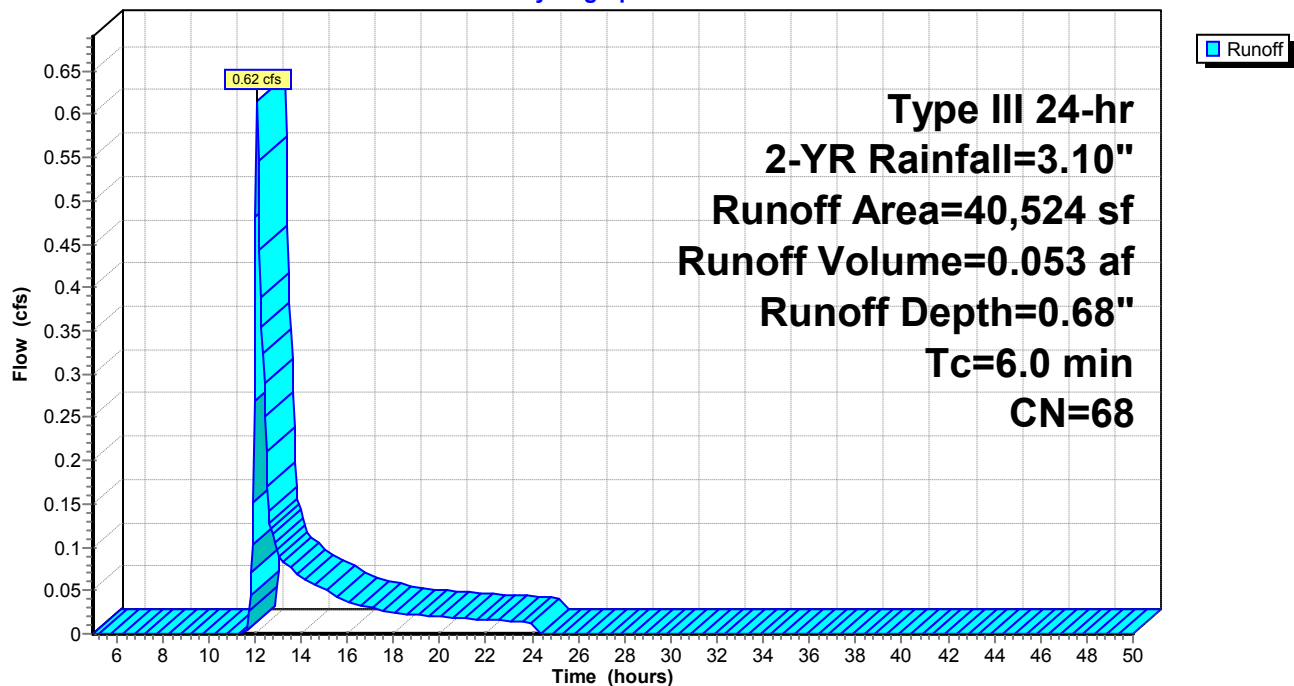
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
11,061	98	Paved parking, HSG A
4,866	98	Unconnected roofs, HSG A
24,597	49	50-75% Grass cover, Fair, HSG A
40,524	68	Weighted Average
24,597		60.70% Pervious Area
15,927		39.30% Impervious Area
4,866		30.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 20S: All Imp & Dev

Hydrograph



Summary for Subcatchment 23S: (new Subcat)

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

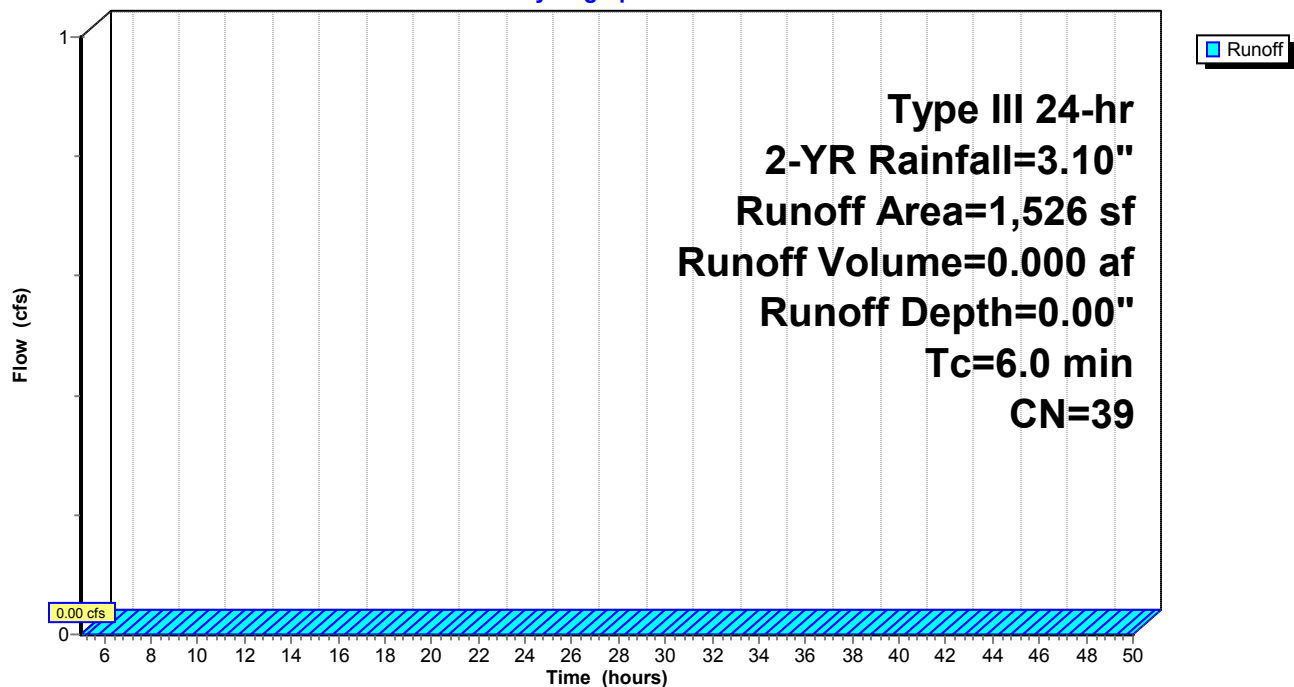
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,526	39	>75% Grass cover, Good, HSG A
1,526		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 23S: (new Subcat)

Hydrograph



Summary for Subcatchment 30S: West Area

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

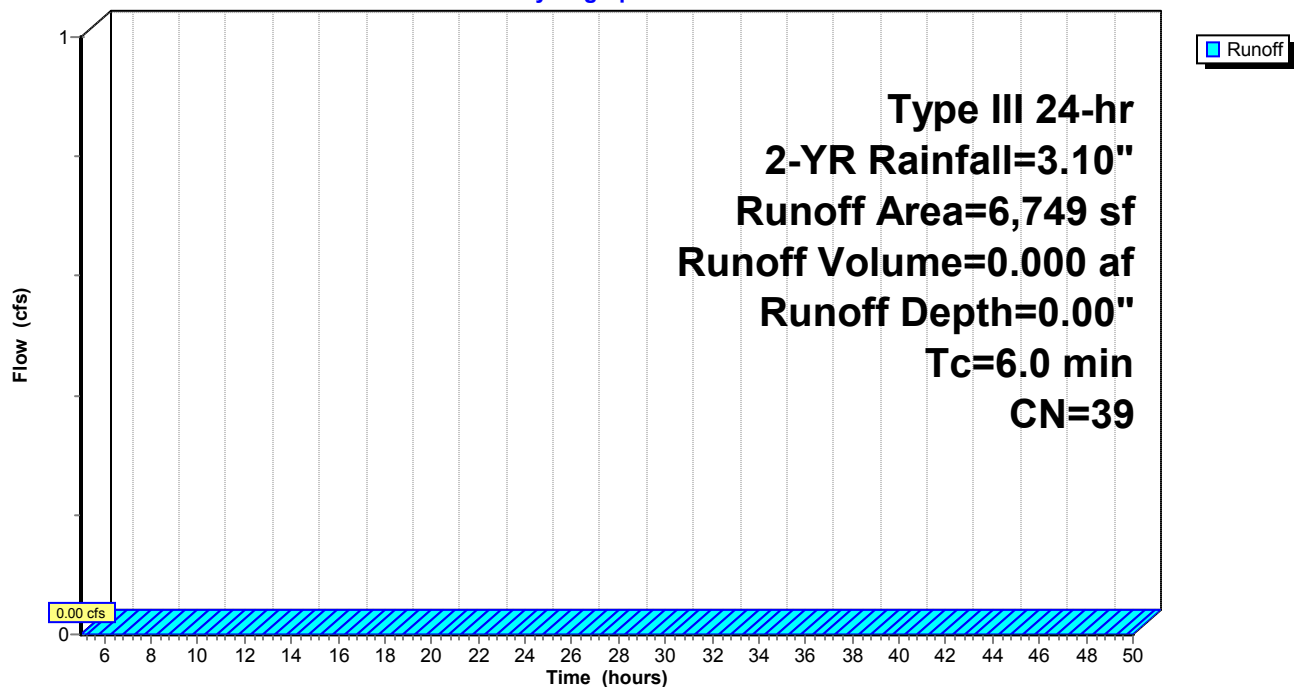
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
6,749	39	>75% Grass cover, Good, HSG A
6,749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 30S: West Area

Hydrograph



Summary for Subcatchment 32S: (new Subcat)

Runoff = 0.36 cfs @ 12.12 hrs, Volume= 0.035 af, Depth= 0.51"

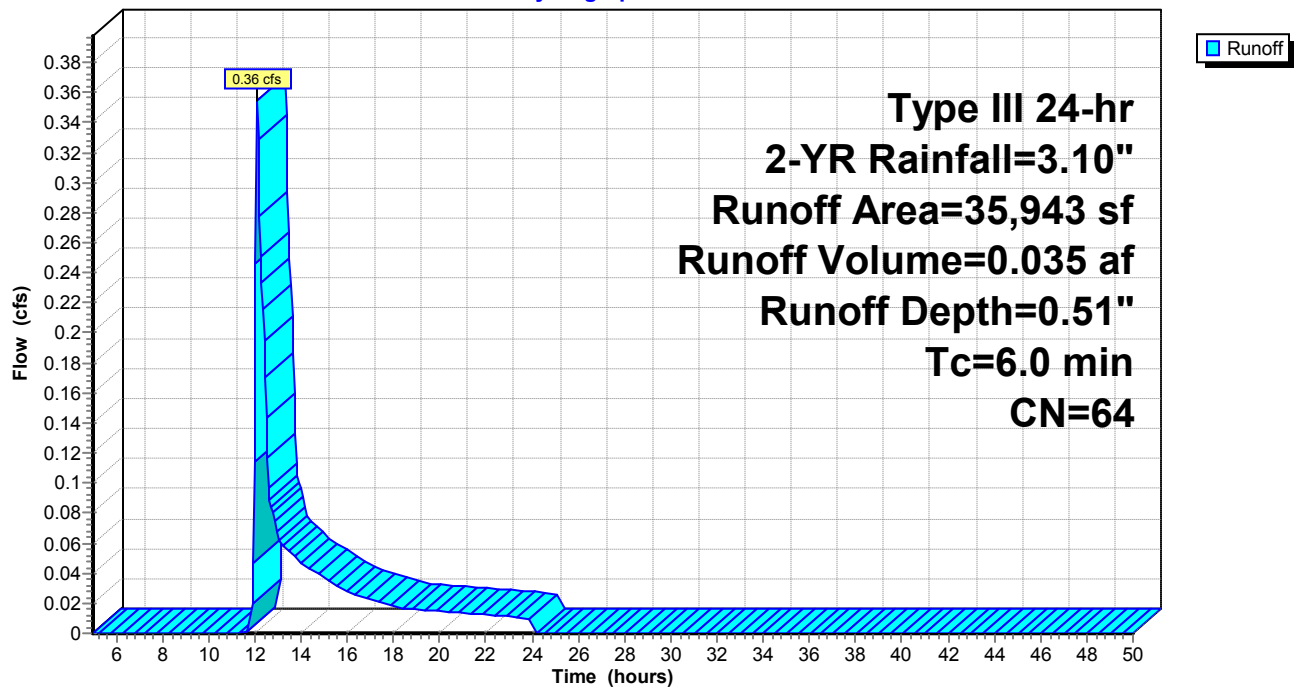
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
*	7,432	98	Pavement
*	7,554	98	Roofs
	20,957	39	>75% Grass cover, Good, HSG A
	35,943	64	Weighted Average
	20,957		58.31% Pervious Area
	14,986		41.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 32S: (new Subcat)

Hydrograph



Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 2.181 ac, 38.98% Impervious, Inflow Depth = 0.55" for 2-YR event
 Inflow = 0.06 cfs @ 12.39 hrs, Volume= 0.099 af
 Outflow = 0.06 cfs @ 12.45 hrs, Volume= 0.099 af, Atten= 0%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.29 fps, Min. Travel Time= 2.0 min

Avg. Velocity= 1.05 fps, Avg. Travel Time= 2.4 min

Peak Storage= 7 cf @ 12.42 hrs

Average Depth at Peak Storage= 0.10'

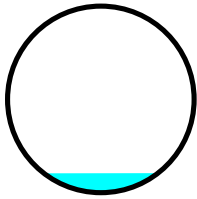
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe

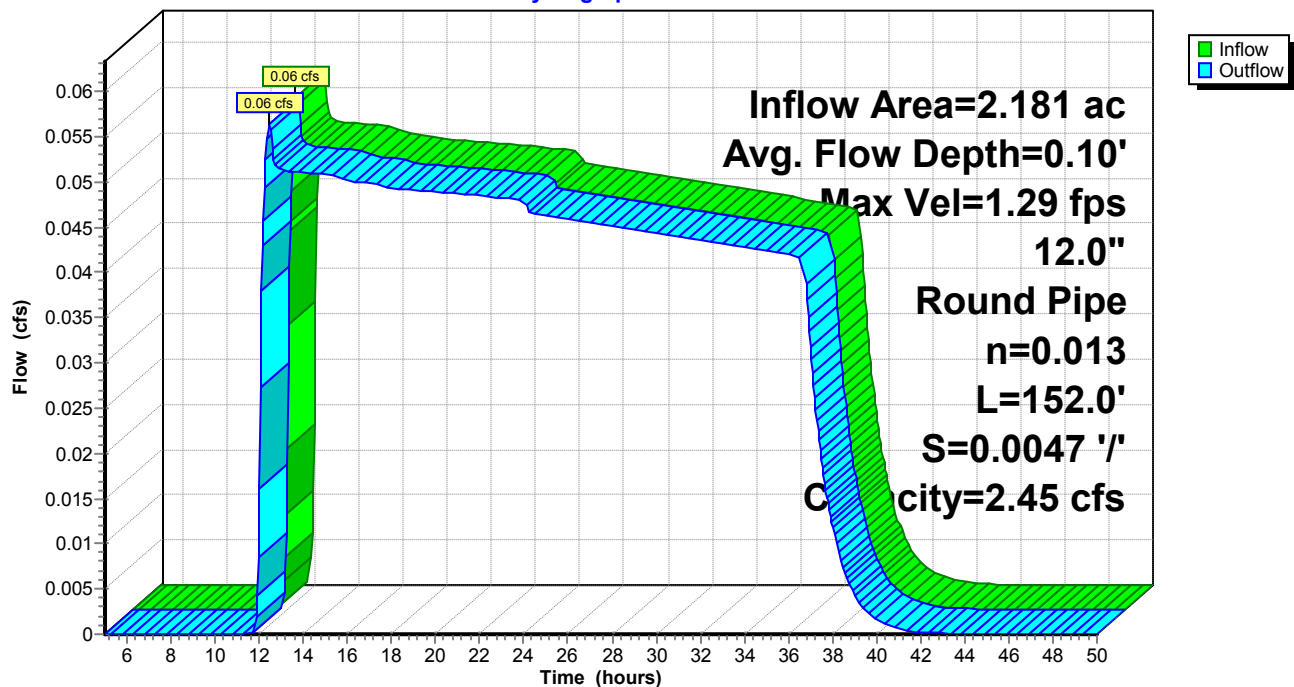
n= 0.013 Clay tile

Length= 152.0' Slope= 0.0047 '/'

Inlet Invert= 139.12', Outlet Invert= 138.40'

**Reach SP1: Site Contribution to Existing Collection System**

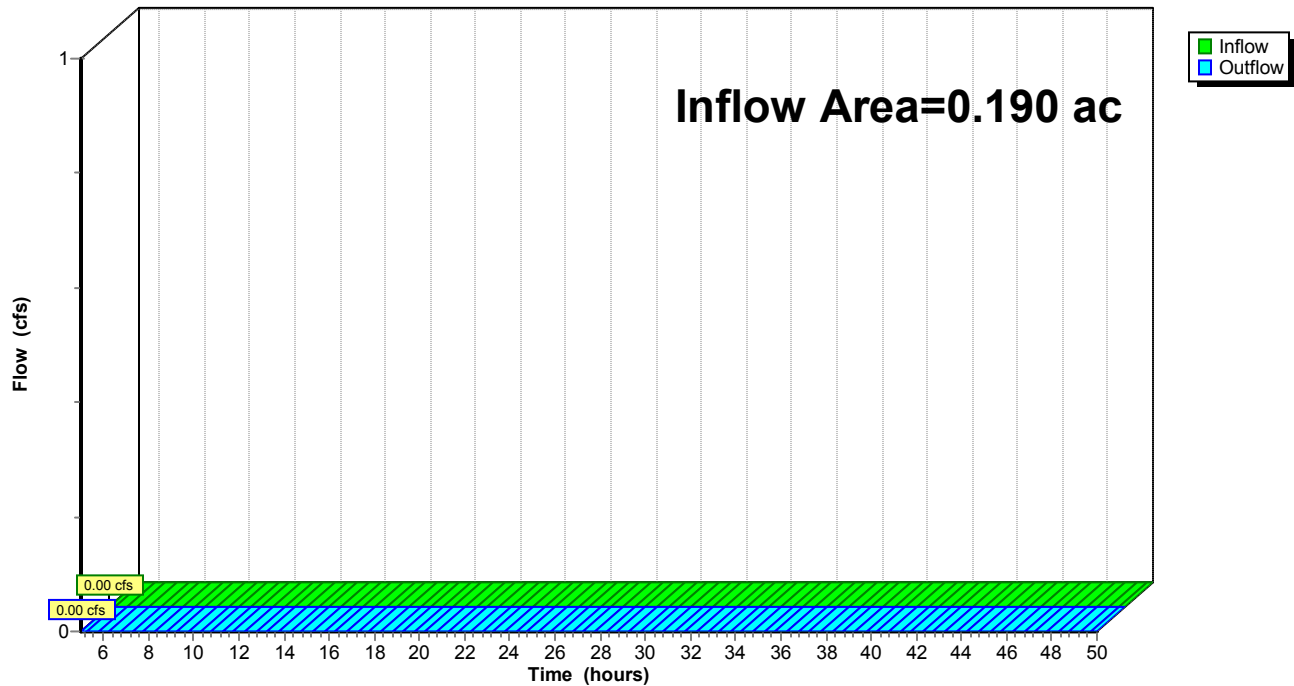
Hydrograph



Summary for Reach SP2: Offsite

Inflow Area = 0.190 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: Offsite**Hydrograph**

Summary for Pond 20P: 2800 SF

Inflow Area = 2.001 ac, 40.14% Impervious, Inflow Depth = 0.58" for 2-YR event
 Inflow = 1.04 cfs @ 12.11 hrs, Volume= 0.096 af
 Outflow = 0.05 cfs @ 17.92 hrs, Volume= 0.096 af, Atten= 95%, Lag= 348.2 min
 Primary = 0.05 cfs @ 17.92 hrs, Volume= 0.096 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 144.52' @ 17.92 hrs Surf.Area= 3,452 sf Storage= 2,412 cf

Plug-Flow detention time= 579.8 min calculated for 0.096 af (100% of inflow)
 Center-of-Mass det. time= 580.3 min (1,475.4 - 895.1)

Volume	Invert	Avail.Storage	Storage Description
#1	143.75'	25,953 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.75	2,843	0	0
144.00	3,016	732	732
145.00	3,855	3,436	4,168
146.00	4,601	4,228	8,396
147.00	5,404	5,003	13,398
148.00	6,263	5,834	19,232
149.00	7,179	6,721	25,953

Device	Routing	Invert	Outlet Devices
#1	Primary	140.75'	12.0" Round Culvert L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.75' / 138.86' S= 0.0350 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.25'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	145.12'	7.2" W x 6.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	146.45'	18" Nyloplast 18" Domed Structure Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.37 0.40 0.45 0.50 Disch. (cfs) 0.000 0.200 0.500 0.800 1.400 1.900 2.500 3.100 3.500 3.600 3.800 4.000
#5	Secondary	147.50'	6.5' 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=0.05 cfs @ 17.92 hrs HW=144.52' (Free Discharge)

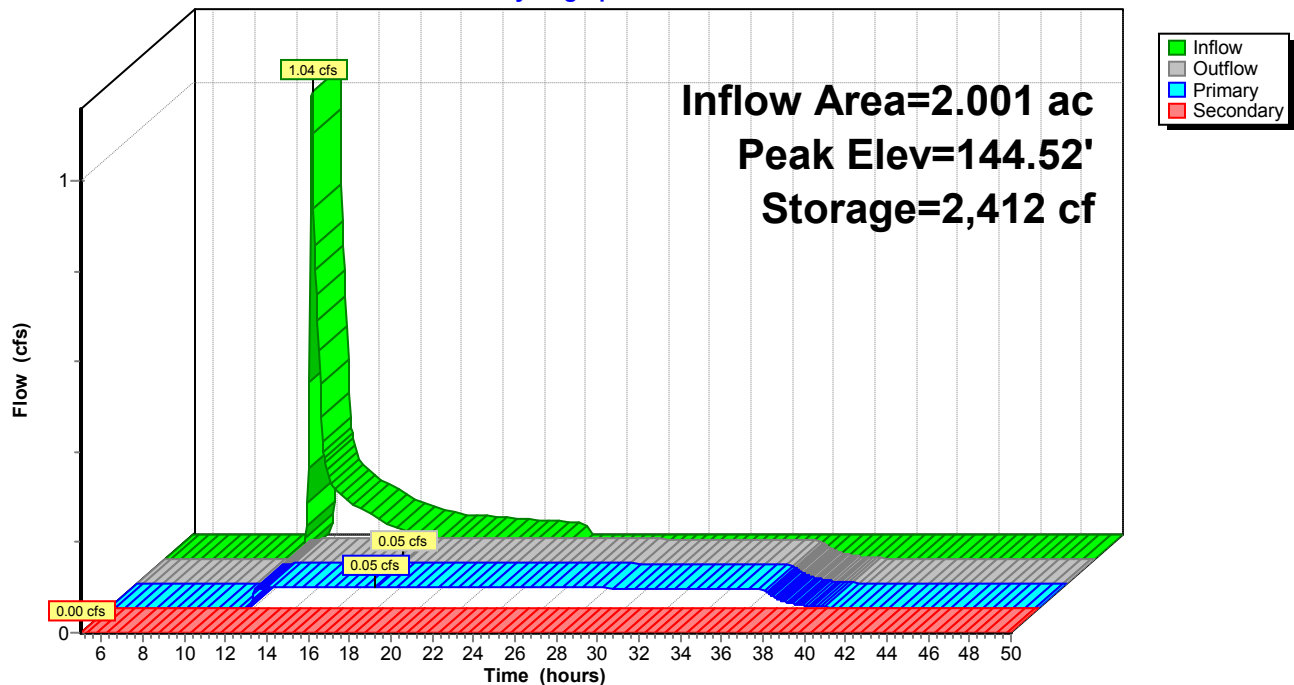
- 1=Culvert (Passes 0.05 cfs of 6.84 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 8.65 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=18" Nyloplast 18" Domed Structure (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=143.75' (Free Discharge)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 20P: 2800 SF

Hydrograph



Summary for Pond CB: (new Pond)

Inflow Area = 0.181 ac, 26.17% Impervious, Inflow Depth = 0.20" for 2-YR event
 Inflow = 0.01 cfs @ 12.38 hrs, Volume= 0.003 af
 Outflow = 0.01 cfs @ 12.38 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.01 cfs @ 12.38 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.39' @ 12.38 hrs

Flood Elev= 146.58'

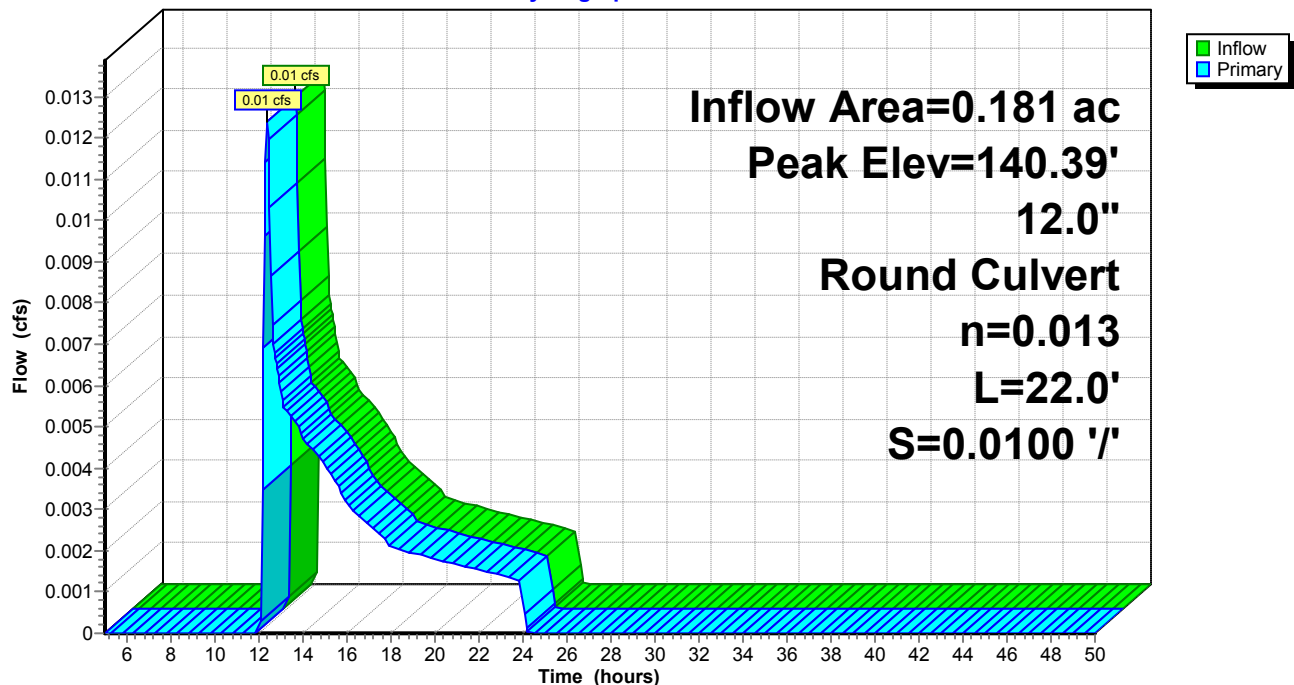
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 12.38 hrs HW=140.39' (Free Discharge)

↑1=Culvert (Barrel Controls 0.01 cfs @ 0.98 fps)

Pond CB: (new Pond)

Hydrograph



Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 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 10S: Northeast Area	Runoff Area=7,876 sf 26.17% Impervious Runoff Depth=0.73" Tc=6.0 min CN=54 Runoff=0.11 cfs 0.011 af
Subcatchment 12S: (new Subcat)	Runoff Area=10,678 sf 38.07% Impervious Runoff Depth=1.14" Tc=6.0 min CN=61 Runoff=0.28 cfs 0.023 af
Subcatchment 20S: All Imp & Dev	Runoff Area=40,524 sf 39.30% Impervious Runoff Depth=1.60" Tc=6.0 min CN=68 Runoff=1.65 cfs 0.124 af
Subcatchment 23S: (new Subcat)	Runoff Area=1,526 sf 0.00% Impervious Runoff Depth=0.13" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 30S: West Area	Runoff Area=6,749 sf 0.00% Impervious Runoff Depth=0.13" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.002 af
Subcatchment 32S: (new Subcat)	Runoff Area=35,943 sf 41.69% Impervious Runoff Depth=1.33" Tc=6.0 min CN=64 Runoff=1.17 cfs 0.091 af
Reach SP1: Site Contribution to	Avg. Flow Depth=0.22' Max Vel=2.03 fps Inflow=0.26 cfs 0.242 af 12.0" Round Pipe n=0.013 L=152.0' S=0.0047 ' Capacity=2.45 cfs Outflow=0.26 cfs 0.242 af
Reach SP2: Offsite	Inflow=0.00 cfs 0.002 af Outflow=0.00 cfs 0.002 af
Pond 20P: 2800 SF	Peak Elev=145.33' Storage=5,497 cf Inflow=3.10 cfs 0.239 af Primary=0.24 cfs 0.231 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.231 af
Pond CB: (new Pond)	Peak Elev=140.51' Inflow=0.11 cfs 0.011 af 12.0" Round Culvert n=0.013 L=22.0' S=0.0100 ' Outflow=0.11 cfs 0.011 af
Total Runoff Area = 2.371 ac Runoff Volume = 0.252 af Average Runoff Depth = 1.27" 64.14% Pervious = 1.521 ac 35.86% Impervious = 0.850 ac	

Summary for Subcatchment 10S: Northeast Area

Runoff = 0.11 cfs @ 12.12 hrs, Volume= 0.011 af, Depth= 0.73"

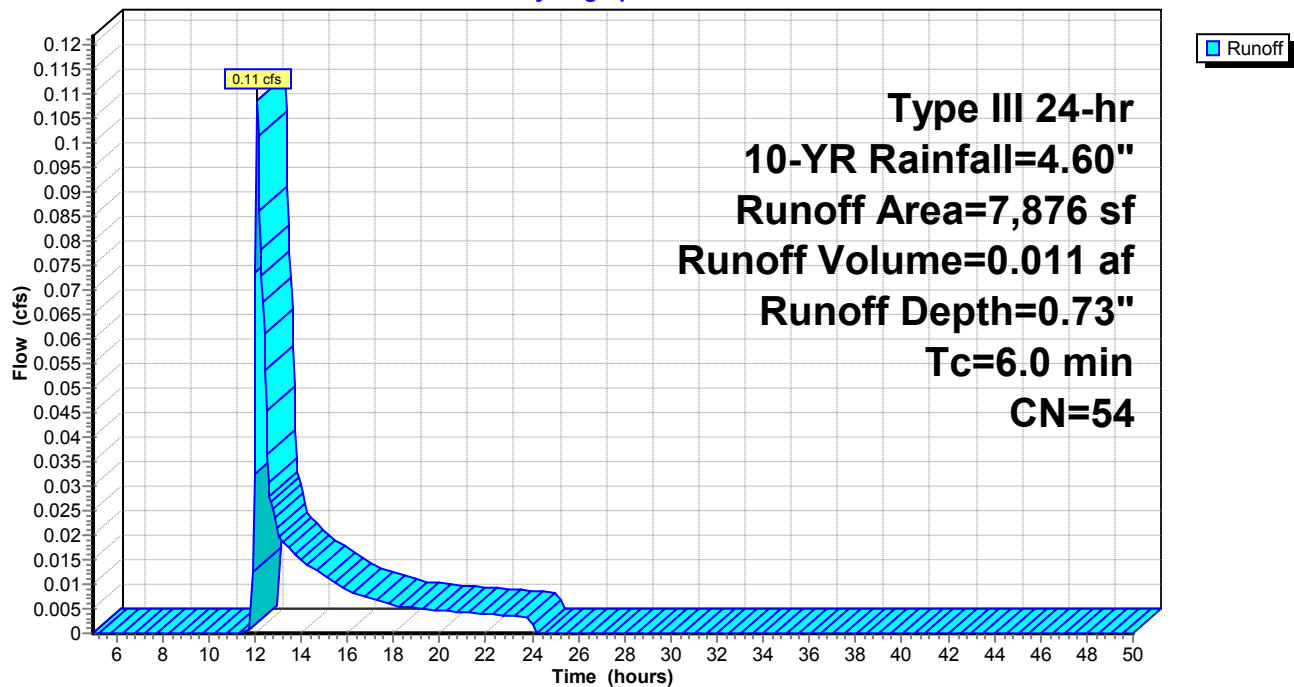
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	1,401	98	Existing Impervious
*	660	98	New Impervious
	5,815	39	>75% Grass cover, Good, HSG A
	7,876	54	Weighted Average
	5,815		73.83% Pervious Area
	2,061		26.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 10S: Northeast Area

Hydrograph



Summary for Subcatchment 12S: (new Subcat)

Runoff = 0.28 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 1.14"

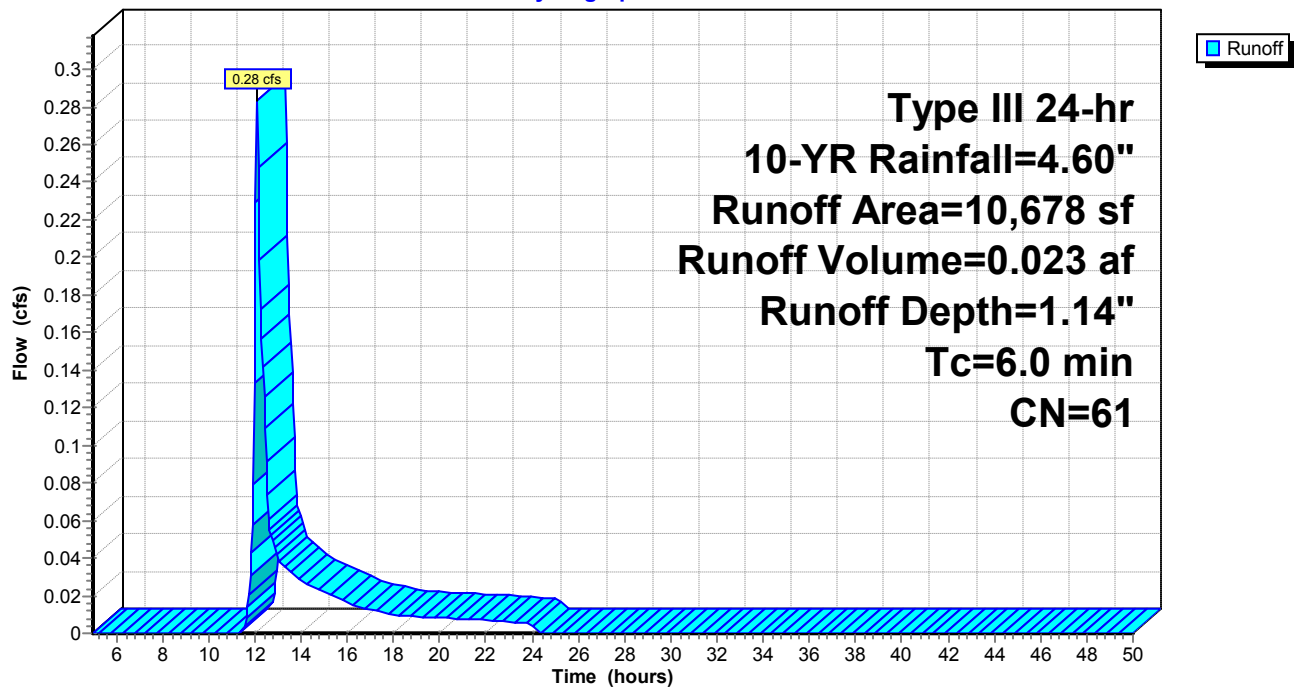
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	368	98	Existing Impervious
*	3,697	98	New Impervious
	6,613	39	>75% Grass cover, Good, HSG A
	10,678	61	Weighted Average
	6,613		61.93% Pervious Area
	4,065		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 12S: (new Subcat)

Hydrograph



Summary for Subcatchment 20S: All Imp & Dev

Runoff = 1.65 cfs @ 12.10 hrs, Volume= 0.124 af, Depth= 1.60"

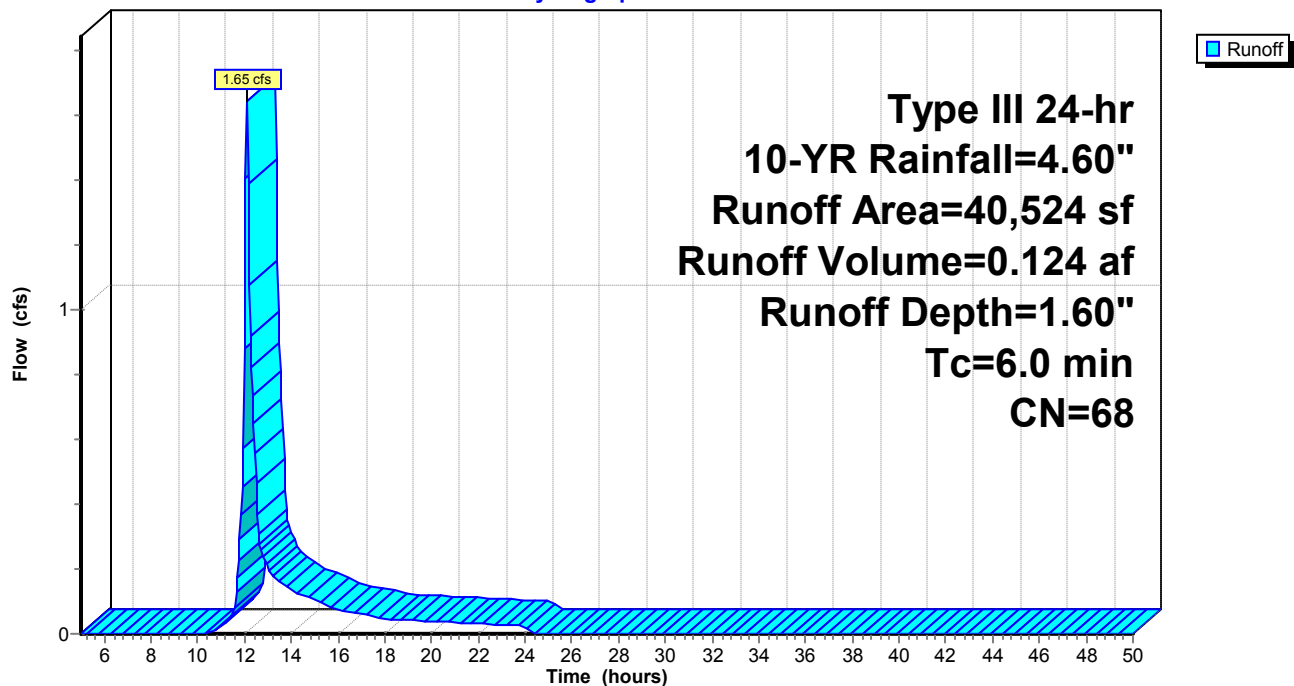
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
11,061	98	Paved parking, HSG A
4,866	98	Unconnected roofs, HSG A
24,597	49	50-75% Grass cover, Fair, HSG A
40,524	68	Weighted Average
24,597		60.70% Pervious Area
15,927		39.30% Impervious Area
4,866		30.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 20S: All Imp & Dev

Hydrograph



Summary for Subcatchment 23S: (new Subcat)

Runoff = 0.00 cfs @ 14.58 hrs, Volume= 0.000 af, Depth= 0.13"

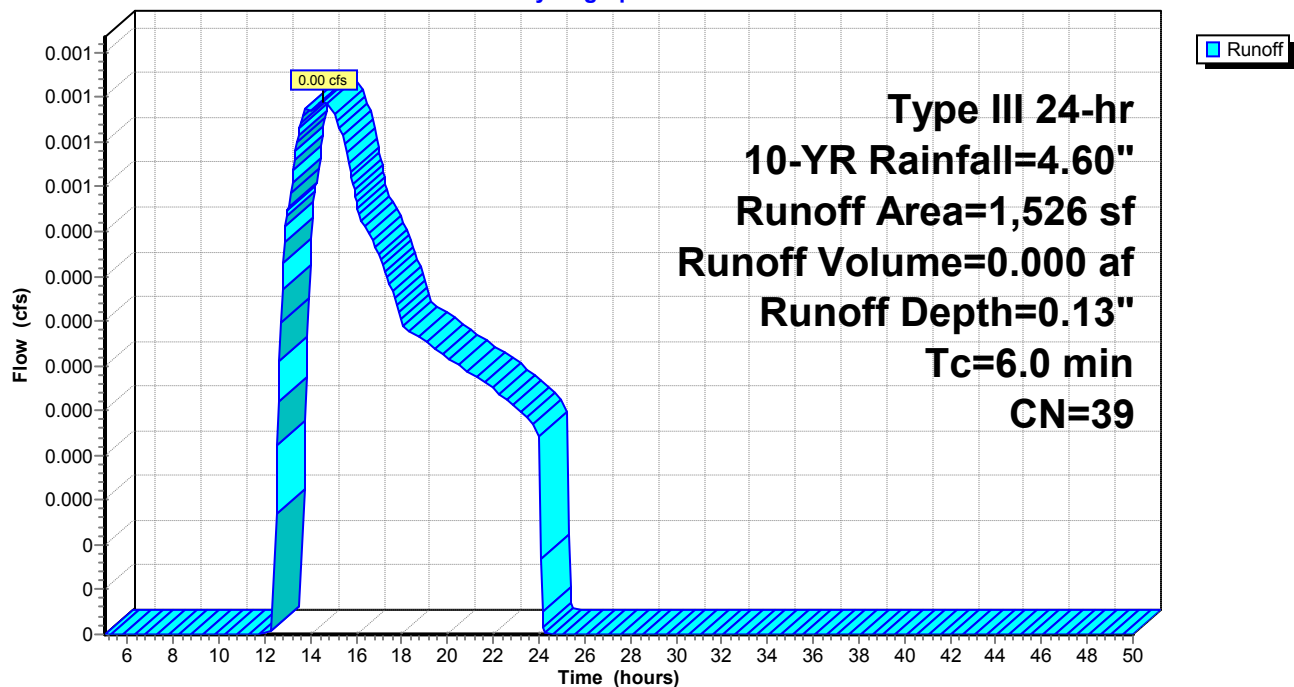
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,526	39	>75% Grass cover, Good, HSG A
1,526		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 23S: (new Subcat)

Hydrograph



Summary for Subcatchment 30S: West Area

Runoff = 0.00 cfs @ 14.58 hrs, Volume= 0.002 af, Depth= 0.13"

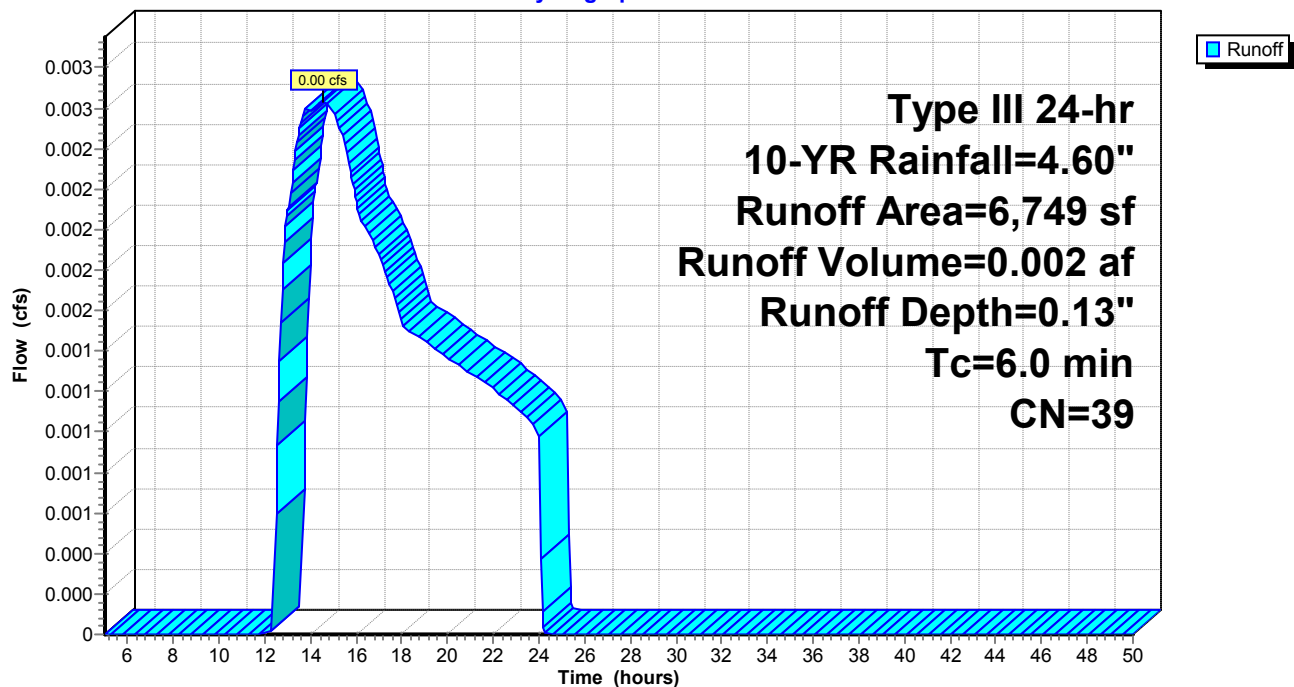
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
6,749	39	>75% Grass cover, Good, HSG A
6,749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 30S: West Area

Hydrograph



Summary for Subcatchment 32S: (new Subcat)

Runoff = 1.17 cfs @ 12.10 hrs, Volume= 0.091 af, Depth= 1.33"

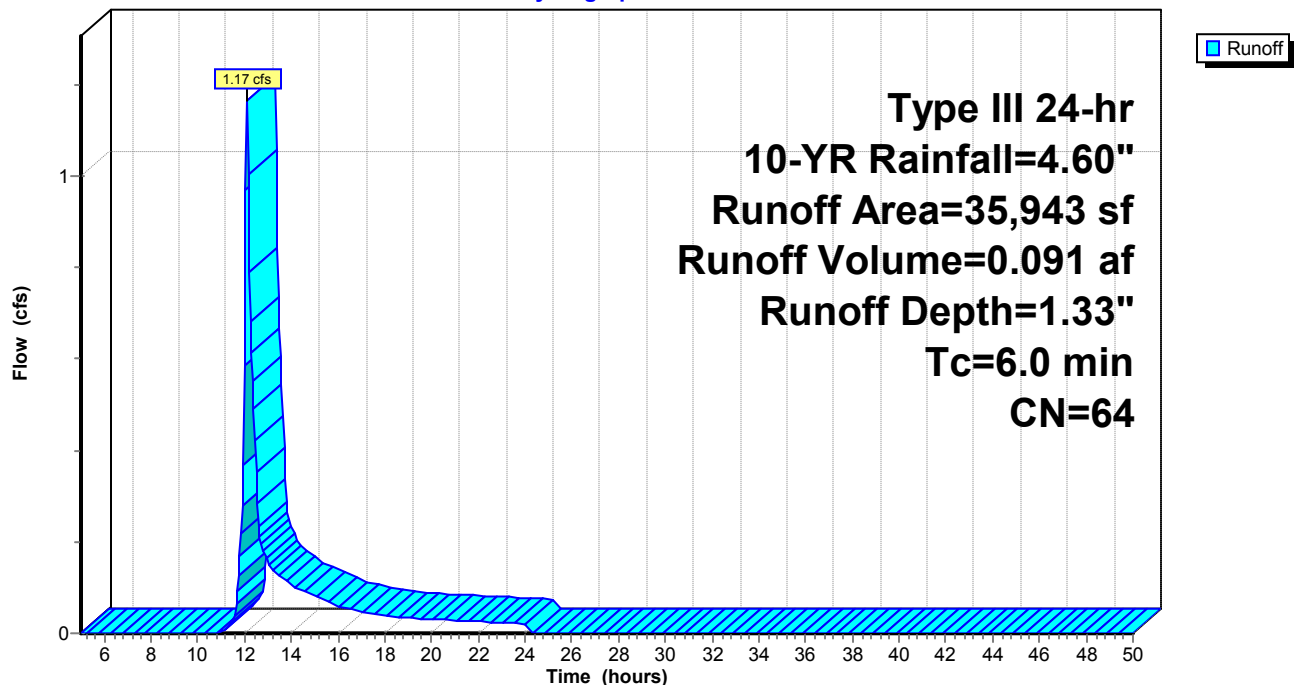
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
*	7,432	98	Pavement
*	7,554	98	Roofs
	20,957	39	>75% Grass cover, Good, HSG A
	35,943	64	Weighted Average
	20,957		58.31% Pervious Area
	14,986		41.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 32S: (new Subcat)

Hydrograph



Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 2.181 ac, 38.98% Impervious, Inflow Depth > 1.33" for 10-YR event
 Inflow = 0.26 cfs @ 14.27 hrs, Volume= 0.242 af
 Outflow = 0.26 cfs @ 14.30 hrs, Volume= 0.242 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.03 fps, Min. Travel Time= 1.3 min

Avg. Velocity= 1.34 fps, Avg. Travel Time= 1.9 min

Peak Storage= 19 cf @ 14.28 hrs

Average Depth at Peak Storage= 0.22'

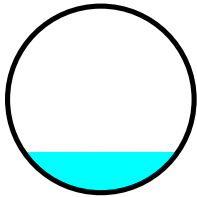
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe

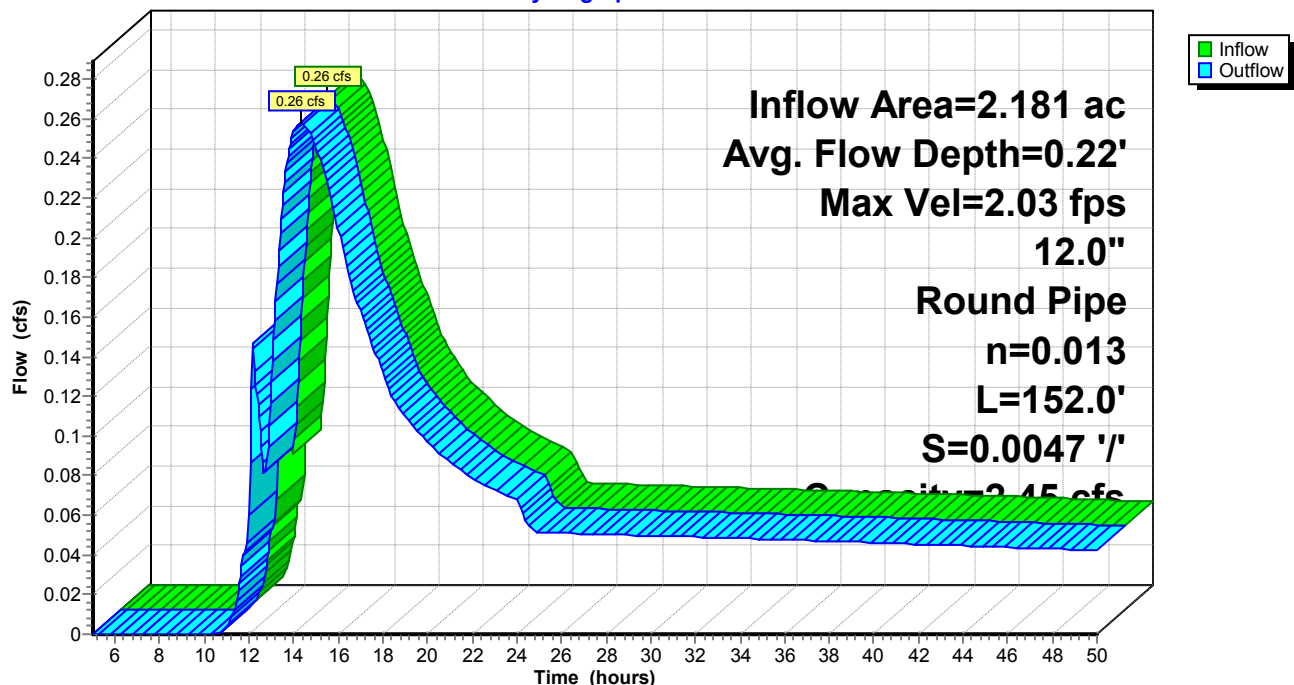
n= 0.013 Clay tile

Length= 152.0' Slope= 0.0047 '/'

Inlet Invert= 139.12', Outlet Invert= 138.40'

**Reach SP1: Site Contribution to Existing Collection System**

Hydrograph



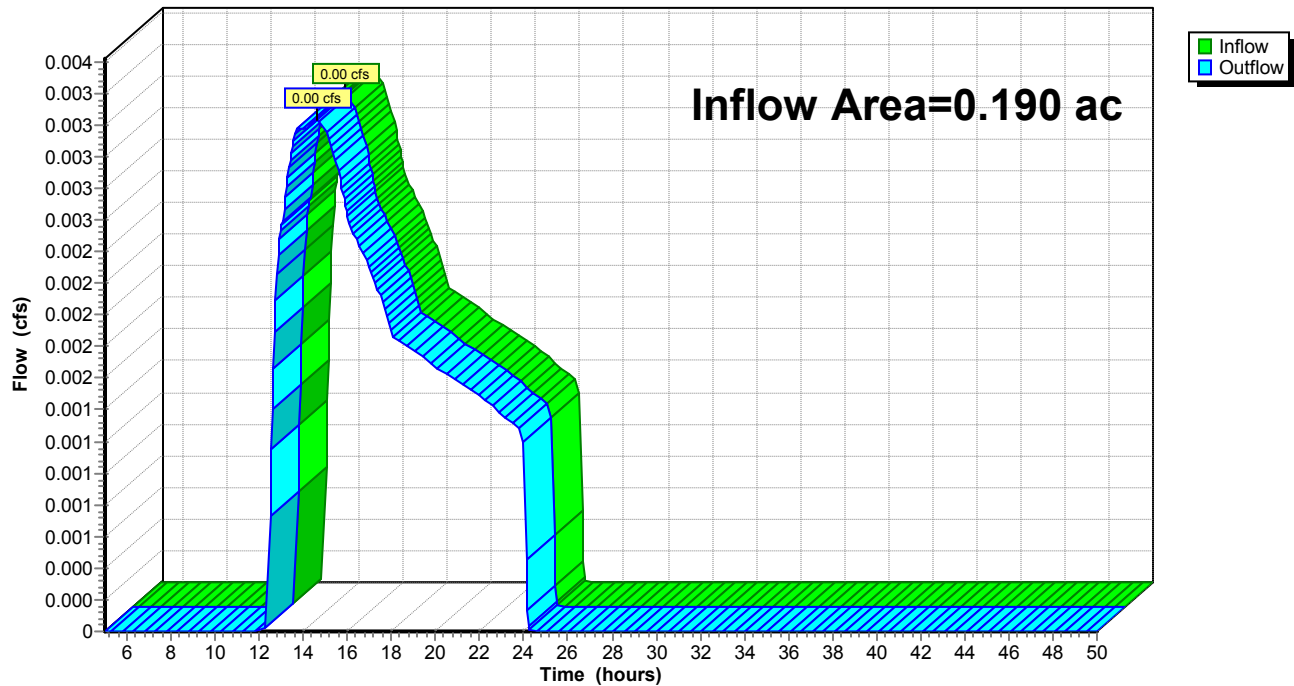
Summary for Reach SP2: Offsite

Inflow Area = 0.190 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-YR event
Inflow = 0.00 cfs @ 14.58 hrs, Volume= 0.002 af
Outflow = 0.00 cfs @ 14.58 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: Offsite

Hydrograph



Summary for Pond 20P: 2800 SF

Inflow Area = 2.001 ac, 40.14% Impervious, Inflow Depth = 1.43" for 10-YR event
 Inflow = 3.10 cfs @ 12.10 hrs, Volume= 0.239 af
 Outflow = 0.24 cfs @ 14.31 hrs, Volume= 0.231 af, Atten= 92%, Lag= 132.3 min
 Primary = 0.24 cfs @ 14.31 hrs, Volume= 0.231 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 145.33' @ 14.31 hrs Surf.Area= 4,104 sf Storage= 5,497 cf

Plug-Flow detention time= 687.8 min calculated for 0.231 af (97% of inflow)
 Center-of-Mass det. time= 669.8 min (1,534.0 - 864.1)

Volume	Invert	Avail.Storage	Storage Description
#1	143.75'	25,953 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.75	2,843	0	0
144.00	3,016	732	732
145.00	3,855	3,436	4,168
146.00	4,601	4,228	8,396
147.00	5,404	5,003	13,398
148.00	6,263	5,834	19,232
149.00	7,179	6,721	25,953

Device	Routing	Invert	Outlet Devices
#1	Primary	140.75'	12.0" Round Culvert L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.75' / 138.86' S= 0.0350 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.25'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	145.12'	7.2" W x 6.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	146.45'	18" Nyloplast 18" Domed Structure Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.37 0.40 0.45 0.50 Disch. (cfs) 0.000 0.200 0.500 0.800 1.400 1.900 2.500 3.100 3.500 3.600 3.800 4.000
#5	Secondary	147.50'	6.5' 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=0.24 cfs @ 14.31 hrs HW=145.33' (Free Discharge)

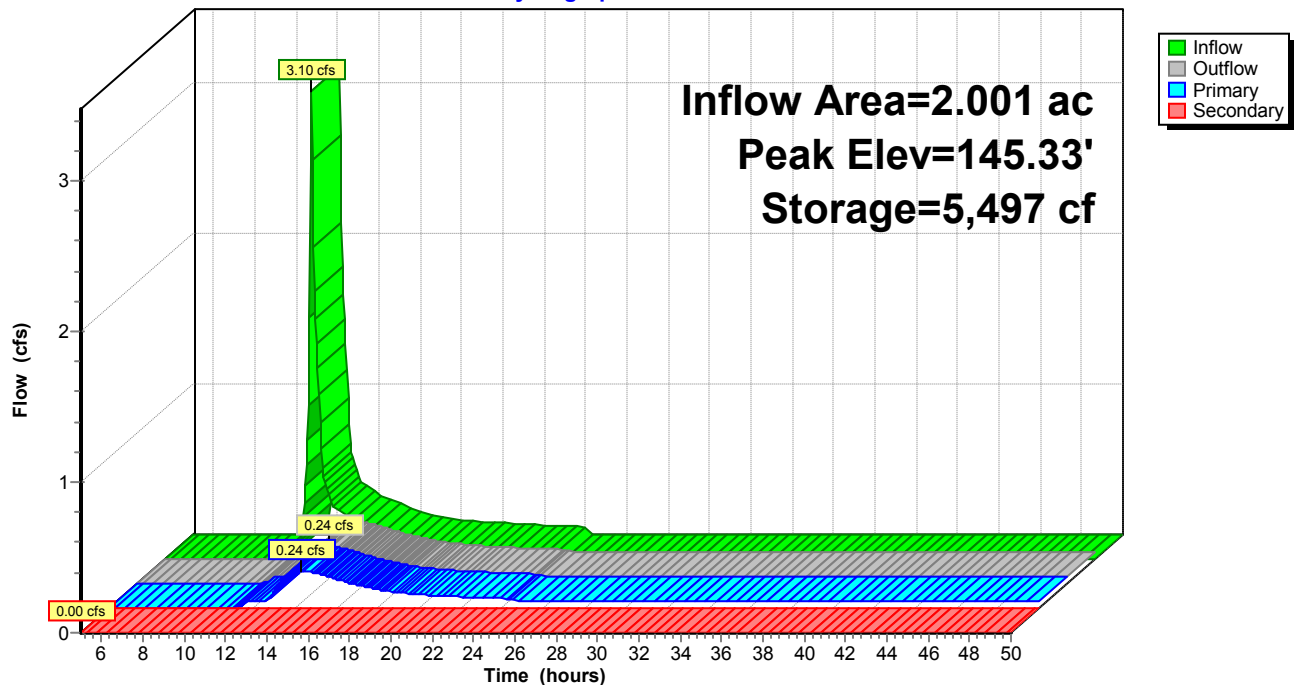
- 1=Culvert (Passes 0.24 cfs of 7.64 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 9.68 fps)
- 3=Orifice/Grate (Orifice Controls 0.19 cfs @ 1.49 fps)
- 4=18" Nyloplast 18" Domed Structure (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=143.75' (Free Discharge)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 20P: 2800 SF

Hydrograph



Summary for Pond CB: (new Pond)

Inflow Area = 0.181 ac, 26.17% Impervious, Inflow Depth = 0.73" for 10-YR event
 Inflow = 0.11 cfs @ 12.12 hrs, Volume= 0.011 af
 Outflow = 0.11 cfs @ 12.12 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.11 cfs @ 12.12 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.51' @ 12.12 hrs

Flood Elev= 146.58'

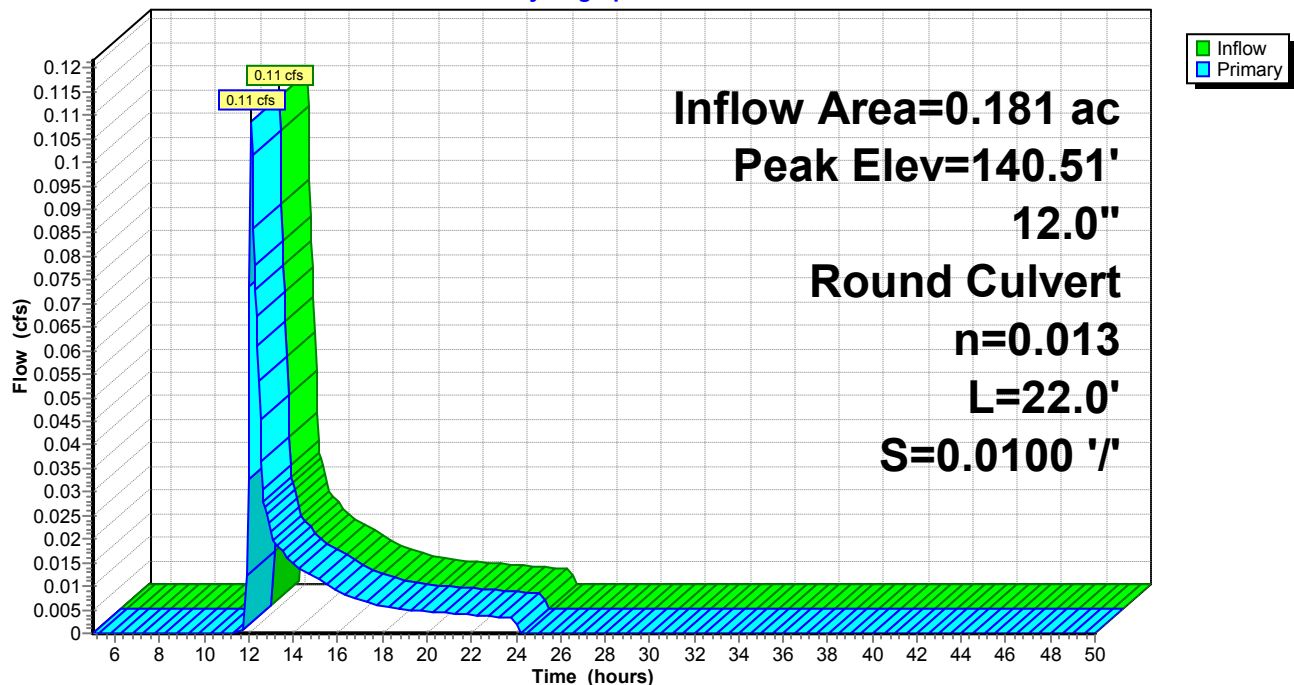
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.10 cfs @ 12.12 hrs HW=140.50' (Free Discharge)

↑1=Culvert (Barrel Controls 0.10 cfs @ 1.86 fps)

Pond CB: (new Pond)

Hydrograph



Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 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 10S: Northeast Area	Runoff Area=7,876 sf 26.17% Impervious Runoff Depth=1.33" Tc=6.0 min CN=54 Runoff=0.24 cfs 0.020 af
Subcatchment 12S: (new Subcat)	Runoff Area=10,678 sf 38.07% Impervious Runoff Depth=1.87" Tc=6.0 min CN=61 Runoff=0.50 cfs 0.038 af
Subcatchment 20S: All Imp & Dev	Runoff Area=40,524 sf 39.30% Impervious Runoff Depth=2.47" Tc=6.0 min CN=68 Runoff=2.61 cfs 0.191 af
Subcatchment 23S: (new Subcat)	Runoff Area=1,526 sf 0.00% Impervious Runoff Depth=0.39" Tc=6.0 min CN=39 Runoff=0.01 cfs 0.001 af
Subcatchment 30S: West Area	Runoff Area=6,749 sf 0.00% Impervious Runoff Depth=0.39" Tc=6.0 min CN=39 Runoff=0.02 cfs 0.005 af
Subcatchment 32S: (new Subcat)	Runoff Area=35,943 sf 41.69% Impervious Runoff Depth=2.12" Tc=6.0 min CN=64 Runoff=1.95 cfs 0.146 af
Reach SP1: Site Contribution to	Avg. Flow Depth=0.42' Max Vel=2.88 fps Inflow=0.90 cfs 0.386 af 12.0" Round Pipe n=0.013 L=152.0' S=0.0047 ' Capacity=2.45 cfs Outflow=0.90 cfs 0.386 af
Reach SP2: Offsite	Inflow=0.03 cfs 0.006 af Outflow=0.03 cfs 0.006 af
Pond 20P: 2800 SF	Peak Elev=145.68' Storage=6,941 cf Inflow=5.06 cfs 0.376 af Primary=0.85 cfs 0.366 af Secondary=0.00 cfs 0.000 af Outflow=0.85 cfs 0.366 af
Pond CB: (new Pond)	Peak Elev=140.59' Inflow=0.24 cfs 0.020 af 12.0" Round Culvert n=0.013 L=22.0' S=0.0100 ' Outflow=0.24 cfs 0.020 af
Total Runoff Area = 2.371 ac Runoff Volume = 0.402 af Average Runoff Depth = 2.03" 64.14% Pervious = 1.521 ac 35.86% Impervious = 0.850 ac	

Summary for Subcatchment 10S: Northeast Area

Runoff = 0.24 cfs @ 12.11 hrs, Volume= 0.020 af, Depth= 1.33"

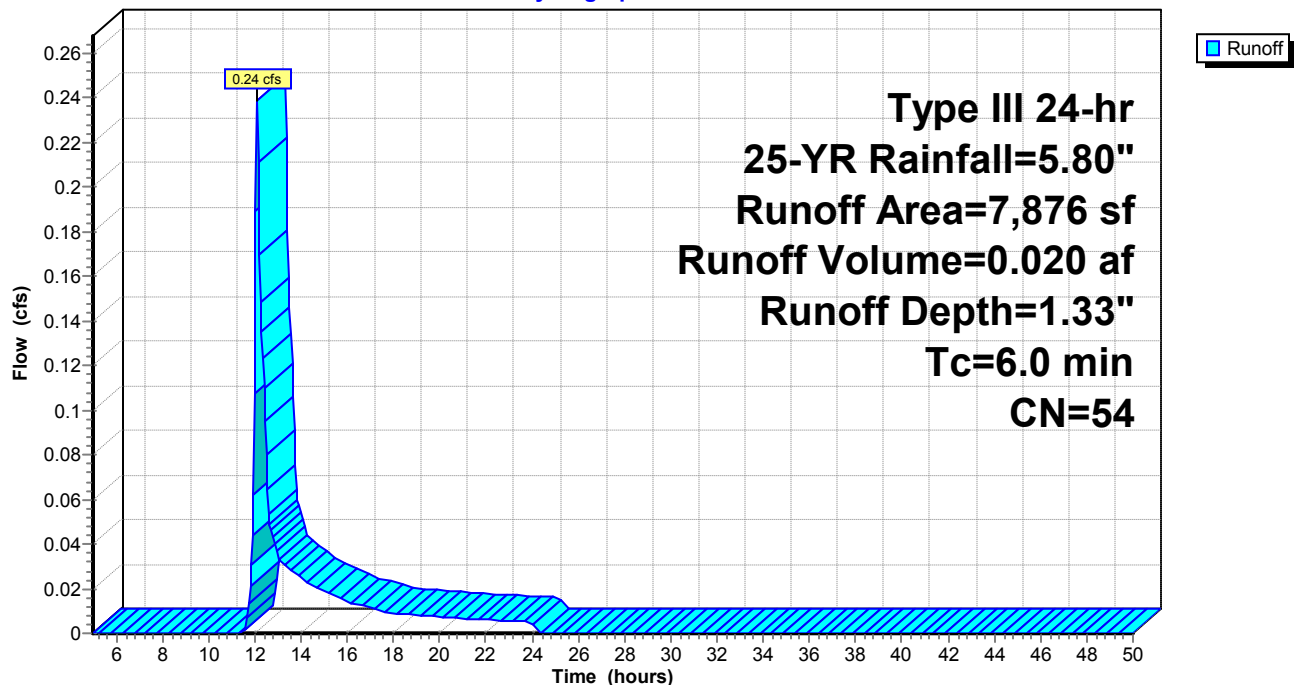
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,401	98	Existing Impervious
*	660	98	New Impervious
	5,815	39	>75% Grass cover, Good, HSG A
	7,876	54	Weighted Average
	5,815		73.83% Pervious Area
	2,061		26.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 10S: Northeast Area

Hydrograph



Summary for Subcatchment 12S: (new Subcat)

Runoff = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Depth= 1.87"

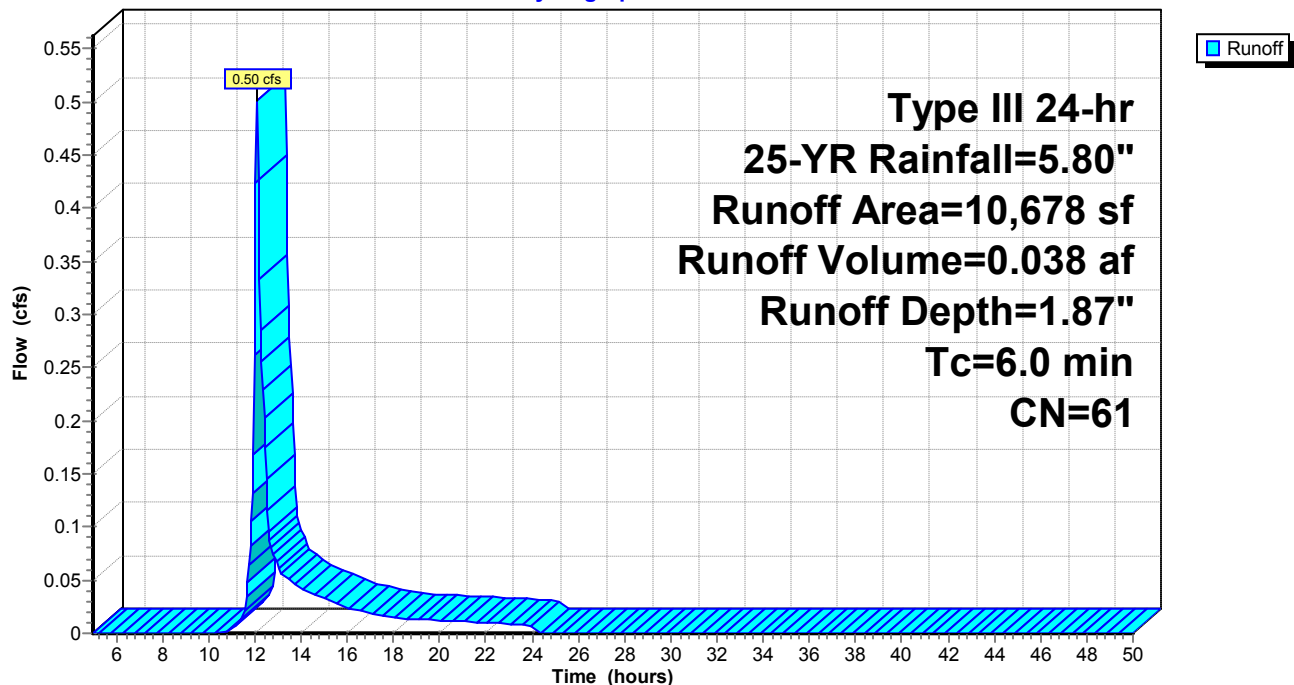
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	368	98	Existing Impervious
*	3,697	98	New Impervious
	6,613	39	>75% Grass cover, Good, HSG A
	10,678	61	Weighted Average
	6,613		61.93% Pervious Area
	4,065		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 12S: (new Subcat)

Hydrograph



Summary for Subcatchment 20S: All Imp & Dev

Runoff = 2.61 cfs @ 12.10 hrs, Volume= 0.191 af, Depth= 2.47"

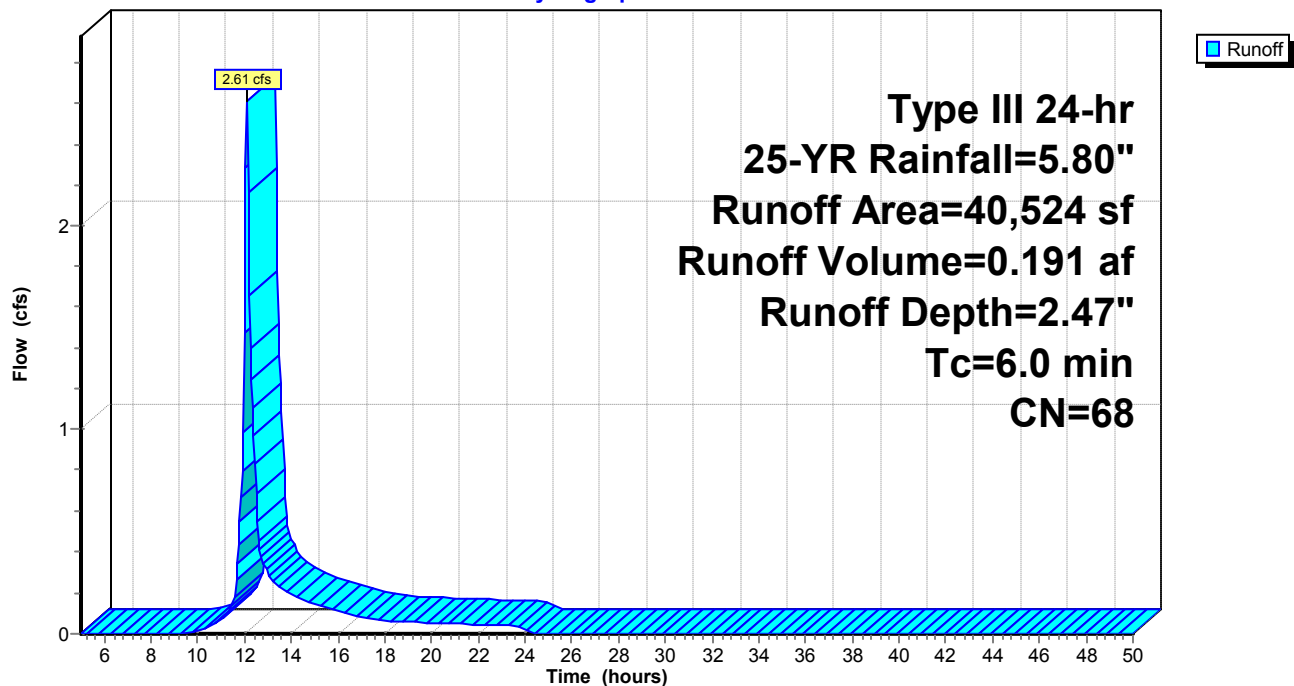
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
11,061	98	Paved parking, HSG A
4,866	98	Unconnected roofs, HSG A
24,597	49	50-75% Grass cover, Fair, HSG A
40,524	68	Weighted Average
24,597		60.70% Pervious Area
15,927		39.30% Impervious Area
4,866		30.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 20S: All Imp & Dev

Hydrograph



Summary for Subcatchment 23S: (new Subcat)

Runoff = 0.01 cfs @ 12.37 hrs, Volume= 0.001 af, Depth= 0.39"

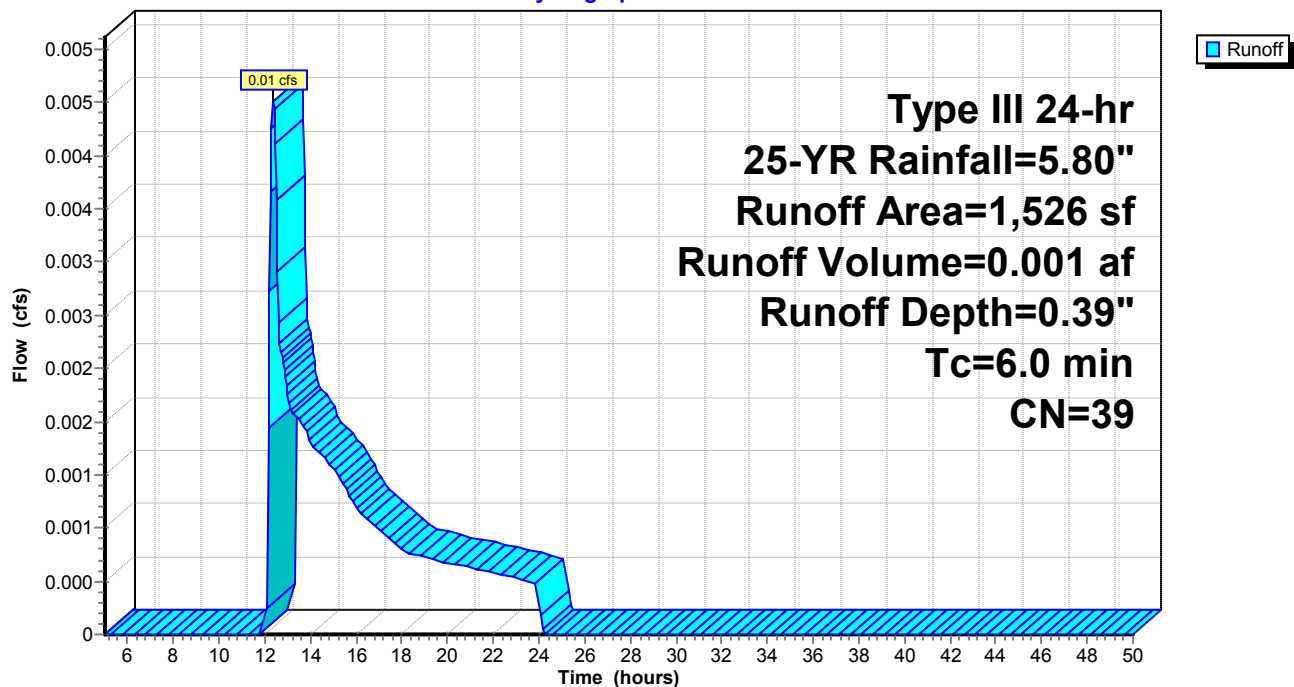
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,526	39	>75% Grass cover, Good, HSG A
1,526		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 23S: (new Subcat)

Hydrograph



Summary for Subcatchment 30S: West Area

Runoff = 0.02 cfs @ 12.37 hrs, Volume= 0.005 af, Depth= 0.39"

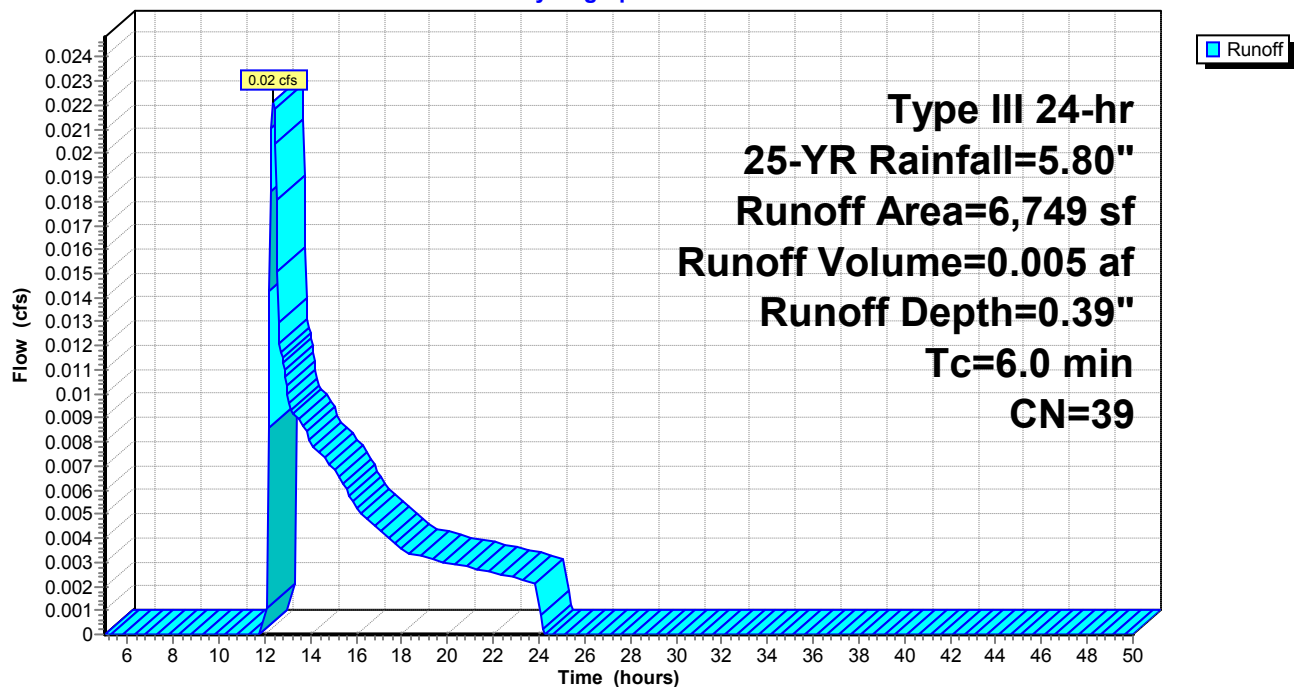
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
6,749	39	>75% Grass cover, Good, HSG A
6,749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 30S: West Area

Hydrograph



Summary for Subcatchment 32S: (new Subcat)

Runoff = 1.95 cfs @ 12.10 hrs, Volume= 0.146 af, Depth= 2.12"

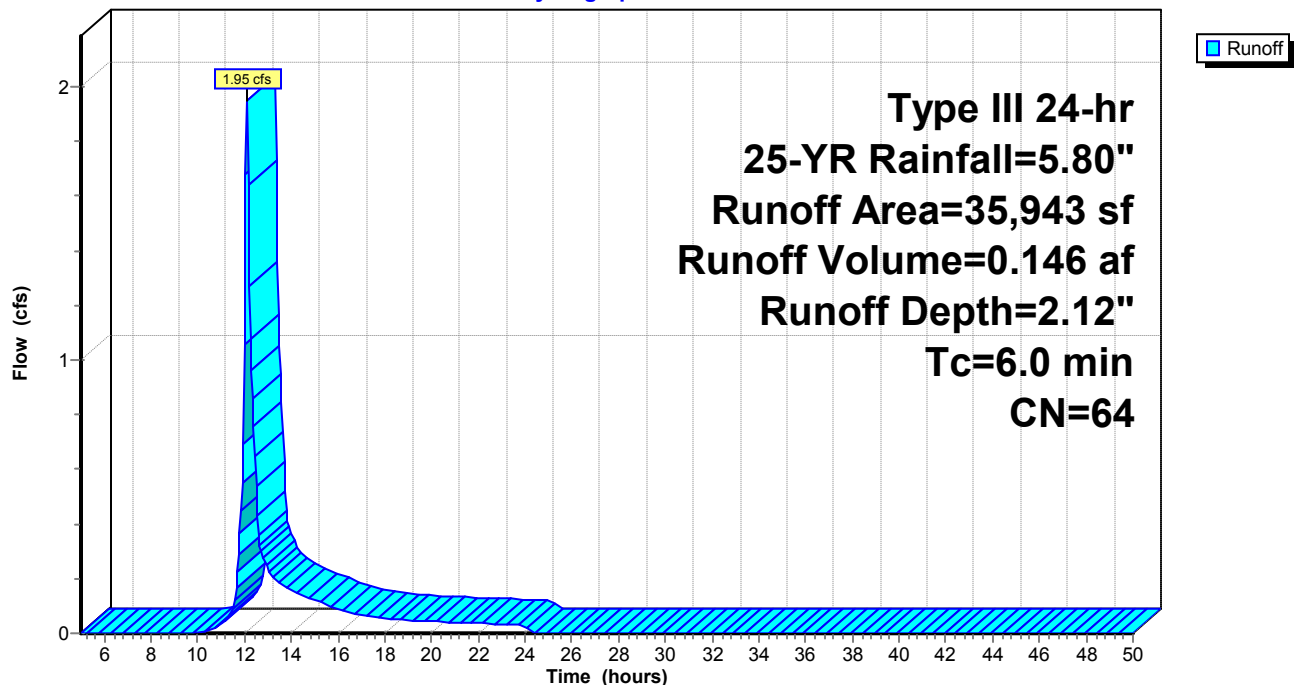
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	7,432	98	Pavement
*	7,554	98	Roofs
	20,957	39	>75% Grass cover, Good, HSG A
	35,943	64	Weighted Average
	20,957		58.31% Pervious Area
	14,986		41.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 32S: (new Subcat)

Hydrograph



Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 2.181 ac, 38.98% Impervious, Inflow Depth > 2.12" for 25-YR event
 Inflow = 0.90 cfs @ 12.60 hrs, Volume= 0.386 af
 Outflow = 0.90 cfs @ 12.62 hrs, Volume= 0.386 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.88 fps, Min. Travel Time= 0.9 min

Avg. Velocity= 1.43 fps, Avg. Travel Time= 1.8 min

Peak Storage= 47 cf @ 12.61 hrs

Average Depth at Peak Storage= 0.42'

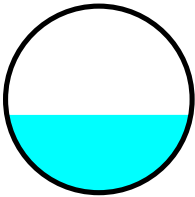
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe

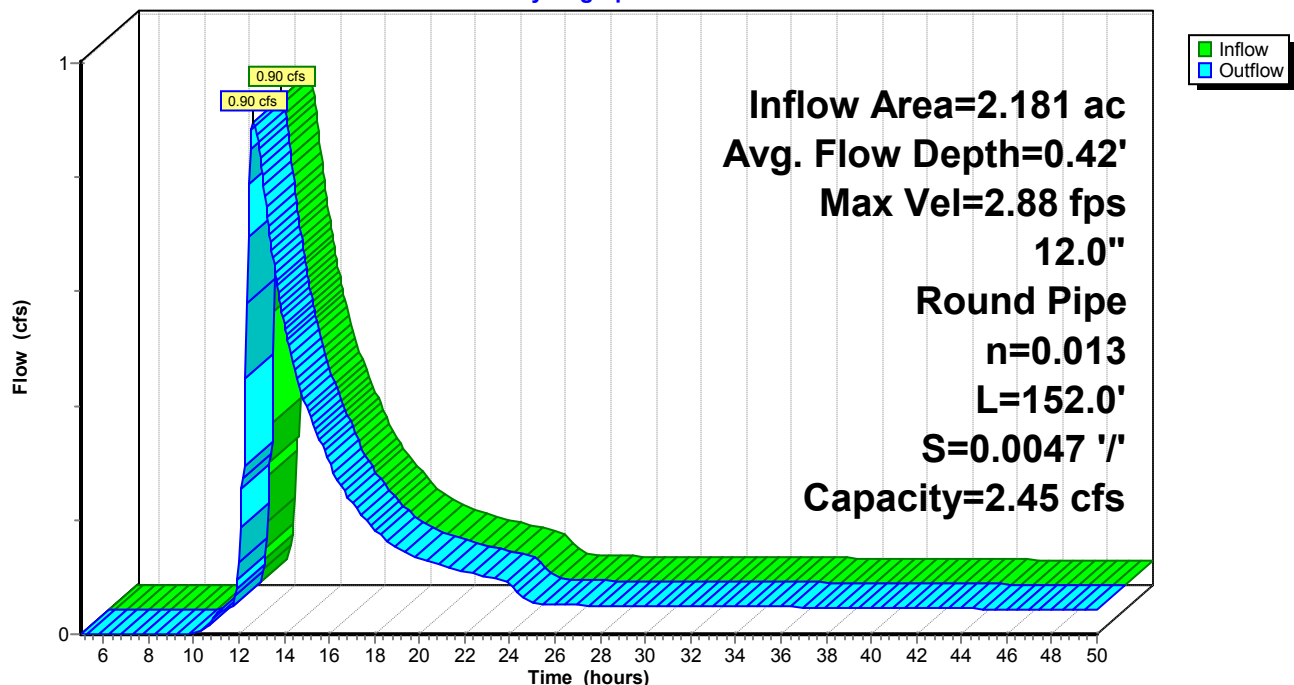
n= 0.013 Clay tile

Length= 152.0' Slope= 0.0047 '/'

Inlet Invert= 139.12', Outlet Invert= 138.40'

**Reach SP1: Site Contribution to Existing Collection System**

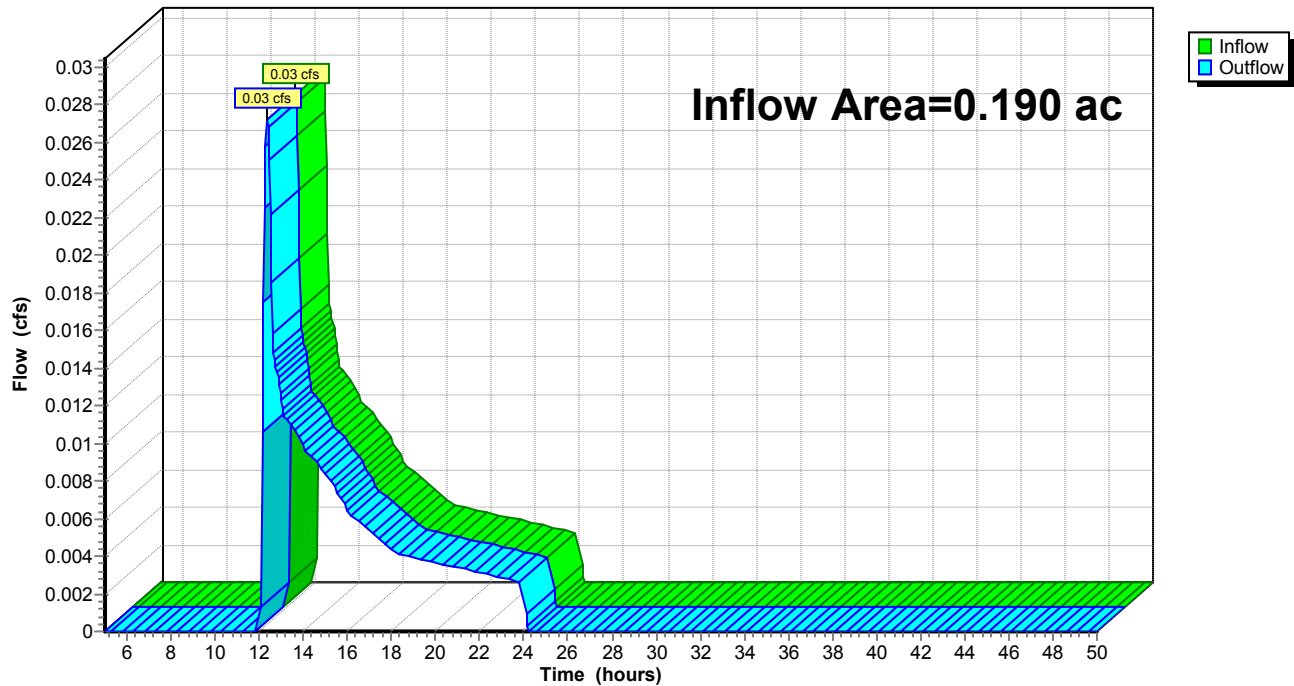
Hydrograph



Summary for Reach SP2: Offsite

Inflow Area = 0.190 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-YR event
Inflow = 0.03 cfs @ 12.37 hrs, Volume= 0.006 af
Outflow = 0.03 cfs @ 12.37 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: Offsite**Hydrograph**

Summary for Pond 20P: 2800 SF

Inflow Area = 2.001 ac, 40.14% Impervious, Inflow Depth = 2.25" for 25-YR event
 Inflow = 5.06 cfs @ 12.10 hrs, Volume= 0.376 af
 Outflow = 0.85 cfs @ 12.64 hrs, Volume= 0.366 af, Atten= 83%, Lag= 32.5 min
 Primary = 0.85 cfs @ 12.64 hrs, Volume= 0.366 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 145.68' @ 12.64 hrs Surf.Area= 4,359 sf Storage= 6,941 cf

Plug-Flow detention time= 457.3 min calculated for 0.366 af (97% of inflow)
 Center-of-Mass det. time= 442.7 min (1,293.1 - 850.3)

Volume	Invert	Avail.Storage	Storage Description
#1	143.75'	25,953 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.75	2,843	0	0
144.00	3,016	732	732
145.00	3,855	3,436	4,168
146.00	4,601	4,228	8,396
147.00	5,404	5,003	13,398
148.00	6,263	5,834	19,232
149.00	7,179	6,721	25,953

Device	Routing	Invert	Outlet Devices
#1	Primary	140.75'	12.0" Round Culvert L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.75' / 138.86' S= 0.0350 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.25'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	145.12'	7.2" W x 6.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	146.45'	18" Nyloplast 18" Domed Structure Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.37 0.40 0.45 0.50 Disch. (cfs) 0.000 0.200 0.500 0.800 1.400 1.900 2.500 3.100 3.500 3.600 3.800 4.000
#5	Secondary	147.50'	6.5' 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=0.85 cfs @ 12.64 hrs HW=145.67' (Free Discharge)

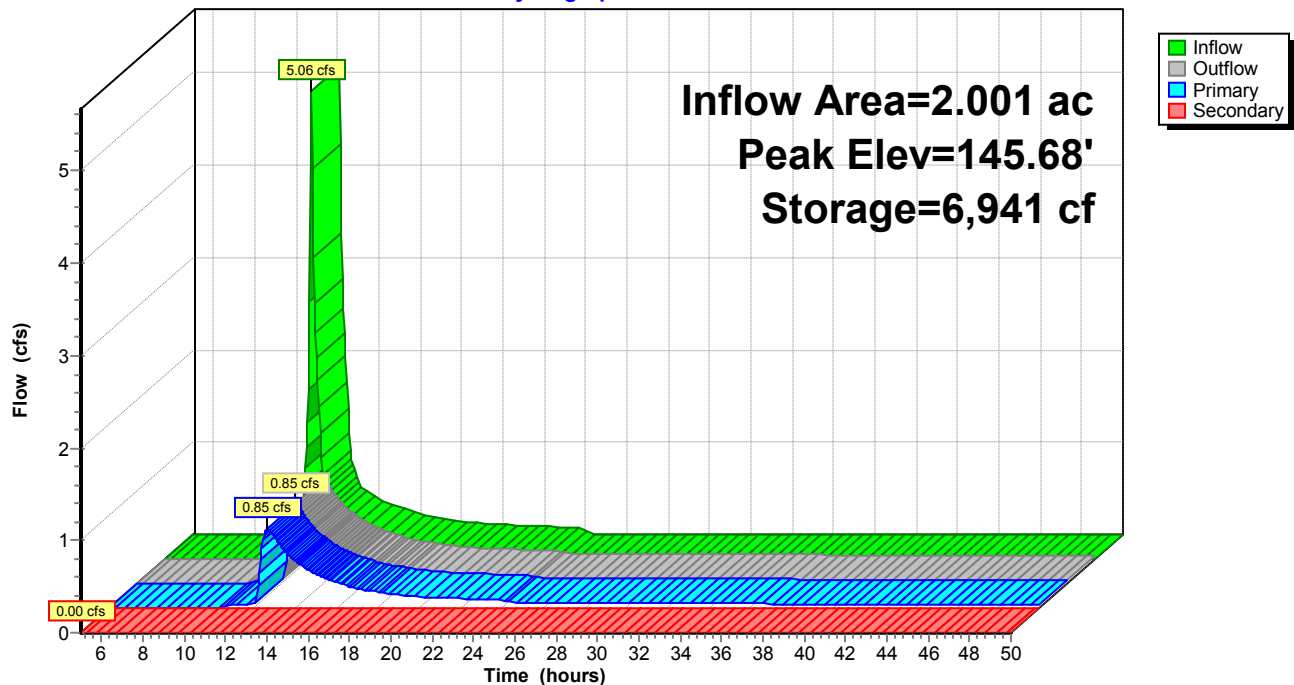
- 1=Culvert (Passes 0.85 cfs of 7.95 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 10.08 fps)
- 3=Orifice/Grate (Orifice Controls 0.79 cfs @ 2.44 fps)
- 4=18" Nyloplast 18" Domed Structure (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=143.75' (Free Discharge)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 20P: 2800 SF

Hydrograph



Summary for Pond CB: (new Pond)

Inflow Area = 0.181 ac, 26.17% Impervious, Inflow Depth = 1.33" for 25-YR event
 Inflow = 0.24 cfs @ 12.11 hrs, Volume= 0.020 af
 Outflow = 0.24 cfs @ 12.11 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.24 cfs @ 12.11 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.59' @ 12.11 hrs

Flood Elev= 146.58'

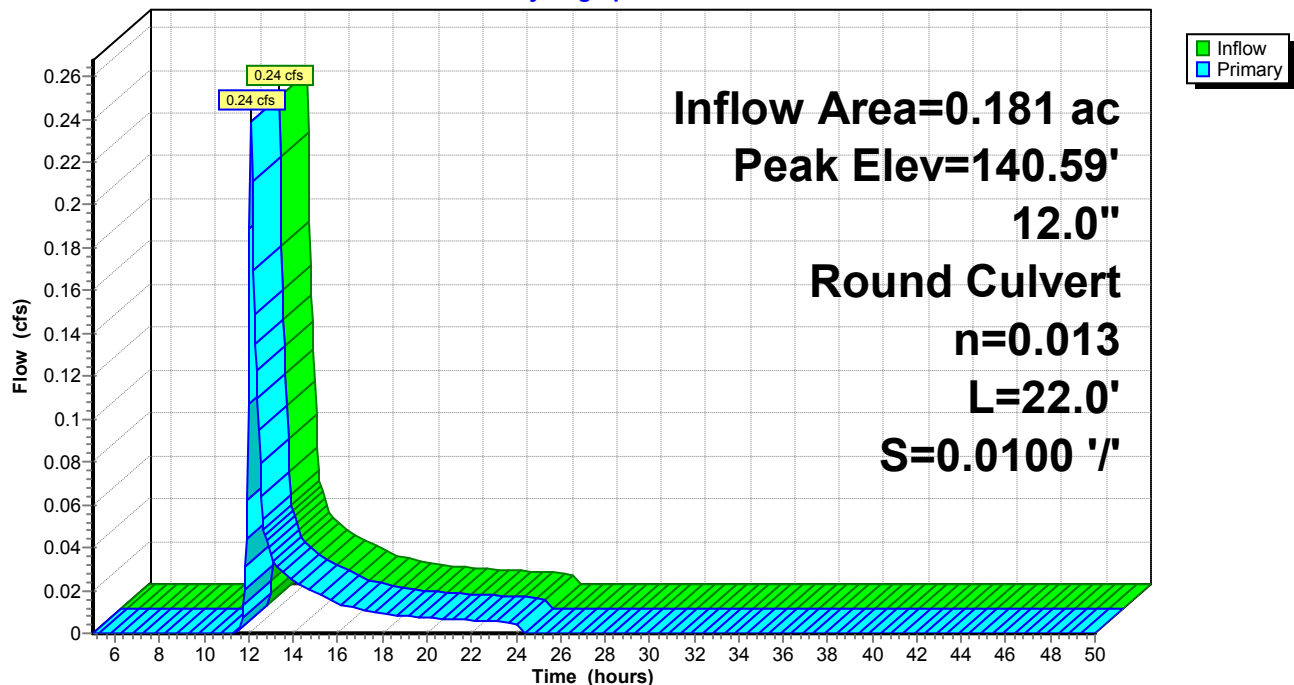
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.11 hrs HW=140.59' (Free Discharge)

↑1=Culvert (Barrel Controls 0.23 cfs @ 2.29 fps)

Pond CB: (new Pond)

Hydrograph



Time span=5.00-50.00 hrs, dt=0.05 hrs, 901 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 10S: Northeast Area	Runoff Area=7,876 sf 26.17% Impervious Runoff Depth=2.74" Tc=6.0 min CN=54 Runoff=0.55 cfs 0.041 af
Subcatchment 12S: (new Subcat)	Runoff Area=10,678 sf 38.07% Impervious Runoff Depth=3.52" Tc=6.0 min CN=61 Runoff=0.98 cfs 0.072 af
Subcatchment 20S: All Imp & Dev	Runoff Area=40,524 sf 39.30% Impervious Runoff Depth=4.32" Tc=6.0 min CN=68 Runoff=4.62 cfs 0.335 af
Subcatchment 23S: (new Subcat)	Runoff Area=1,526 sf 0.00% Impervious Runoff Depth=1.20" Tc=6.0 min CN=39 Runoff=0.03 cfs 0.004 af
Subcatchment 30S: West Area	Runoff Area=6,749 sf 0.00% Impervious Runoff Depth=1.20" Tc=6.0 min CN=39 Runoff=0.14 cfs 0.015 af
Subcatchment 32S: (new Subcat)	Runoff Area=35,943 sf 41.69% Impervious Runoff Depth=3.86" Tc=6.0 min CN=64 Runoff=3.65 cfs 0.265 af
Reach SP1: Site Contribution to	Avg. Flow Depth=1.00' Max Vel=3.55 fps Inflow=3.16 cfs 0.702 af 12.0" Round Pipe n=0.013 L=152.0' S=0.0047 ' Capacity=2.45 cfs Outflow=2.56 cfs 0.702 af
Reach SP2: Offsite	Inflow=0.18 cfs 0.019 af Outflow=0.18 cfs 0.019 af
Pond 20P: 2800 SF	Peak Elev=146.63' Storage=11,454 cf Inflow=9.25 cfs 0.672 af Primary=2.96 cfs 0.661 af Secondary=0.00 cfs 0.000 af Outflow=2.96 cfs 0.661 af
Pond CB: (new Pond)	Peak Elev=140.74' Inflow=0.55 cfs 0.041 af 12.0" Round Culvert n=0.013 L=22.0' S=0.0100 ' Outflow=0.55 cfs 0.041 af
Total Runoff Area = 2.371 ac Runoff Volume = 0.733 af Average Runoff Depth = 3.71"	
64.14% Pervious = 1.521 ac 35.86% Impervious = 0.850 ac	

Summary for Subcatchment 10S: Northeast Area

Runoff = 0.55 cfs @ 12.10 hrs, Volume= 0.041 af, Depth= 2.74"

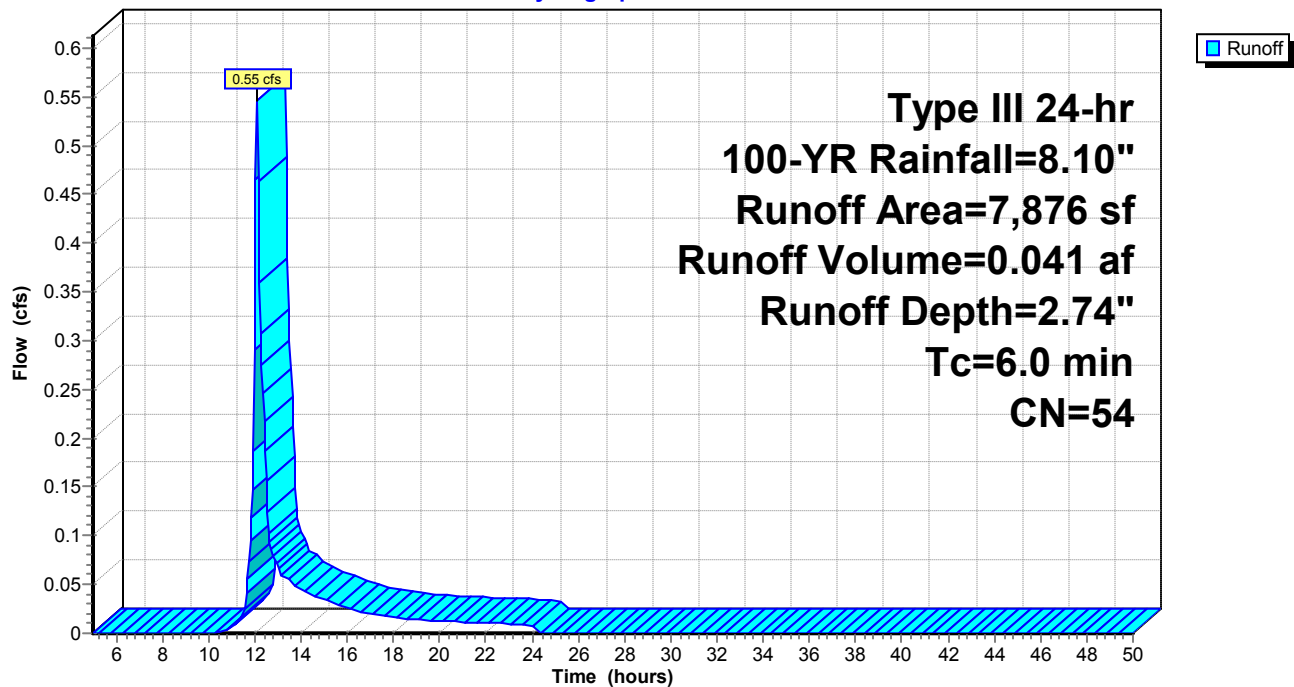
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

	Area (sf)	CN	Description
*	1,401	98	Existing Impervious
*	660	98	New Impervious
	5,815	39	>75% Grass cover, Good, HSG A
	7,876	54	Weighted Average
	5,815		73.83% Pervious Area
	2,061		26.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 10S: Northeast Area

Hydrograph



Summary for Subcatchment 12S: (new Subcat)

Runoff = 0.98 cfs @ 12.10 hrs, Volume= 0.072 af, Depth= 3.52"

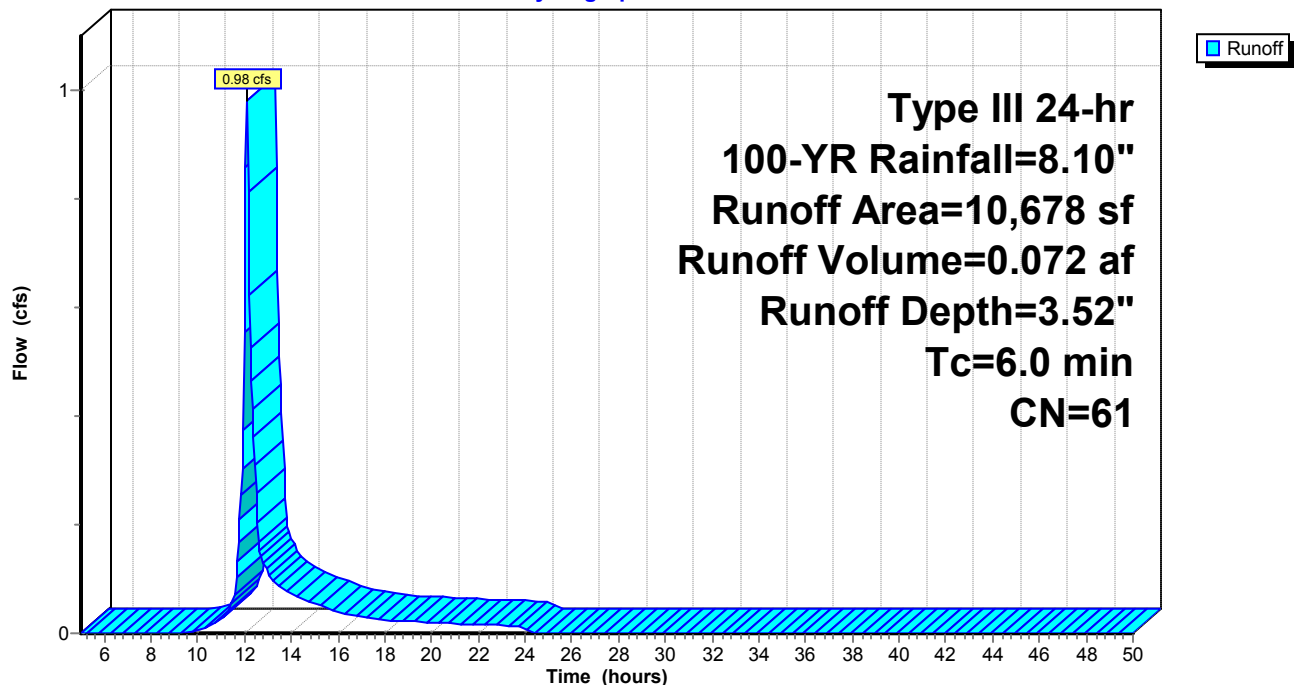
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

	Area (sf)	CN	Description
*	368	98	Existing Impervious
*	3,697	98	New Impervious
	6,613	39	>75% Grass cover, Good, HSG A
	10,678	61	Weighted Average
	6,613		61.93% Pervious Area
	4,065		38.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 12S: (new Subcat)

Hydrograph



Summary for Subcatchment 20S: All Imp & Dev

Runoff = 4.62 cfs @ 12.09 hrs, Volume= 0.335 af, Depth= 4.32"

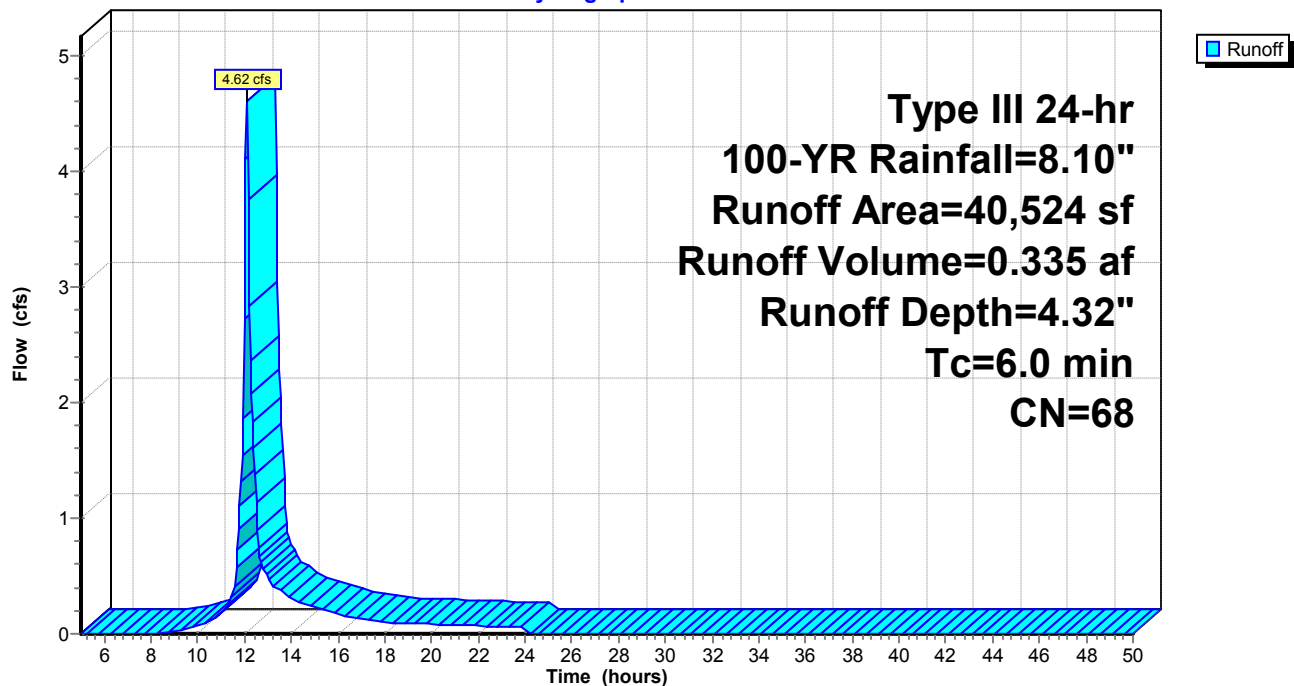
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

Area (sf)	CN	Description
11,061	98	Paved parking, HSG A
4,866	98	Unconnected roofs, HSG A
24,597	49	50-75% Grass cover, Fair, HSG A
40,524	68	Weighted Average
24,597		60.70% Pervious Area
15,927		39.30% Impervious Area
4,866		30.55% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 20S: All Imp & Dev

Hydrograph



Summary for Subcatchment 23S: (new Subcat)

Runoff = 0.03 cfs @ 12.12 hrs, Volume= 0.004 af, Depth= 1.20"

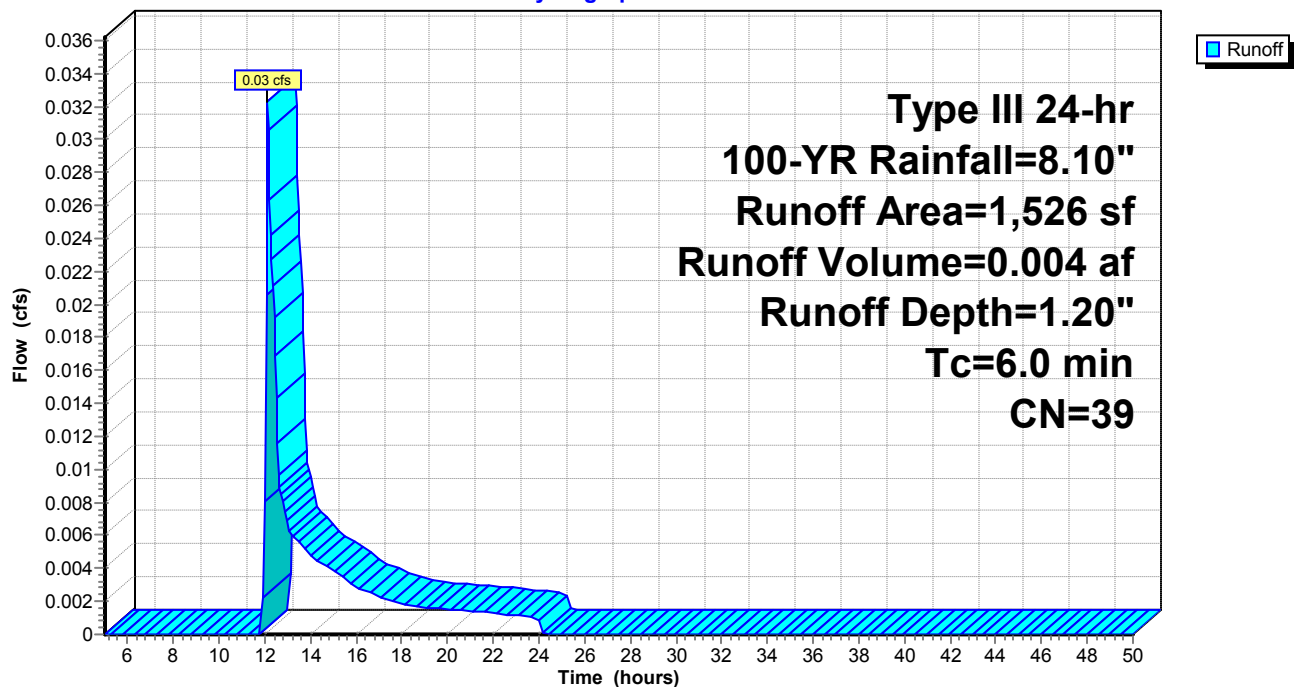
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

Area (sf)	CN	Description
1,526	39	>75% Grass cover, Good, HSG A
1,526		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 23S: (new Subcat)

Hydrograph



Summary for Subcatchment 30S: West Area

Runoff = 0.14 cfs @ 12.12 hrs, Volume= 0.015 af, Depth= 1.20"

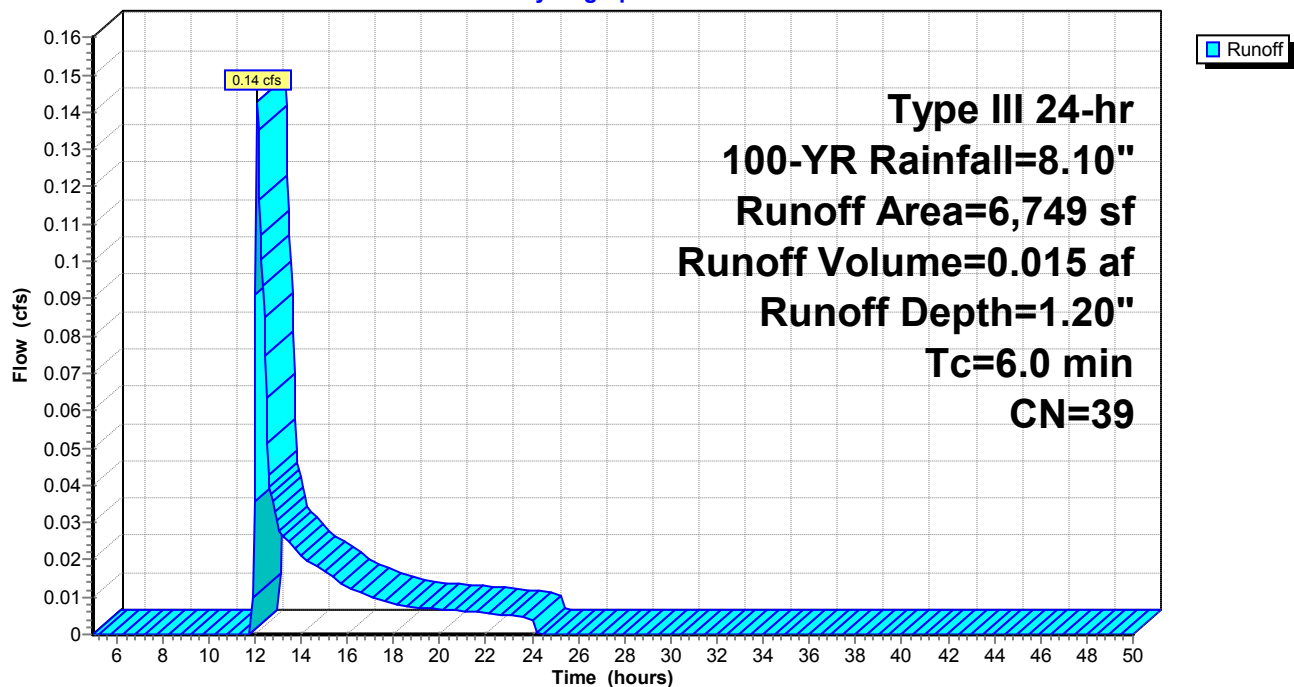
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

Area (sf)	CN	Description
6,749	39	>75% Grass cover, Good, HSG A
6,749		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 30S: West Area

Hydrograph



Summary for Subcatchment 32S: (new Subcat)

Runoff = 3.65 cfs @ 12.09 hrs, Volume= 0.265 af, Depth= 3.86"

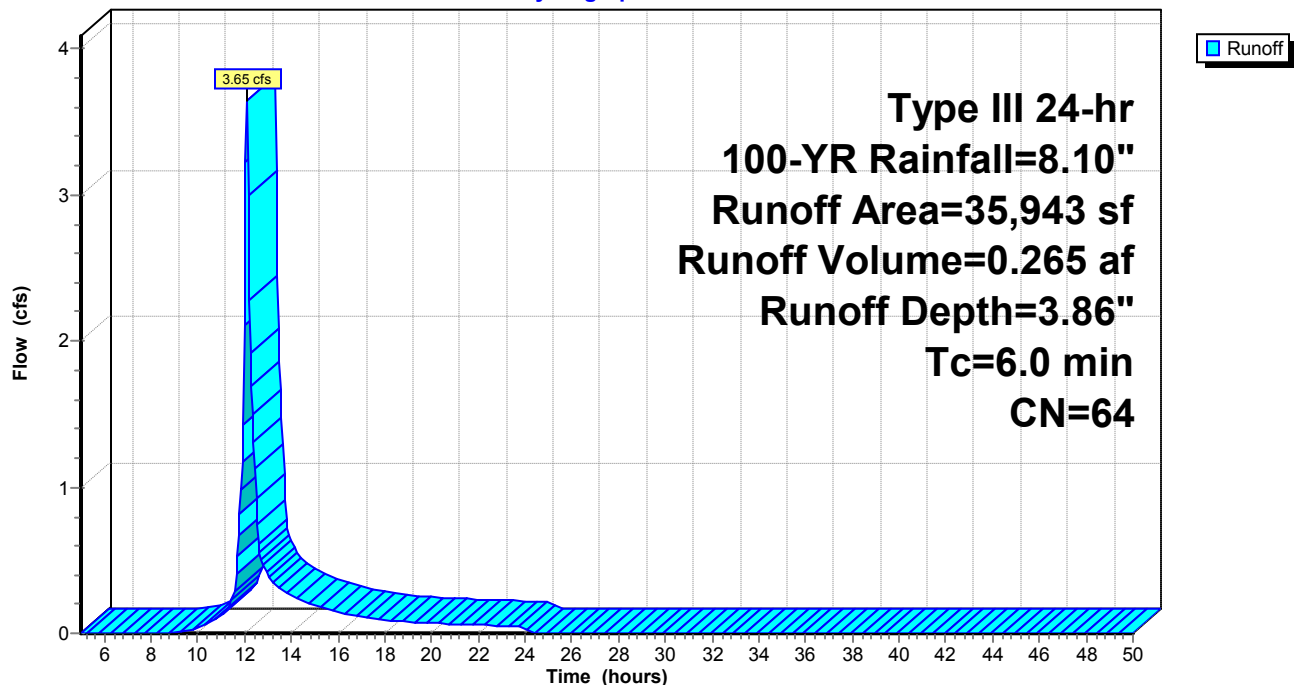
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.10"

	Area (sf)	CN	Description
*	7,432	98	Pavement
*	7,554	98	Roofs
	20,957	39	>75% Grass cover, Good, HSG A
	35,943	64	Weighted Average
	20,957		58.31% Pervious Area
	14,986		41.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment 32S: (new Subcat)

Hydrograph



Summary for Reach SP1: Site Contribution to Existing Collection System

Inflow Area = 2.181 ac, 38.98% Impervious, Inflow Depth > 3.86" for 100-YR event
 Inflow = 3.16 cfs @ 12.43 hrs, Volume= 0.702 af
 Outflow = 2.56 cfs @ 12.83 hrs, Volume= 0.702 af, Atten= 19%, Lag= 24.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.55 fps, Min. Travel Time= 0.7 min

Avg. Velocity= 1.53 fps, Avg. Travel Time= 1.7 min

Peak Storage= 119 cf @ 12.35 hrs

Average Depth at Peak Storage= 1.00'

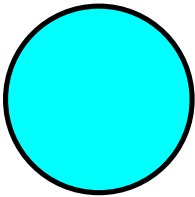
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.45 cfs

12.0" Round Pipe

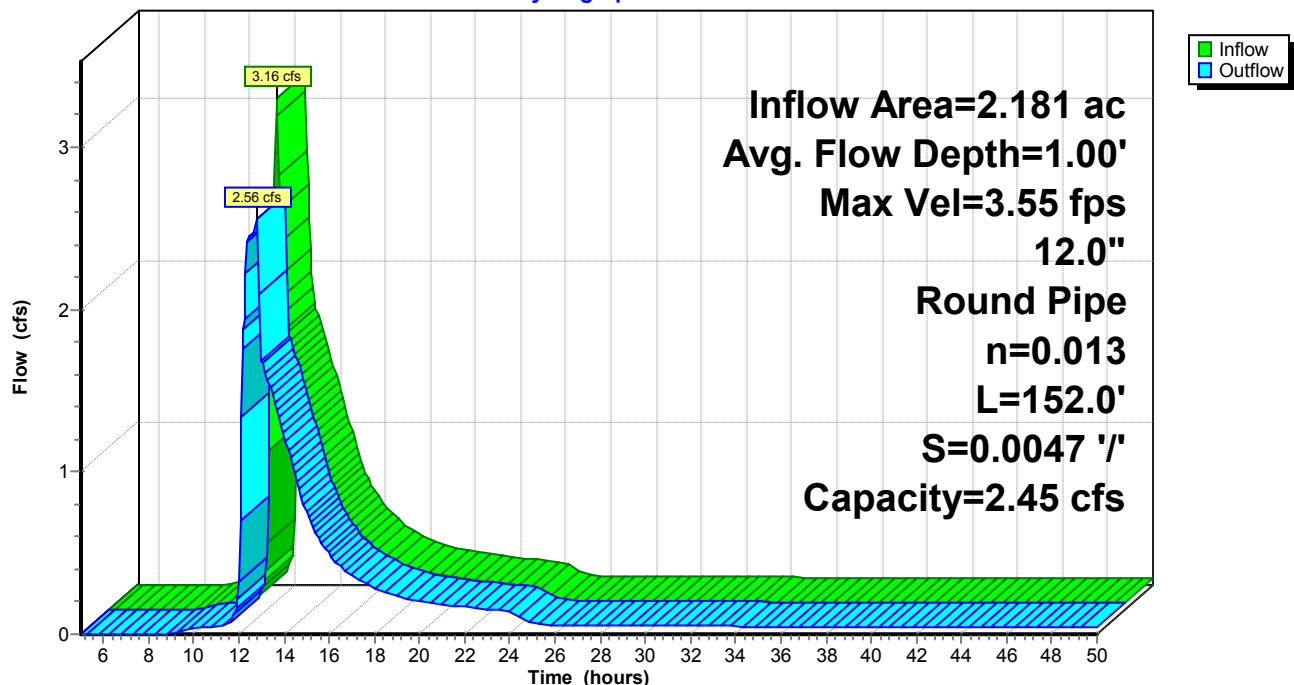
n= 0.013 Clay tile

Length= 152.0' Slope= 0.0047 '/'

Inlet Invert= 139.12', Outlet Invert= 138.40'

**Reach SP1: Site Contribution to Existing Collection System**

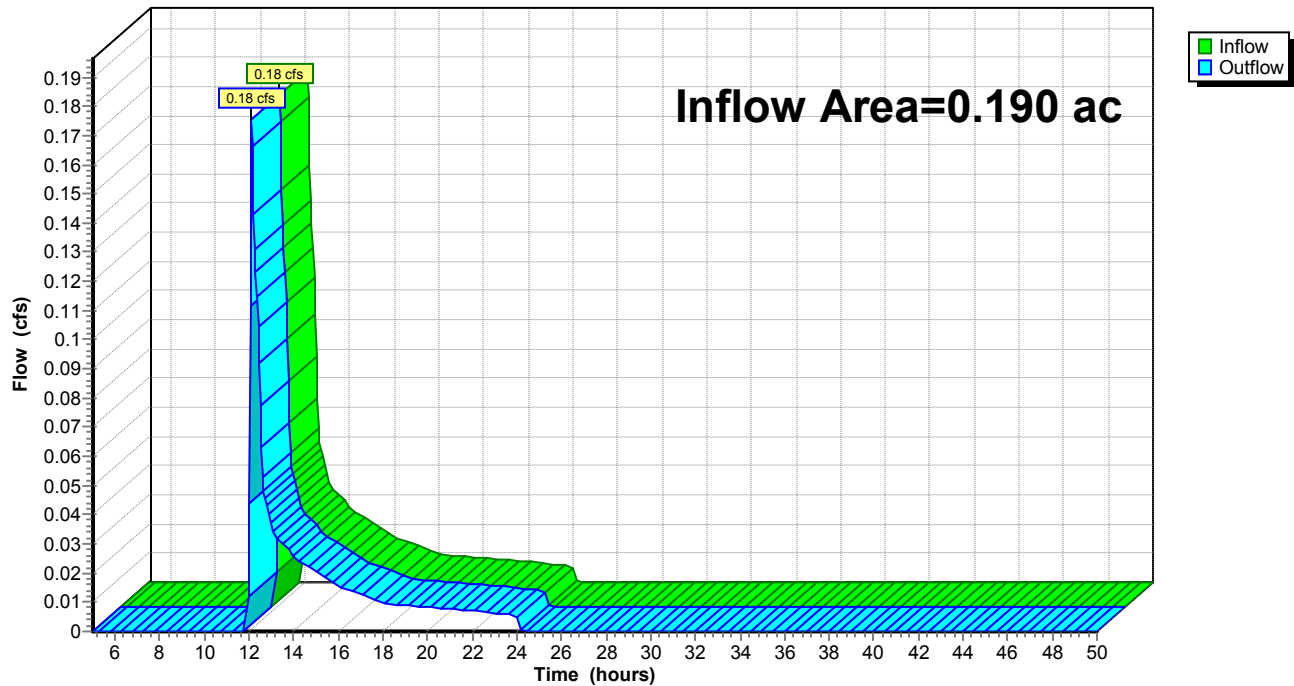
Hydrograph



Summary for Reach SP2: Offsite

Inflow Area = 0.190 ac, 0.00% Impervious, Inflow Depth = 1.20" for 100-YR event
Inflow = 0.18 cfs @ 12.12 hrs, Volume= 0.019 af
Outflow = 0.18 cfs @ 12.12 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Reach SP2: Offsite**Hydrograph**

Summary for Pond 20P: 2800 SF

Inflow Area = 2.001 ac, 40.14% Impervious, Inflow Depth = 4.03" for 100-YR event
 Inflow = 9.25 cfs @ 12.09 hrs, Volume= 0.672 af
 Outflow = 2.96 cfs @ 12.44 hrs, Volume= 0.661 af, Atten= 68%, Lag= 20.6 min
 Primary = 2.96 cfs @ 12.44 hrs, Volume= 0.661 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs
 Peak Elev= 146.63' @ 12.44 hrs Surf.Area= 5,107 sf Storage= 11,454 cf

Plug-Flow detention time= 278.7 min calculated for 0.660 af (98% of inflow)
 Center-of-Mass det. time= 270.1 min (1,103.4 - 833.4)

Volume	Invert	Avail.Storage	Storage Description
#1	143.75'	25,953 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
143.75	2,843	0	0
144.00	3,016	732	732
145.00	3,855	3,436	4,168
146.00	4,601	4,228	8,396
147.00	5,404	5,003	13,398
148.00	6,263	5,834	19,232
149.00	7,179	6,721	25,953

Device	Routing	Invert	Outlet Devices
#1	Primary	140.75'	12.0" Round Culvert L= 54.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.75' / 138.86' S= 0.0350 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.25'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	145.12'	7.2" W x 6.5" H Vert. Orifice/Grate C= 0.600
#4	Device 1	146.45'	18" Nyloplast 18" Domed Structure Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.37 0.40 0.45 0.50 Disch. (cfs) 0.000 0.200 0.500 0.800 1.400 1.900 2.500 3.100 3.500 3.600 3.800 4.000
#5	Secondary	147.50'	6.5' 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=2.94 cfs @ 12.44 hrs HW=146.63' (Free Discharge)

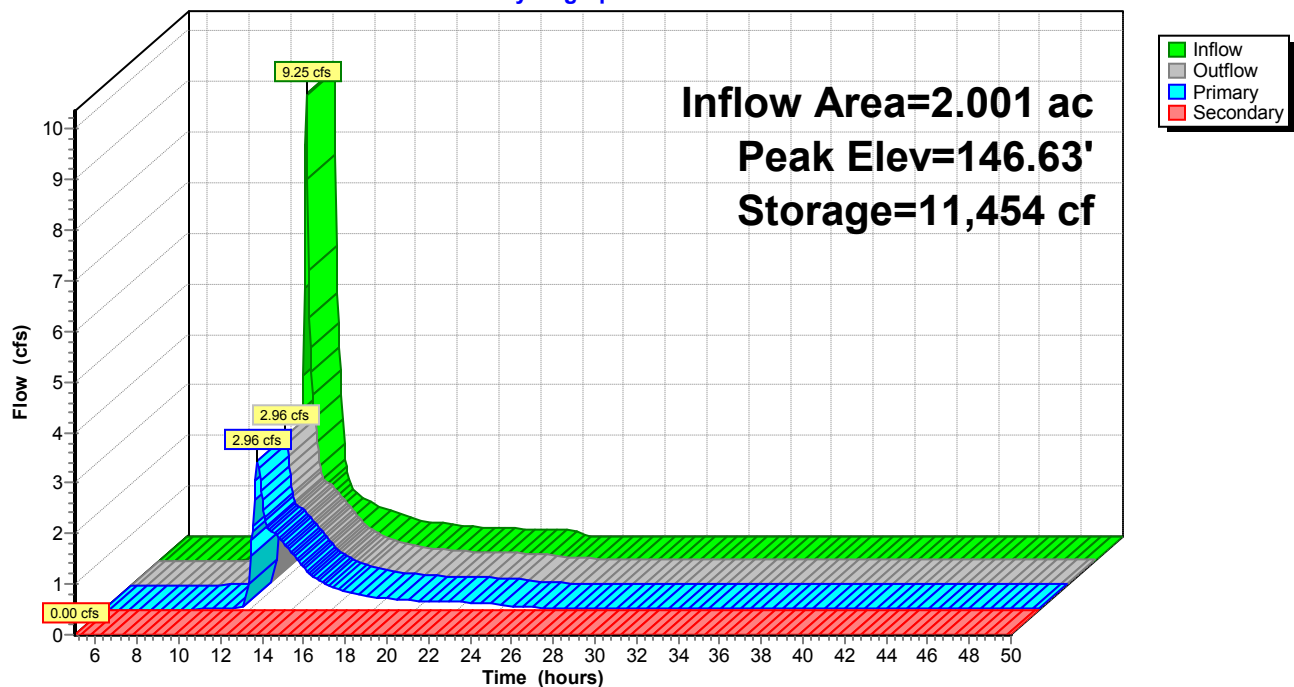
- 1=Culvert (Passes 2.94 cfs of 8.77 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.06 cfs @ 11.12 fps)
- 3=Orifice/Grate (Orifice Controls 1.74 cfs @ 5.35 fps)
- 4=18" Nyloplast 18" Domed Structure (Custom Controls 1.14 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=143.75' (Free Discharge)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 20P: 2800 SF

Hydrograph



Summary for Pond CB: (new Pond)

Inflow Area = 0.181 ac, 26.17% Impervious, Inflow Depth = 2.74" for 100-YR event
 Inflow = 0.55 cfs @ 12.10 hrs, Volume= 0.041 af
 Outflow = 0.55 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.55 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 5.00-50.00 hrs, dt= 0.05 hrs

Peak Elev= 140.74' @ 12.10 hrs

Flood Elev= 146.58'

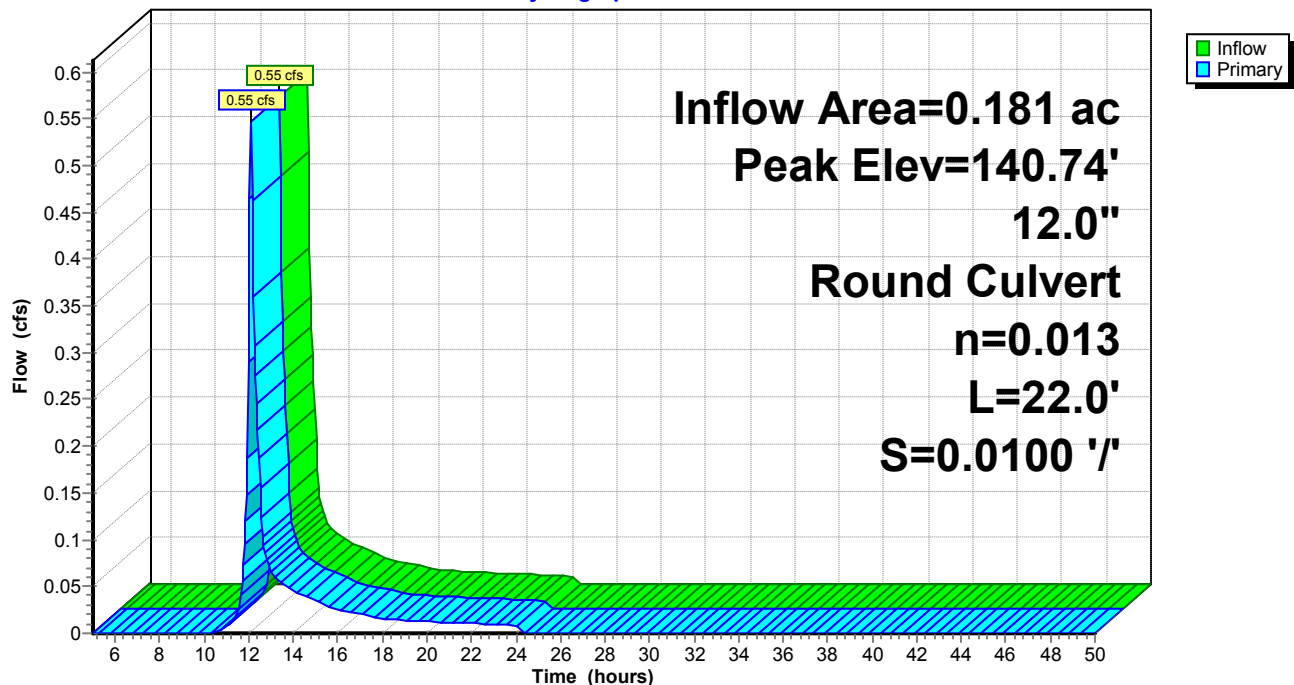
Device	Routing	Invert	Outlet Devices
#1	Primary	140.34'	12.0" Round Culvert L= 22.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 140.34' / 140.12' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.10 hrs HW=140.74' (Free Discharge)

↑1=Culvert (Barrel Controls 0.54 cfs @ 2.78 fps)

Pond CB: (new Pond)

Hydrograph



Attachment C

Inspection, Maintenance and Housekeeping Plan

INSPECTION, MAINTENANCE AND HOUSEKEEPING PLAN

Knight Farm Subdivision Portland, ME

Introduction

During construction, Greenlight Enterprises, LLC will be the responsible party for maintaining construction BMP's. Upon completion of the proposed development, a homeowners' association will be the responsible party for maintaining the stormwater management system. The responsible party shall schedule maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance logbook.

Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5-year time span. The maintenance logbook will be made available to the Maine Department of Environmental Protection (MDEP) and the City of Portland upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

The following plan outlines the anticipated inspection, maintenance, and housekeeping procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in the Inspection, Maintenance, and Housekeeping Plan is 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 details 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 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. 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 seven (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. 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 (3) 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. Sediment Barriers:

- 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 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. 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.

C. 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 this plan.

D. Temporary Storm Drain Inlet Protection:

- The inlet protection structure shall be inspected before each rain event and repaired as necessary.
- Sediment shall be removed and the storm drain sediment barrier restored to its original dimensions when the sediment has accumulated to half of the design depth of the trap.
- Structures shall be removed upon permanent stabilization of the tributary area.
- Upon removal of the structure, all accumulated sediments downstream of the structure shall be cleaned from the storm drain system.

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 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.
- 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.

After Construction

1. **Inspection:** After construction, the owner or operator shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.
2. **Maintenance, and repair:** If a BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator shall take corrective actions to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective actions to the Department of Public Services (DPS). The following is a list of permanent erosion control and stormwater management measures and the inspection, maintenance, and housekeeping 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. Underdrained Grass Filter

- The inlet and outlet of the BMP shall be checked periodically to ensure that flow structures are not blocked by debris. Inspections should be conducted monthly during wet weather conditions from March to November.
- Debris and sediment buildup shall be removed from the forebay and basin upon reaching a 6-inch accumulation within the forebay and 2 inches within the basin, but not less than annually.
- Mowing of grass may be conducted semiannually to a height of no less than 6-inches, with hand held trimmers or push mowers
- Grass filters shall be inspected annually for erosion, destabilization of sideslopes, embankment settling and other signs of structural failure. Corrective action should be taken immediately upon identification of problems.
- Rototill top of filter bed when ponding exceeds 48 hours
- Replace top several inches of filter material when ponding exceeds 72 hours

C. Catch Basins:

- Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring.
- Clean out must include the removal and legal disposal of accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins.

3. **Annual Report:** The owner or operator 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 that the person has inspected the BMPs 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 actions taken.
4. **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 – Sample Stormwater Inspection and Maintenance Form
1728 Washington Avenue, Portland, Maine

Sample Stormwater Inspection and Maintenance Form

**1728 Washington Avenue
Portland, Maine
Attachment 1**

This log is intended to accompany the stormwater Inspection, Maintenance and Housekeeping Plan for the Portland Retirement Residence. 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. Qualified personnel familiar with drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			
	Check after Major Storms			
Underdrained Grass Filter	Inspect inlets/outlets to ensure no blockage from debris			
	Inspect sideslopes annually for erosion, destabilization, and embankment settling.			
Catch Basins and Culverts	Remove accumulated sediment and debris			
	Sump depth			

Section 14. Statement of Project's Consistency with City Master Plan

Statement of Project’s Consistency with City Master Plans

There are no City of Portland Master Plans for the subject area.

Section 15. Ability to Serve Letters

- Portland Water District
- City of Portland Public Services – Sewer Division



February 7, 2017
16533

MEANS Group
Portland Water District
P.O. Box 3553
225 Douglass St.
Portland, ME 04102

Request for an Ability to Serve Determination
1728 Washington Avenue, Portland, ME

Dear MEANS Group:

On behalf of our client, Bedrock Holdings LLC, we are currently in the process of filing a site plan application to the City of Portland. As part of this submittal, a review of the Portland Water District's ability to provide water service is required.

The site is identified as Lot A3 on City of Portland Tax Map 351. The property is approximately 2.37± acre parcel located on the west side of Washington Avenue approximately 0.5 miles south of the intersection of Washington Avenue with Riverside Street. The site is currently a single family colonial farmhouse with barns and outbuildings. The proposed development will subdivide the parcel into 9 residential lots. The existing farmhouse will remain on lot 9; however the barns and outbuildings will be removed.

We anticipate a 4-inch diameter water main extension within the new 440-foot public road. It is our understanding that the main in Washington Avenue is a 6-inch diameter water main and a fire hydrant is located adjacent to the project site. The 8 lots that will be new construction will require new water service to provide both domestic usage and support a residential NFPA 13D sprinkler system. As we are in the initial stages of City approval, the flow and pressure requirements for the sprinkler systems are not known at this time. It is not anticipated that the existing farmhouse will require sprinkler protection. We request to continue usage of the existing service from Washington Avenue to serve the farmhouse.

If you have any questions on this project, please do not hesitate to contact me at ghavu@sebagotechnics.com or on my direct line at (207) 200-2090. Thank you for your time and consideration.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink that reads "Glissen Havu".

Glissen Havu, E.I.
Civil Engineer

GJH/Ilg
Enc.



February 8, 2017
16533

Bradley Roland, P.E.
City of Portland
Department of Public Services
55 Portland Street
Portland, ME 04101-2991

New Utility Service Assessment
1728 Washington Avenue, Portland, ME

Dear Mr. Roland:

On behalf of our client, Bedrock Holdings LLC, we are currently in the process of filing a site plan application to the City of Portland. As part of this submittal, a review of the City's ability to provide wastewater service is required. Enclosed is a copy of the City of Portland Wastewater Capacity Application.

The site is identified as Lot A3 on City of Portland Tax Map 351. The property is a parcel of approximately 2.37± acres located in on the west side of Washington Avenue approximately 0.5 miles south of the intersection of Washington Avenue with Riverside Street. The site is currently a single family colonial farmhouse with barns and outbuildings. The proposed development will subdivide the parcel into 9 residential lots. The existing farmhouse will remain on lot 9; however the barns and outbuildings will be removed.

Based on the Maine Subsurface Wastewater Disposal Rules, the design flow for a 3 bedroom single family dwelling unit is approximately 270 GPD. Therefore, the estimated total design flow for the 8 new residential lots is approximately 2,160 GPD.

Please provide a letter from the City confirming the ability of the existing public wastewater collection and treatment system to serve the proposed project. If you have any questions on this project, please do not hesitate to contact me at ghavu@sebagotechnics.com or on my direct line at (207) 200-2090. Thank you for your time and consideration.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink that reads "Glissen Havu".

Glissen Havu, E.I.
Civil Engineer

GJH/llg
Enc.

Section 16. Statement of Solid Waste Generation

Statement of Solid Waste Generation

A. Estimated Quantities of Solid Waste

The proposed 8-lot residential subdivision is expected to generate normal residential waste (assuming 2 ½ CY/month/unit) 20 CY/month. Each lot owner will be eligible to use the City's solid waste program.

B. Off-Site Disposal of Construction/Demolition Debris

Any material not suitable for on-site disposal will be source separated and transferred by a licensed non-hazardous waste transporter to a local construction material recycling facility.

Local waste management providers include:

- *Casella Waste Systems*, 87 Pleasant Hill Road, Scarborough
- *Troiano Waste*, 10 Filmike Way, South Portland

Local disposal sites include:

- Riverside Recycling Facility, Portland
- Community Recycling Center (CPRC Group), Scarborough

C. On-Site Disposal of Wood Waste/Land Clearing Debris

Stumps and grubblings will be chipped or ground on site. The grindings will be used for erosion control mulch whenever possible.

D. Special or Hazardous Waste

No Hazardous Waste will used or generated.

Section 17. NFPA 1/Fire Department Standards

NFPA 1/Fire Department Standards

Each of the proposed single family homes will be sprinkled in accordance with NFPA 13D guidelines. Furthermore, the site has been designed to meet the requirements of NFPA 1, Chapter 18 more specifically:

Section 18.2 Fire Department Access

The site provides a minimum of 28' wide of clear paved accessed access to entire developed portion of the property. A hammerhead turnaround has been provided at the end of the public roadway.

Section 18.3 Water Supplies

The project will connect to the existing 6" water main in Washington Avenue and extend a 4" main within the proposed roadway.

Section 18.4 Fire Flow Requirements for Buildings

One inch diameter water services to each building will provide adequate flow and pressure for fire protection and domestic flows.

Section 18.5 Fire Hydrants

An existing fire hydrant is located along the frontage of the existing farmhouse on the remaining land of the proposed subdivision.

Section 18. Assessment of Consistency with Design Standards

Assessment of Consistency with Design Standards

The following is an assessment of the conformance with the design standards contained in Section 14-526 and in the City of Portland Technical Manual.

1. Transportation Systems and Street Design Standards

1.1. Impact on Surrounding Street Systems

Based upon the anticipated generation of traffic from the proposed project and the peak traffic generated off the time of the roadway peaks, the project is not expected to have a significant impact on the adjacent streets and public ways.

1.2. Street Grades and Vertical Alignment

A new local public street is proposed as part of this project. The proposed street grade at the intersection with Washington Avenue is 2.8% for 26-feet up to a high point then continues down at 1.0% for 45-feet to a low point and up again to 1% for the remainder of the roadway. Vertical alignments for both the crest and sag vertical curves have been designed in accordance with the local street curve values presented in the City of Portland Technical Manual.

2. Sanitary Sewer and Storm Drain Design Standards

2.1. Manholes, Pipes and Catch Basins

Manholes, pipes and catch basins have been designed to meet the City of Portland Design Manual Standards. Manhole and catch basin details shown on Sheet 7 of 8 have been reviewed to meet the requirements shown on the Sanitary Sewer and Storm Drain Design Standards in Section II of the design manual. Pipe material for the sewer main has been specified as 8-inch diameter PVC SDR 35.

2.2. Building Sewer Laterals

The installation of backwater valves have been indicated on the plan as is required when connecting into a combined sewer system.

3. Public Safety Standards

3.1. Fire Hydrant Standards

The existing fire hydrant adjacent to the project site will be within 500-feet of all proposed structures.

3.2. Single and Town Family Residential Development

One-inch diameter water services are proposed to each single family house lot, which will provide adequate flow and pressure for domestic and residential fire protection.

3.3. Site Access Standards

As required, a turnaround has been designed at the end of the roadway. The turnaround design matches the Turnaround on Dead End Street detail in Section I of the Portland Design Manual.

4. Landscaping and Landscape Preservation Standards

4.1. Street Trees

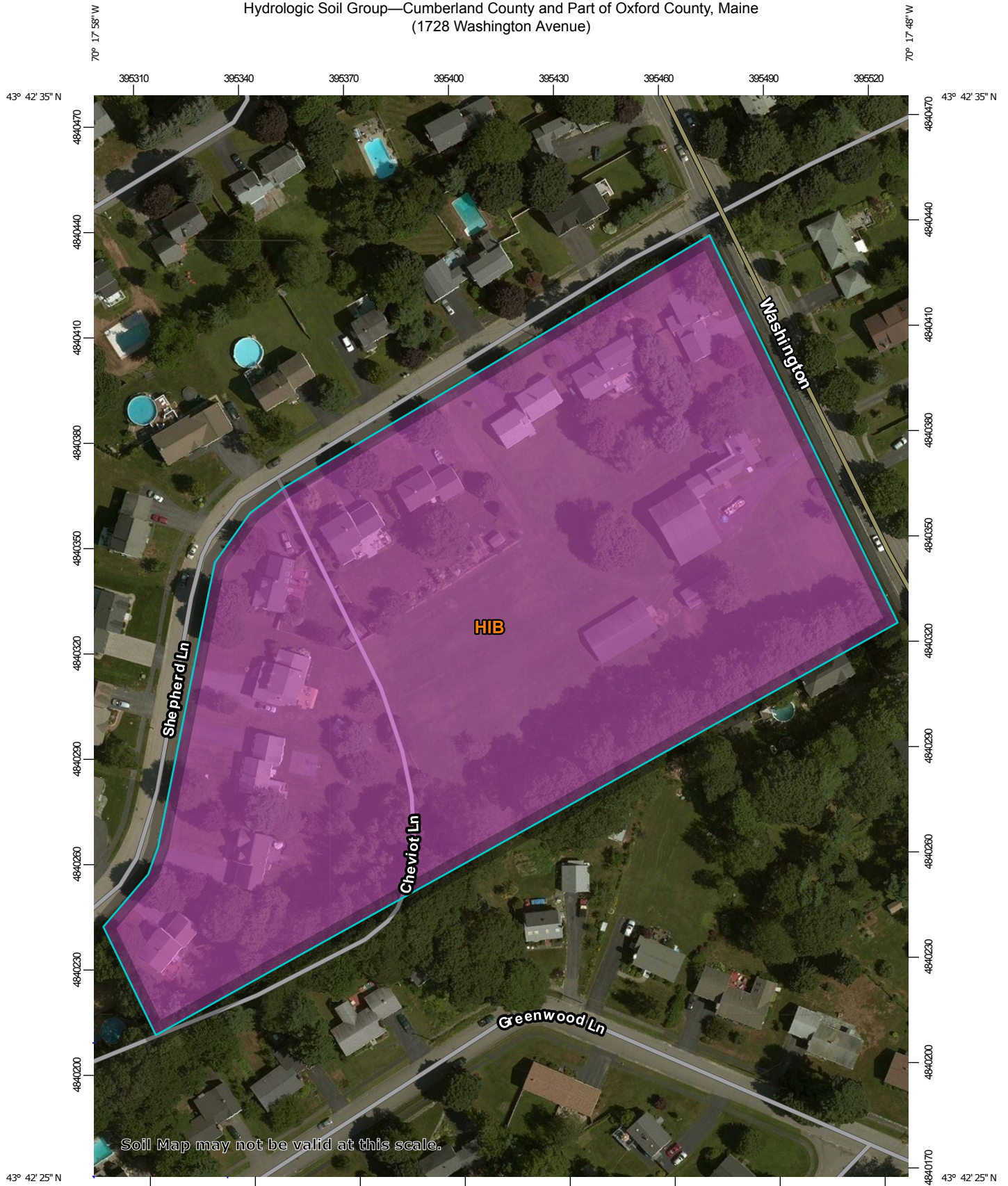
At least two street trees per single family residential lot have been indicated on the Grading and Utility Plan (Sheet 4 of 8).

5. Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management

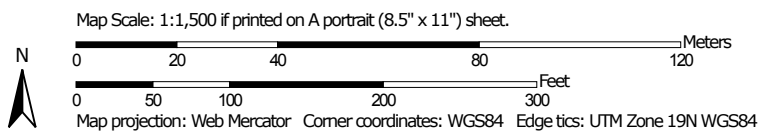
5.1. See Section 13. Stormwater Management Plan. The stormwater BMPs have been designed per the Maine BMP manual as well as Maine DEP Chapter 500 standards.

Section 19. Soils Report

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(1728 Washington Avenue)



Soil Map may not be valid at this scale.



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

2/6/2017
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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 imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Cumberland County and Part of Oxford County, Maine (ME005)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIB	Hinckley loamy sand, 3 to 8 percent slopes	A	6.2	100.0%
Totals for Area of Interest			6.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Greenlight Enterprises, LLC
PO Box 963
Gray, Maine 04039

April 14, 2017

City of Portland
Planning Division
Fourth Floor, City Hall
389 Congress Street
Portland, Maine 04101

Knight Farm Subdivision

Dear Planning Staff:

I am requesting that you allow Sebago Technics, Inc. to represent me before the planners and planning board for the Knight Farm Subdivision application.

Sincerely,

President,
Green Light Enterprises, LLC

Section 20. Site/Subdivision Plans



May 10, 2017
16533

Barbara Barhydt, Development Review Manager
City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, Maine 04101

Re: Neighborhood Meeting Documentation
Site Plan – Knight Farm Subdivision, 1728 Washington Avenue, Portland, ME

Dear Barbara:

I, Robert A. McSorley, P.E., Sebago Technics, Inc., consultant for the applicant hereby attest that a neighborhood meeting was held on May 3, 2017 at 1728 Washington Avenue at 6:00 P.M.

I also attest that on April 17, 2017, 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.
2. Residents on the "interested parties" list.
3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov, shukriaw@portlandmaine.gov, sgo@portlandmaine.gov and bab@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Sincerely,

SEBAGO TECHNICS, INC.

A handwritten signature in black ink, appearing to read "R. McSorley", written over a horizontal line.

Robert A. McSorley, P.E.
Senior Project Manager

5/10/17

RAM:llg

Attached to this statement are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes
4. Copy of plan exhibited at neighborhood meeting



April 13, 2017
16533

Level III Site Plan – Neighborhood Meeting
Knight Farm Subdivision

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for a proposed 8 lot subdivision (see attached plan, reverse side of notice) located at 1728 Washington Avenue.

Meeting Location: Site – 1728 Washington Avenue

Meeting Date: May 3, 2017

Meeting Time: 6:00 P.M.

If you have any questions, please call Rob McSorley at Sebago Technics, 200-2074.

Sincerely,

A handwritten signature in black ink, appearing to read "Ron Goddard", with a stylized flourish extending from the end.

for

Ron Goddard
Green Light Enterprises, LLC

**Knight Farm Subdivision
1728 Washington Avenue
Portland, ME**

Neighborhood Meeting – May 3, 2017, 6:00 P.M.

#	Neighbors Name	Street Address
1	Low Guddard	1728 Washington Ave
2	MIKE WILSON	276 BRACKETT ST.
3	Stephanie Wood	89 Greenwood Ln.
4	Liz Winslow	32 Shepherd Ln.
5	Peg Samuels	15 Quaker Ln
6	Walt & Bob Rice	210 Shepherd Lane
7	Jane & David Inman	12 Shepherd Lane
8	RICK ROMANO	1731 WASHINGTON AVE
9	Tina Romano	1731 Washington Ave
10	Jill Tabbutt-Heary	1711 Washington Ave
11	ASTON POTTER	83 GREENWOOD LN
12	Anne Ackerman	52 Dole Dr
13	Stephanie Quattrucci	50 Shepherd Lane
14	Tony Quattrucci	50 Shepherd Lane
15	Bill & Robin Carter	1739 Wash Ave
16	Keth Derrig	1756 Washington Ave.
17	Chris Brown	82 Shepherd Lane
18		
19		
20		
21		
22		
23		
24		
25		

Memorandum

16533

To: City of Portland Planning Department

From: Robert A. McSorley, P.E.

Date: May 8, 2017

**Subject: Neighborhood Meeting
Knight Farm Subdivision
1728 Washington Avenue, Portland, ME**



On Wednesday, May 3, 2017, 6:00 P.M., the property owner/applicant representative along with Sebago Technics held a neighborhood meeting for the proposed project. This meeting was attended by several neighbors from throughout the neighborhood and adjacent to the proposed project (see attached attendance list). A rendered composite drawing of the proposed Subdivisions and Grading and Utility Plan was on display on a presentation board. The project was presented by Rob McSorley of Sebago Technics and the following questions and discussions below were asked/held.

As part of the questions, there was some discussion presented by an abutter that they have been attempting to have the City purchase and turn the property into a park. Also, it was mentioned that a couple of abutters have looked into developing the property and were told that the site could not be developed the way that they wanted to develop it. There was also discussion that the historical significance of the property had not been properly addressed and that the removal of the barn structure on the site was illegal development because the subdivision has not been approved. ***The proper demolition permits were obtained from the City prior to the demolition.*** It was also noted that the property had been on the market for about 2 years.

This is a list of the neighbor's questions and our responses during the Neighborhood meeting:

1. Is there going to be a public hearing? We were told that there would be no public hearing.

Yes, the project is a Level III Site plan which will have a public hearing before the Planning Board.

2. Will we be noticed for the Planning Board Hearing?

Yes, the city should be notifying all those who were notified for the neighborhood meeting.

3. What will happen to the split rail fence along the west property line (in bad shape)?

Need to confirm whose fence it is. If property owner's, will probably be taken down.

4. Will a new barrier be installed on the property line?

No barrier is proposed by the project. An owner of the single-family lot may elect to install a fence for privacy or to keep a dog in their yard.

5. Will the trees on the property be taken down?

Trees in middle of the property will be taken down; some of the trees along the perimeter of the project may remain.

6. Will you be replacing the trees that you take down?

Each lot on the property is required to plant two street trees as part of the development.

7. Is the project going to use green infrastructure practices?

The project will utilize an under drained soil filter for stormwater treatment.

8. Is there going to be any green preservation on the project?

There is no proposed preservation for the project.

9. Who will be building the lots? Will the lots be for sale?

There will be one builder selected for the project. The intent is not to sell lots but sell spec. homes or a development package for a lot.

10. What is the brown envelope on the plan (presentation drawing at the meeting)?

The light brown area is the potential area for building construction. Building will be limited to maximum lot coverage of the zoning ordinance and be wholly within that envelope.

11. Question about how the drainage/runoff will be affected at the southwest corner of the property (runoff to abutter lot)?

There is knoll on the property about 2/3 of the distance back from Washington Avenue from which a consideration amount of area drains off to the southwest. The proposed grading reduce the amount of area contributing to runoff in that direction with the lots regraded from runoff to be directed to the on-site treatment area.

12. What is the maximum height for the homes?

Designs for individual houses have not been completed at this time. The zoning ordinance allows a maximum height of 35'.

13. Will the houses have basements?

Most of the houses are intended to have basements but there could be homes that are slab on the grade and have no basement.

14. What are the setbacks?

The front and rear setbacks are 25' and the side setback will be 8' – 16' depending on the height of the home and which zoning district the house falls in.

15. Time frame to build and sell?

It is assumed that construction will begin after City approval and the necessary bonds or sureties are in place. The earthwork and construction of utilities, drainage and roadway will commence first. The developer intends to begin and probably build two homes at one time.

16. How far is end of street from end of subdivision?

Approximately 20' to 25'.

17. When will dumpster be emptied? It is full and refuse has been blowing out of it onto adjoining properties.

The property owner has stated that the dumpster currently on site for the removal of the barn will be emptied within the week. It has been emptied previously.

18. Has soil test been done? What if there are buried contaminants or high arsenic levels?

Soil testing has not been done; there may be testing on individual lots relative to the housed designs. It is not expected that there will be contaminated soils on the property. They will be dealt with appropriately if found.

19. Can the owner of the property begin cleaning up the property?

The property owner stated that he has been working on the cleanup as part of the restoration of the residence that will remain on the property.

20. Is the end of street configuration acceptable to the City? Why is it not a cul-de-sac?

The t-turnaround on the proposed subdivision plan is based upon the City's standards. The standards recognize that cul-de-sac are not possible in all situations.

21. Will the trees on the perimeter be removed?

The perimeter trees are expected to be retained as much as possible with the development.

22. Will the developer work with the neighbors and consider doing 4 large houses and have more green space?

Based upon the economics of the development and the need to meet City standards for the street and infrastructure, the development will not be feasible with less homes.

23. Why was the project named Knight Farm Subdivision? Will the developer consider renaming after the last owner?

The older deeds of the property were reviewed to determine an owner name when the property may have been operated as a farm. No.

24. What will the street name be?

The tentative street name is Abner Lane which will need to be approved by the City.

25. Questions and discussions relative to the pond.

Based upon inquiries about the pond, a discussion was held to explain the design of the pond, how it treats the stormwater, the detention of runoff for the different storm events (up to the 100 year event) and discussion on the slopes down to bottom.

26. Will the house be restored and be sold?

The house is currently under restoration by the owner who intends to continue to live in the house.

27. Will there be pressure problems with the water main?

We do not expect that there will be pressure problems. The mains through the neighborhood are looped and there is a 12" main that feed through the Parsons Pond

development. It is expected that the 6" main within this area of Washington Avenue will be replaced in the future because of its age and be replaced by at least an 8" main.

28. Will the houses be sprinkled? If the water line sufficient to provide for the sprinkler systems.

The houses will be sprinkled; the sprinkler requirements for residence structures are such that a smaller main is needed than a commercial project.

29. Will there be sidewalks? Will there be sidewalks along Washington Street?

There is intended to be a sidewalk on one side of the new street and a sidewalk is being proposed along Washington Avenue to connect to the sidewalk at Shepard's Lane.

30. Will all the utilities be underground?

Yes, that is a requirement of the subdivision development.

31. Is there any plans for the right-of-way that extends from the property to Shepard Lane?

None known of at this time.

32. Will the shed structures remain?

No the shed structures will be removed.

33. What will the price ranges for the houses be?

The pricing for the homes have not been determined; however, it is expected that the style and pricing will be similar to those on Shepard's Lane.

34. Has the zoning requirements been reviewed and the dimensional proportion of the structures been addressed (long dimension along right of way)?

The dimensional criteria will need to be addressed at the time of building permits.

35. Will there be a barricade at the end of the right-of-way?

Yes, there will be a guardrail. Abutter asked about vegetation; reply was that it will be looked at.

36. Discussions about the t-turnaround into lot.

One abutter wanted an explanation relative to the t-turnaround and how it relates to the lot. Recommended visiting True Street off Ocean Avenue to look at what it will be.

37. What is the process going forward?

We have submitted for site plan review and this is our required neighborhood meeting. We are awaiting staff and peer review comments. We expect that those will be received shortly and addressed. The project will have a public hearing before the Planning Board at which the project will be presented and discussed.

The neighborhood meeting was concluded at approximately 7:10 – 7:15.

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 Knight Farm Subdivision, STI Project No. 16533, shown on the Subdivision Plat (Exhibit A) recorded in Cumberland Registry of Deeds in Plan Book ____, Page ____ submitted by Greenlight Enterprises, LLC, and associated Grading, Grading & Utility Plan (Exhibit B) prepared by Sebago Technics, Inc. of 75 John Roberts Road, Suite 1A, South Portland, ME 04106 dated _____ and pursuant to a condition thereof, Greenlight Enterprises, LLC, a Maine limited liability company with a principal place of business in Portland, Maine, and having a mailing address of 1728 Washington Avenue, 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 underdrained soil filter, discharge structure, discharge pipe and emergency spillway, (hereinafter collectively referred to as the “stormwater system”), as shown on the Grading & Utility Plan in Exhibit B and in strict compliance with the approved Inspection, Maintenance and Housekeeping Plan prepared for the Owner by Sebago Technics, Inc. (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 lienied 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 lienning it or create a cause of action against the City.

Dated at Portland, Maine this ____ day of _____, 2017.

Greenlight Enterprises, LLC

(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 and Utility Plan
Exhibit C: Approved Stormwater Maintenance and Inspection Agreement



July 28, 2017
16533

Shukria Wiar
City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, Maine 04101

Re: Site Plan Resubmission – Knight Farm Subdivision
1728 Washington Avenue, Portland, ME, Map 351, Lot A003001

Dear Shukria:

Based upon the comments from staff and the peer review, we have made modifications to the plan and submission. Response to these comments and the corresponding changes are as follows:

Comments from Planner Shukari Wiar

1. Construction Management Plan needs to be submitted.

A construction management plan is enclosed.

2. Stormwater Maintenance Agreement needs to be submitted.

A draft of the Stormwater Maintenance Agreement is enclosed.

3. Street lighting, street trees and sidewalk shall be on the same side. In order to accomplish this, the underground electricity will need to be proposed under the sidewalk. This change needs to be reflected on the subdivision plan.

The sidewalk has been relocated to the south side of the proposed street as discussed.

4. Street will have to go to the end of the lot but does not have to be paved to the end.

As discussed with Shukria Wiar, the right-of-way as shown is acceptable.

5. Turn around on Lot 6, could this be located somewhere else on the lot?

To satisfy the comments from the fire department, the t-turnaround has been moved slightly eastward (20'+).

6. Instead of a one main stormwater, could there be individual treatments, like rain gardens?

Several different scenarios have been vetted for the project including the installation of underground storage, more than more one system and the potential to discharge to the system within Shepherds Lane. To make the project within an acceptable market range, it is necessary to distribute the costs over as many potential lots as possible. As this parcel is an infill parcel, the zoning requirements dictate that the project is configured in the linear layout presented.

By the nature of the project, we need to both treat and detent runoff for the project. Because of the City right-of-way within the project, treatment and detention for the lots cannot occur within the right-of-way. Because of sizing of the lots and grading to allow for drainage and transitions to match grades, rain gardens are difficult to impossible to use on this layout.

In addition, the underlying soils are HSG A which creates a greater runoff for any area that is converted to impervious area (i.e. drives, roads, roofs, etc.). Coupled with the facts that essentially the entire site drains towards Washington Street and that the City's system is a CSO, we have designed the system to meet pre vs. post to the 100 year event. The system as designed just fits into project based upon the retainage of the existing farmhouse and the need to have the treatment/detention at the low end of the project.

As mentioned above, several other deign were evaluated. Once again, because of the HSG A soils, the site would create more runoff than a site with HSG B or HSG C soils. The result for a subsurface surface would need to utilize large storage pipes/vaults vs. an open channel system. This design would require additional proprietary pre-treatment devices that increases the cost and would make the project unfeasible from a market standpoint.

The separation into more than one system was also reviewed. Because of the need for an open graded system (under drained soil filter), the composite systems would need the same bottom foot print for treatment but would require more area because of the transition slopes to grade. In addition to additional cost for two systems, this fact would cause the treatment areas to have a larger total footprint requiring the elimination of a lot. Thus the cost for individual lots would increase to cover the project's infrastructure costs.

Lastly, the potential to discharge to the drainage system in Shepherd's Lane was reviewed. First, we are unsure of the capacity of that drainage system as it was designed and built in the early 1990's. Furthermore, that system discharges to a pond/stormwater system on private property that is owned/maintained by the adjacent development. Because of the adjacent wetlands, it is questionable whether

the existing system can be expanded or retrofitted to meet current MDEP criteria. Lastly, there are no rights to drain through that system.

7. What is being proposed for exterior lighting?

The intent was to use standard fixtures and poles provided by Central Maine Power; however, we are aware of the City taking over the street lighting within the municipal boundaries. We have reached out to the Lighting Coordinator, Kevin Thomas, and the Sustainability Coordinator, Troy Moon, to make the appropriate adjustments for our plans. As the city has not finalized the lighting elements/selection, we will work with the city after site plan approval for the installation of appropriate fixtures.

8. The City is in the process of replacing all street lighting to LED lights. The applicant is proposing street lighting and staff recommends that these be LED as well. The standard is 3000 K for color temperature.

See response to 7. above.

Comments from TY Lin

- The applicant has conducted a trip generation estimate and less than 10 peak hour trips will be generated by the project. This level of traffic would not be expected to create traffic or safety deficiencies.

Acknowledged.

- A detailed construction management plan for activities that impact Washington Avenue traffic and pedestrians shall be provided.

A construction management plan is enclosed.

- The sidewalk waiver request shall comply with the City's sidewalk waiver criteria.

We are requesting a waiver from the sidewalk construction requirement of Land Use Code, Chapter 14, Article 4, Sec. 14-498, Subsection 8, Paragraph A for the north side of the proposed roadway. The justification for the waiver as stated in Sec. 14-506 is as follows:

1. ***Because the proposed street is a dead end street, there is no reasonable expectation for pedestrian usage coming from, going to and traversing the site.***
2. ***A sidewalk will be provided on the south side of the roadway which is a safe alternative-walking route is reasonably and safely available by crossing the proposed dead end street.***

- It is suggested that the sidewalk be located on the south side of the proposed roadway given the greater number of housing lots on the south side.

The sidewalk has been relocated to the south side of the proposed street as discussed.

- The applicant shall provide sight distance information at the new intersection with Washington Avenue.

Required site distance for 20 mph: 200 feet. There is some vegetation within the Washington Street right-of-way along the project site north property line and at the proposed center line of the new street that needs to be removed/trimmed. Other than that obstruction, the street will have more than 200' of site distance in both directions with approximately 450' to the south and approximately 700' to the north.

- A sidewalk waiver request is required for the property frontage on Washington Avenue towards the south.

In the pre-application meeting for the project, the sidewalk to the south was discussed. In lieu of constructing this portion of sidewalk, it was discussed continuing the north section of sidewalk to the intersection of Shepherd Lane. Staff appeared to be support this idea, therefore, we are requesting a waiver from the sidewalk construction requirement of Land Use Code, Chapter 14, Article 4, Sec. 14-498, Subsection 8, Paragraph A for the west side of Washington Street, south of the proposed street to construct a section of sidewalk north of the property to Shepherd Lane. The justification for the waiver as stated in Sec. 14-506 is as follows:

- 1. There is no sidewalk on the west side of Washington Street for 2,700' to the south, this sidewalk is an isolated segment and not interconnected sidewalk exists until 3,300' south of the project. Therefore, the sidewalk would not contribute to the development of a pedestrian oriented infrastructure.***
- 2. A sidewalk is proposed to be extended past the property line approximately 150' to the north and connect to the sidewalk at Shepherds Lane. This connection is at the existing signed crosswalk to allow pedestrian to access the walk on the east side of Washington Street, the main pedestrian access way for the street. This sidewalk and connection provides safe alternative-walking route is reasonably and safely available.***

We are requesting a waiver from the curbing construction requirement of Land Use Code, Chapter 14, Article 4, Sec. 14-498, Subsection 8, Paragraph B for the west side of Washington Street. The justification for the waiver as stated in Sec. 14-506 is as follows:

- 1. There is no continuous curbing on Washington Street until approximately 1,200' to the north and 2,400 to the south and these locations are on one side of the right-of-way predominately with adjacent sidewalks***

2. *There are catch basin stones adjacent to the drainage structures and runoff with Washington Street operates with the existence of curbing.*

- The City has been implementing traffic calming recommendations along Washington Avenue over a number of years and I need to review conditions in the vicinity of the project and whether any specific actions or monetary contributions are required by the applicant.

There are existing radar feedback speed signs 1700' north and 1500' south of the site. There is an intersection with 175' of the site that has a traffic island with pedestrian warning signs. The development is proposing to install a sidewalk from the site to the sidewalk/crosswalk at Shephard lane; cost is approximately \$5,500.00.

- Greater detail is required for the sidewalk connection to Shepherd Lane as it relates to utility location and impacts. I also continue to review general pedestrian safety and connectivity.

The sidewalk connection area has been reviewed. The only conflict is a plant along the northern property that will need to be removed. The sidewalk will traverse the adjacent lot within the right-of-way and cross one existing driveway. It will be placed at grade as to not disturb the abutter property.

Comments from Woodard & Curran

- 1) The City of Portland requires that all Level III site plan applications 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 (Technical Manual, Section 5. II. Applicability in Portland. C. a. and City of Portland Code of Ordinances Sec. 14-526 site plan standards (b). 3. b.). We offer the following comments:

- a) Basic Standard: The Applicant has provided notes, and details to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. The locations of proposed sediment barriers should be included on the plans.

The sediment barrier has been added to the plan where appropriate.

- b) General Standard: The Applicant has proposed to install an underdrained soil filter to provide treatment for the subdivision. This system will provide adequate treatment for the subdivision. We have the following comments on the stormwater design:
 - Please clarify the locations of the vertical orifice openings on the outlet control structure.

In review of this comment, it was determined that the proposed orifice on the outlet control structure was below the water quality elevation. The 1" diameter orifice is an orifice for the under drained pipe system; this has been clarified in the detail. The 5.5" x 6.5" orifice has been adjusted to 7.25" x 6.5" and is on the face of the riser structure in the under drained soil filter. The detail on sheet 7 of 8 has been modified to add clarity to the plans.

- The soil filter's emergency spillway is modeled with an elevation of 149. It appears based on the grading plan, that this elevation is closer to 147.5. Based on the model, the peak water elevation in the 100-year storm will not reach this elevation, and the outlet will serve only emergency conditions in the event that the outlet control structure becomes plugged. The Applicant should provide additional permanent stabilization (i.e. a turf reinforcement matting) at the emergency spillway, or confirm that in an emergency flow situation (i.e. model the 25- year storm with no flow exiting via the OCS) that the velocity existing via the spillway will not be at erosive levels.

The intent of the design was to have a spillway at the southeast corner of the soil filter at elevation 147.50. This spillway will be stabilized with North American Green VMAX 350 turf reinforcement. The spillway detail has been added to the plans and the spillway labeled on the plan sheet.

- As noted during the May 23, 2017 meeting with the Applicant, concern has been expressed by neighbors and staff on the scale and location of the underdrain soil filter. We understand that the site constraints limit the location and type of stormwater treatment features that may be utilized for the subdivision. The Applicant should be prepared to discuss these constraints and the alternatives considered with the Planning Board. We also recommend that the Applicant consider additional landscaping to provide buffering at the street.

See response above.

- c) Flooding Standard: The proposed underdrained soil filter will provide for flood control within the subdivision.

Acknowledged.

- 2) The City of Portland Department of Public Works has reviewed the proposed utility plan for the new roadway. As designed, the stormwater system does not meet the City's Technical Standards and is unacceptable. The stormwater system should be constructed with a storm drain system in the middle third of the road (per figure I-4 in the City's Technical Manual <http://portlandmaine.gov/756/City-CodesOrdinances-Regulations-Maps>), with drain manholes at either end of the run. Stormwater services from the individual properties (foundation drains, roof drains, or any other field inlets or stormwater connections) should be to the stormdrain main in the street and not to the underdrains installed at the curb lines.

We have revised the plans based upon coordination with the Public Works Division to include a 12" HDPE pipe in the roadway with a manhole at the end.

- 3) As discussed during the May 23 meeting with the Applicant, the City would like the sidewalk layout adjusted to move the 5' sidewalk with 6' esplanade to the opposite side of the street. The lights should be on the same side as the sidewalk, and the electrical lines for the lights should be under the sidewalk. Trees should be installed on both sides of the street as shown, with the trees in the esplanade installed such that there is no conflict with the electrical lines.

The sidewalk has been relocated to the south side of the proposed street as discussed.

Comments from Chief Keith Gautreau

Premises Identification

- The main entrance of the building must be the address for the property. This should be consistent with 911, tax assessor, Inspections Division and future mailing address.
- Street addresses shall be marked on the structure and shall be as approved by the City E-911 Addressing Officer.
- If the building entry faces a different street, both the street name and number should be large enough to read from the street.
- Address numbers must be a minimum of 6 inches high.
- The number should be in Arabic numerals rather than spelled out (for example, "130" instead of "One Hundred and Thirty").
- Color: Addresses should be in a color that contrasts with the background.
- Whenever possible, should be illuminated.
- Provide additional address signs at entrances to the property when the building address is not legible from the public street.

Acknowledged.

- The width of the proposed road is acceptable to Fire Dept. for emergency vehicle access.

Acknowledged.

- The proposed turnaround appears to not be able to accommodate a Fire Dept. ladder truck. Please provide documentation that there will be sufficient turning radius for a ladder truck.

The location of the t-turnaround has been moved slightly eastward. Attached is an exhibit that shows that the movements for a Fire Department truck executing a t-turnaround to exit the site.

- The existing hydrant located just north of the proposed new street will be within acceptable distance to the end of the road.

Acknowledged.

Comments from the City Surveyor

1. Should there be a proposed street name on the plan?

Abner Lane has been added to the Subdivision Plan.

2. The surveyor needs to cite the specific City benchmark and elevation that was used as a basis for this survey.

The city benchmark reference has been added.

3. There appears to be a missing distance along Washington Avenue at the Open Space lot. Also, should there be a note about restrictions/uses for the Open Space lot and especially about the Drainage Easement in this area?

The missing dimension has been added to the Subdivision Plan.

4. The surveyor needs to add at least three proposed monument locations for the proposed street: one at Washington Avenue, one at the PC near Washington, and one at the proposed street's end. All three should be on the same side of the proposed street and on the three-foot offset lines. Either side of the street is acceptable.

The proposed monuments have been shown on the revised Subdivision Plan.

Other Comment from Planning Memo

The ordinance requires submission to include a preliminary landscape plan, and staff have advised the applicant that tree saves are generally sought for subdivisions. This parcel is an open field and not forested but there are mature trees along the southern boundary that will need to be saved as part of this development. A more detailed landscape and tree save plan will need to be prepared for the final submission. The applicant is proposing to twenty-two street trees. Tree save proposals should address the need for buffering between the subdivision and the surrounding existing homes.

Four trees behind the barn were taken down. There are another four isolated trees within the open areas that will depend upon the lot development. Most of the trees along the south property line are not on the property and will not be impacted. It appears that a few smaller tress, if necessary will need to be removed.

Discussion from Planning Board Workshop

In addition, to the above referenced changes, the proposed ordinances that were mentioned at the Planning Board workshop have been reviewed to see if they have an effect or could be used for the proposed project. These changes do not encompass the R-2 and R-3 zoning districts.

In addition, we have reached out to abutter, Rick Romano, relative to the project to discuss the evaluation of the proposed ordinances and their non-effect on the project, to discuss the under drained soil filter and provide pictures of a typical filter, show the landscaping that has been placed along the Washington Avenue frontage adjacent to the under drained soil filter and provide him with an aerial photograph with the project line work that shows the entrance location (to be shared with neighboring abutter). Several emails, phone calls and a couple visits to Mr. Romano's place of business has failed to yield a meeting with him. At this point, we will ourselves available at our office for Mr. Romano to meet us to hear his concerns.

Lastly, an abutter commented on the fact that the owner has not completed demolition and removal of some of the building materials from the site. Since the Planning Board meeting, the owner has continued their cleanup and has hauled off 3 construction dumpster loads from the property.

Uploaded to the City's Eplan system are:

1. This response letter.
2. Revised plan and detail sheets.
3. Revised section 10: Construction Management Plan.
4. Revised section 13: Stormwater Management Plan.
5. Section 22: draft Stormwater Maintenance Agreement.

If you have any questions, relative to this resubmission, do not hesitate to contact me. Thank you for your time relative to our application.

Sincerely,

SEBAGO TECHNICS, INC.



Robert A. McSorley, P.E.
Senior Project Manager

RAM:llg
Enc.

cc: Ron Goddard, Greenlight Enterprises, LLC



Shukria Wiar <shukriaw@portlandmaine.gov>

Knight Farm Subdivision waiver

Robert McSorley <rmcsorley@sebagotechnics.com>

Fri, Sep 29, 2017 at 10:16 AM

To: Shukria Wiar <shukriaw@portlandmaine.gov>, Thomas Errico <thomas.errico@tylin.com>

Tom/Shukria,

Justification for sidewalk waiver. Hopes that this does it.

Rob

1. There is no reasonable expectation for pedestrian usage coming from, going to **AND** traversing the site.

The street is a dead end street and there is no expectation that pedestrians will traverse through the site to get from or to another property (THERE ARE THREE PARTS TO THIS CRITERIA. WHILE WE DO HAVE THE EXPECTATION THAT PEDESTRIANS WILL COME OR GO TO THE SIGHT, THERE IS NO EXPECTATION THAT PEOPLE WILL TRAVERSE THE SITE AS IT IS A DEAD END ROAD). The sidewalk will be used for the most part only by the residents or people visiting the residents.

3. A safe alternative-walking route is reasonably and safely available, for example, by way of a sidewalk on the other side of the street that is lightly traveled.

A sidewalk will be provided on the south side of the roadway which is a safe alternative-walking route is reasonably and safely available by crossing the proposed dead end street.

6. Strict adherence to the sidewalk requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value

The project's roadway, Abner Lane, is proposed where it is based certain restrictions. First, the access road had to be place to the south to get the minimum required setback from the existing house and secondly, not too far to the south such that the access way lines up with the house across Washington Avenue and have impacts from car headlight coming down Abner Lane. The result is that the lots on the north side of Abner Way are not as deep as the southern lots. In order, to have a more balanced street from a landscaping and yard perspective, it is necessary to provide the additional green space in the right-way adjacent to the lots on the north side of Abner Way. The public will see a benefit from the deletion of the sidewalk from a more balanced neighborhood street frontage and the reduction of headlight impacts to the existing house on Washington Avenue)

Furthermore, the project is within the Fall Brook Watershed and as such we have designed the site to minimize impervious areas and maximize the stormwater management detention for the project. This is achieved through providing sidewalk on only one side of the roadway, which is sufficient for the 9 homes to be built or exist in the subdivision, and designing the system for the 100 year storm event in lieu of the required 25 year event. The additional impervious area from the sidewalk will result in more water quality

volume needing to be provided (detained pool volume). The result is the pond will not provide the all the proposed additional stormwater volume from the 100 year storm. Having less impervious area within the Fall Brook Watershed and providing additional stormwater storage is of greater public good than the construction of the dead end sidewalk along 4 residences.

Rob McSorley, P.E. *Senior Project Manager*

Office: 207.200.2100 | Direct: 207.200.2074 | Cell: 207.939.1809

75 John Roberts Rd., Suite 1A, South Portland, ME 04106

rmcsorley@sebagotechnics.com | www.sebagotechnics.com

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KNIGHT FARM SUBDIVISION

1728 WASHINGTON AVE
PORTLAND, MAINE 04103

APPLICANT:
GREENLIGHT
ENTERPRISES, LLC
1728 WASHINGTON AVE.
PORTLAND, MAINE 04103

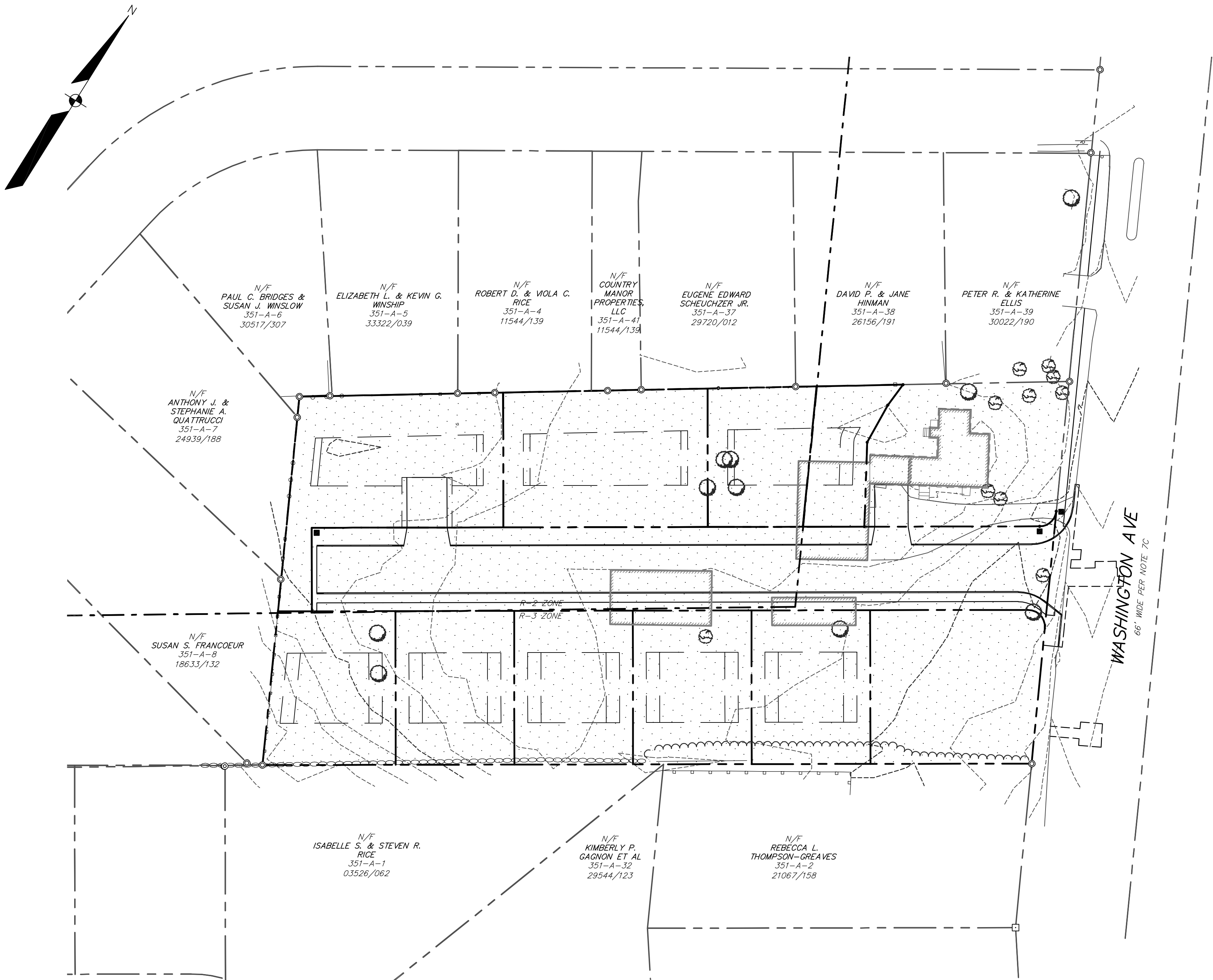
ENGINEER/SURVEYOR:

SEBAGO
TECHNICS

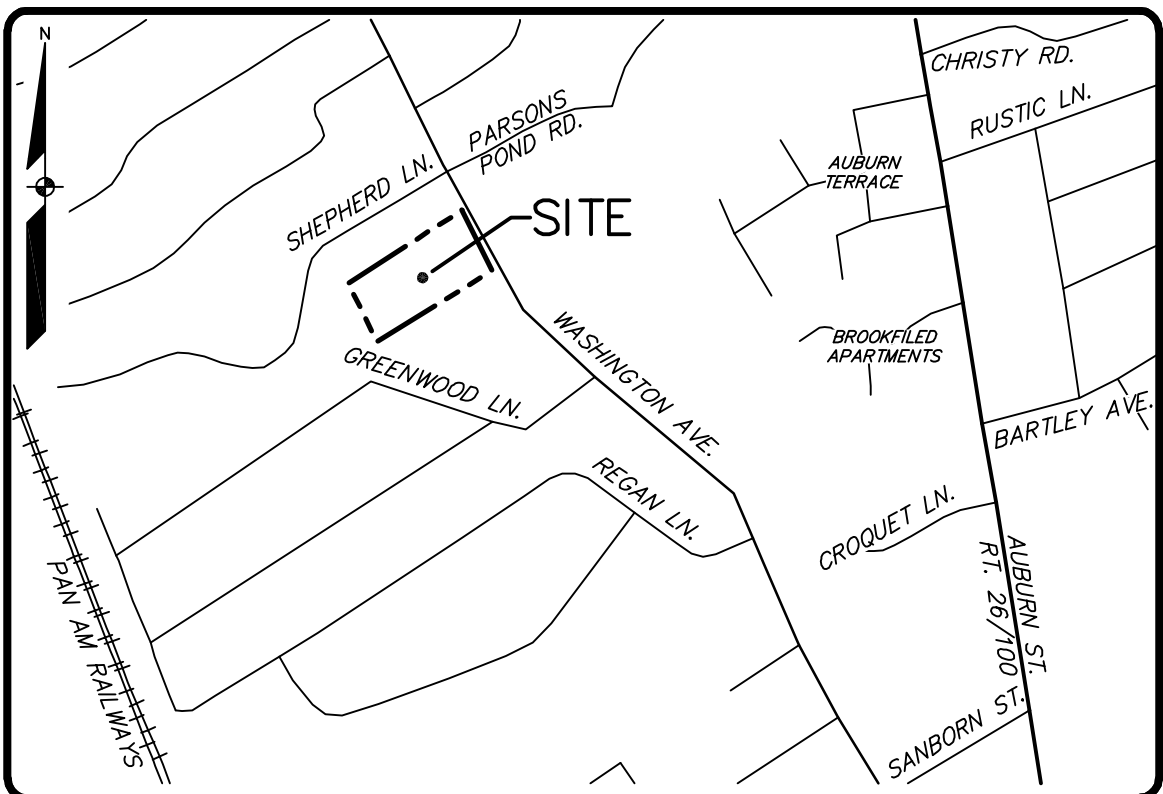
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South Portland, ME 04106
Tel. 207-200-2100

250 Goddard Rd. Suite B
Lewiston, ME 04240
Tel. 207-783-5656



SCALE: 1" = 40'



LOCATION MAP

NTS

INDEX OF PLANS

SHEET NO.	SHEET TITLE
1	COVER SHEET
2	EXISTING CONDITIONS SURVEY
3	SUBDIVISION PLAN
4	GRADING AND UTILITY PLAN
5	PROFILE
6	DETAILS
7	DETAILS
8	DETAILS
1	PRE DEVELOPMENT WATERSHED PLAN
2	POST DEVELOPMENT WATERSHED PLAN

GENERAL NOTES:

- THE RECORD OWNER OF THE PARCEL IS GREENLIGHT ENTERPRISES LLC BY DEED DATED MARCH 10, 2017 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD) IN BOOK 33874, PAGE 149.
- THE PROPERTY IS SHOWN AS LOT 3, BLOCK A ON THE CITY OF PORTLAND TAX MAP 351 AND IS LOCATED IN THE R-2 AND R-3 RESIDENTIAL ZONES.
- SPACE AND BULK CRITERIA FOR THE R-2 AND R-3 ZONE ARE AS FOLLOWS:

MINIMUM LOT SIZE:	R-2	R-3
MINIMUM STREET FRONTAGE:	10,000 SQ FT	6,500 SQ FT
MINIMUM FRONT YARD:	50 FT	50 FT
MINIMUM SIDE YARD:	25 FT	25 FT
MINIMUM REAR YARD:	12 FT	8 FT
MINIMUM LOT COVERAGE:	20 %	35 %
MINIMUM SIDE YARD SIDE STREET:	20 FT	20 FT
MINIMUM LOT WIDTH:	65 FT	65 FT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.
- TOTAL AREA OF PARCEL IS APPROXIMATELY 2.15 ACRES.
- BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A FIELD SURVEY PERFORMED BY SEBAGO TECHINCS INC. IN JANUARY OF 2017. THERE WAS LIMITED SNOW COVER BUT NO VISIBLE LEDGE WAS OBSERVED. THERE MAY BE SURFACE OR SHALLOW LEDGE ON THE PROPERTY.
- PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83. ELEVATIONS DEPICTED HEREON ARE ON CITY DATUM, BASED ON BENCHMARK INFORMATION PROVIDED BY THE CITY OF PORTLAND.

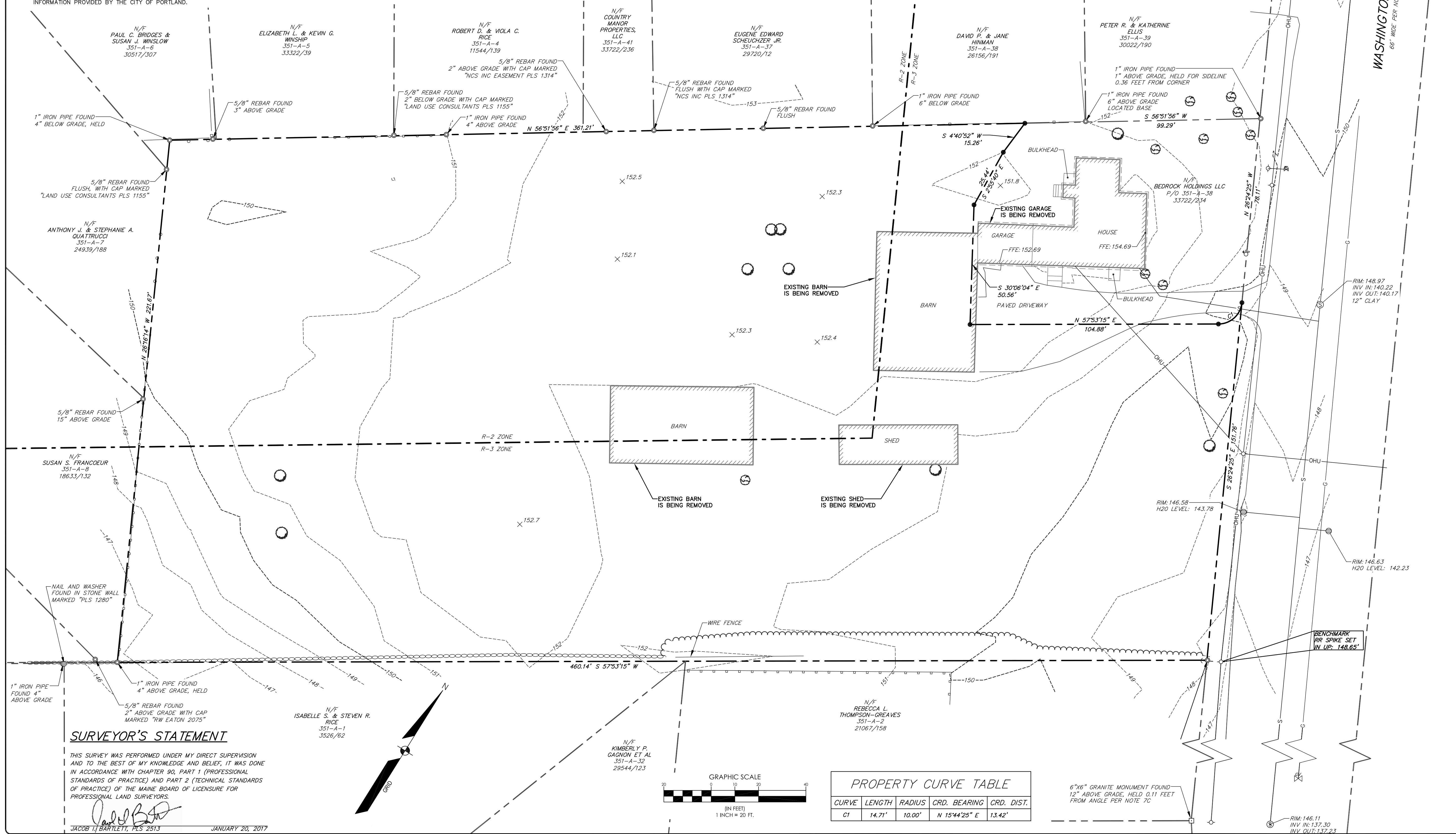
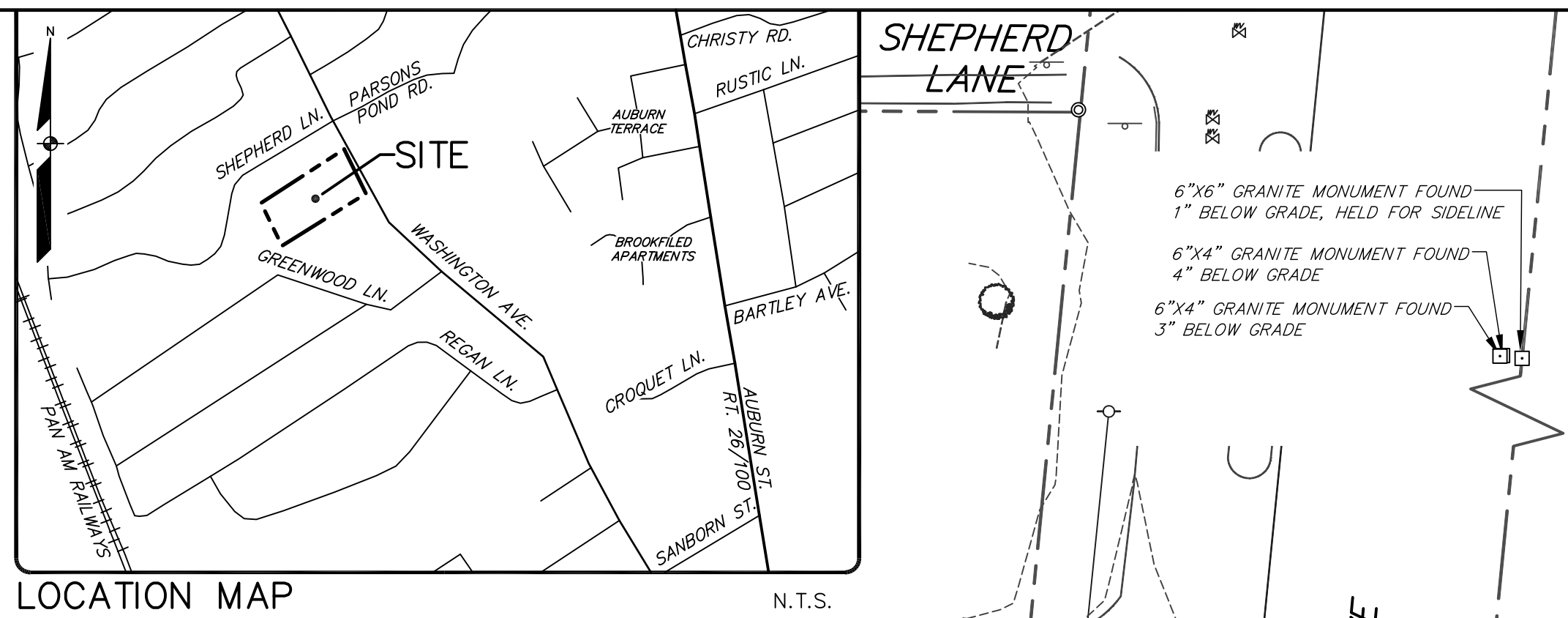
PLAN REFERENCES:

- "PLAN OF GREENWOOD ACRES MADE FOR ROBERT M. CHASE" DATED DECEMBER 12, 1967, BY J.P. BEAULIEU AND W.S. BOOTHBY AND RECORDED AT CORD IN PLAN BOOK 78, PAGE 13.
- "ORCHARD GREEN SUBDIVISION OFF SHEPHERD LANE PORTLAND, MAINE" DATED JUNE 8, 1993 BY LAND USE CONSULTANTS, INC. AND RECORDED AT CORD IN PLAN BOOK 193, PAGE 223.
- WASHINGTON AVENUE BLUE SHEETS, PAGES 28-29, FILED IN THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT ENGINEERING ARCHIVES.
- "BOUNDARY SURVEY 20 SHEPHERD LANE, PORTLAND, MAINE OWNER: CAROLYN SCHEUCHZER" DATED JUNE 4, 2008 BY NORTHEAST CIVIL SOLUTIONS INC. AND RECORDED AT CORD IN PLAN BOOK 212, PAGE 188.
- "REVISED PLAN OF LAND AT GREENWOOD ACRES MADE FOR ROBERT M. CHASE PORTLAND MAINE" DATED JULY 26, 1987 BY J.P. BEAULIEU AND W.S. BOOTHBY AND RECORDED AT CORD IN PLAN BOOK 75, PAGE 13.
- "EXISTING CONDITIONS SURVEY OF: JIMINO PROPERTY" DATED MARCH 22, 2016 BY SEBAGO TECHINCS INC.
- 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.
- THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051-0002-C, HAVING AN EFFECTIVE DATE OF DECEMBER 8, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS ZONE X, AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN.
- THE SEWER LINE IS SHOWN ON THE LOCUS PROPERTY PER A PLAN PROVIDED BY THE CITY.

LEGEND

EXISTING	EXISTING
PROPERTY LINE/R.O.W.	CONTOURS
ABUTTER LINE/R.O.W.	SPOT GRADE
SETBACK	PICKET FENCE
REBAR TO BE SET	STOCKADE FENCE
MONUMENT	POST & RAIL FENCE
IRON PIPE/ROD	STONE WALL
CURVE/LINE NO.	DECIDUOUS TREE
ZONE LINE	SHRUB
BENCHMARK	FENCE POST
BENCHMARK DESCRIPTION WITH ELEVATION	GAS
BUILDING	WATER
DECK/STEPS	WATER GATE VALVE
OVERHANG	WATER SHUT OFF
EDGE PAVEMENT	HYDRANT
EDGE CONCRETE	SANITARY SEWER
CURB LINE	SANITARY MANHOLE
OHU	STORM DRAIN
UTILITY POLE	CATCH BASIN
GUY WIRE	PROPOSED PROPERTY LINE/R.O.W.
TREELINE	

LOCATION MAP



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.

JACOB I. BARTLETT, PLS 2513

JANUARY 20, 2017

PROPERTY CURVE TABLE

CURVE	LENGTH	RADIUS	CRD. BEARING	CRD. DIST.
C1	14.71'	10.00'	N 15°44'25" E	13.42'



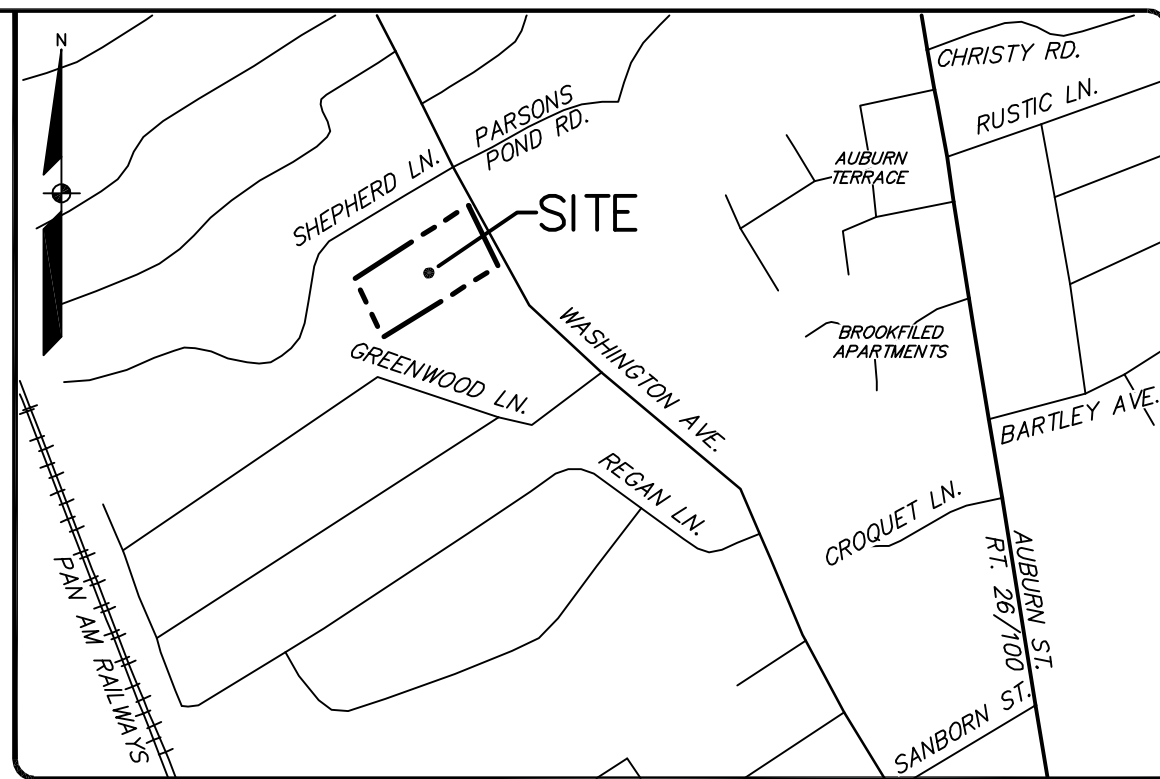
DESIGNED	CHECKED
JIB	MWE
C	JIB
B	JIB
A	JIB
REV:	BY: DATE: STATUS:
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHINCS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHINCS, INC.	

SEBAGO
TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. 250 Ogdard Rd.
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS SURVEY
OF:
KNIGHT FARM SUBDIVISION
1728 WASHINGTON AVE.
PORTLAND, MAINE 04103
FOR:
GREENLIGHT ENTERPRISES, LLC
1728 WASHINGTON AVE.
PORTLAND, MAINE 04103

PROJECT NO.	SCALE
16533	1" = 20'

SHEET 2 OF 8



GENERAL NOTES:

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3. SPACE AND BULK CRITERIA FOR THE R-2 AND R-3 ZONE ARE AS FOLLOWS:

	R-2	R-3
MINIMUM LOT SIZE:	10,000 SQ FT	6,500 SQ FT
MINIMUM STREET FRONTAGE:	50 FT	50 FT
MINIMUM FRONT YARD:	25 FT	25 FT
MINIMUM SIDE YARD: 1 & 1 1/2 STORY	12 FT	8 FT
2 STORY	14 FT	14 FT
1 1/2 STORY	16 FT	16 FT
MINIMUM REAR YARD:	25 FT	25 FT
MAXIMUM BUILDING HEIGHT:	35 FT	35 FT
MAXIMUM LOT COVERAGE:	20 %	35 %
MINIMUM SIDE YARD SIDE STREET	20 FT	20 FT
MINIMUM LOT WIDTH	65 FT	80 FT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.
4. TOTAL AREA OF PARCEL IS APPROXIMATELY 2.15 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A FIELD SURVEY PERFORMED BY SEBAGO TECHNICS INC. IN JANUARY OF 2017. THERE WAS LIMITED SNOW COVER BUT NO VISIBLE LEDGE WAS OBSERVED. THERE MAY BE SURFACE OR SHALLOW LEDGE ON THE PROPERTY.
6. PLAIN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NADES. ELEVATIONS DEPICTED HEREON ARE ON CH DATUM, BASED UPON BENCHMARK MONUMENTS PROVIDED BY THE CITY IN FIELDBOOK L845. THE SPECIFIC BENCHMARK IS "MON BOLT SEC BALLPARK & WASH", ELEVATION 99.43.
7. PLAIN REFERENCES:
 - A. "PLAIN OF GREENWOOD ACRES MADE FOR ROBERT M. CHASE" DATED DECEMBER 12, 1967, BY J.P. BEAULIEU AND W.S. BOOTHBY AND RECORDED AT CCRD IN PLAIN BOOK 78, PAGE 13.
 - B. "ORCHARD GREEN SUBDIVISION OFF SHEPHERD LANE PORTLAND, MAINE" DATED JUNE 8, 1993 BY LAND USE CONSULTANTS, INC. AND RECORDED AT CCRD IN PLAIN BOOK 193, PAGE 223.
 - C. WASHINGTON AVENUE BLUE SHEETS, PAGES 28-29, FILED IN THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT ENGINEERING ARCHIVES.
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8. 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.
9. THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051-0002-C, HAVING AN EFFECTIVE DATE OF REQUIREMENT 5, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS ZONE X, AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN.
10. THE SEWER LINE IS SHOWN ON THE LOCUS PROPERTY PER A PLAN PROVIDED BY THE CITY.
11. WAIVERS:
 - A. THE APPLICANT REQUESTS A WAIVER OF THE LAND USE CODE, CHAPTER 14, ARTICLE 4, SEC 14-498, SUBSECTION 8, PARAGRAPH A REQUIRING THE CONSTRUCTION OF SIDEWALKS IN A SUBDIVISION SETBACK.
12. PROJECT IMPACTS:
 - A. TOTAL DISTURBED AREA: 2.11 ACRES
 - B. TOTAL IMPACTED WETLAND AREA: 0.00 SQ. FT.
13. LOT 8 IS SPLIT BETWEEN BOTH THE R2 AND R3 ZONES. THE AREA CALCULATIONS FOR LOT 8 ARE AS FOLLOWS: 3,197 SF IS IN THE R3 ZONE WITH A 6,500 SF REQUIREMENT, BEING 49.18 % OF THE LOT REQUIREMENT. 5,093 S.F. OF LOT 8 IS IN THE R2 ZONE WITH A 6,500 SF REQUIREMENT. BEING 50.82 % OF THE REQUIRED LOT AREA WHICH CALCULATES TO A TOTAL OF 100.12 LOT REQUIREMENT AS DIRECTED BY THE CITY ZONING ADMINISTRATOR. THE FRONT AND REAR SETBACKS FOR LOT 8 ARE THE SAME IN BOTH ZONES. THE SIDE SETBACKS FOR EACH ZONE SHALL MEET THE STANDARDS FOR EACH ZONE.

APPROVAL-
CITY OF PORTLAND
PLANNING BOARD

DATE

CHAIRPERSON

[illegible]

SEBAGO
TECHNICS
WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

250 Coddard Rd.
Suite B
Lewiston, ME 04240
Tel. 207-783-5656

SUBDIVISION PLAN

OF:

KNIGHT FARM SUBDIVISION

1728 WASHINGTON AVE
PORTLAND, MAINE 04103

FOR RECORD OWNER:

GREENLIGHT ENTERPRISES, LLC

1728 WASHINGTON AVE.
PORTLAND, MAINE 04103

PROJECT NO.
16533

SCALE
1" = 30'

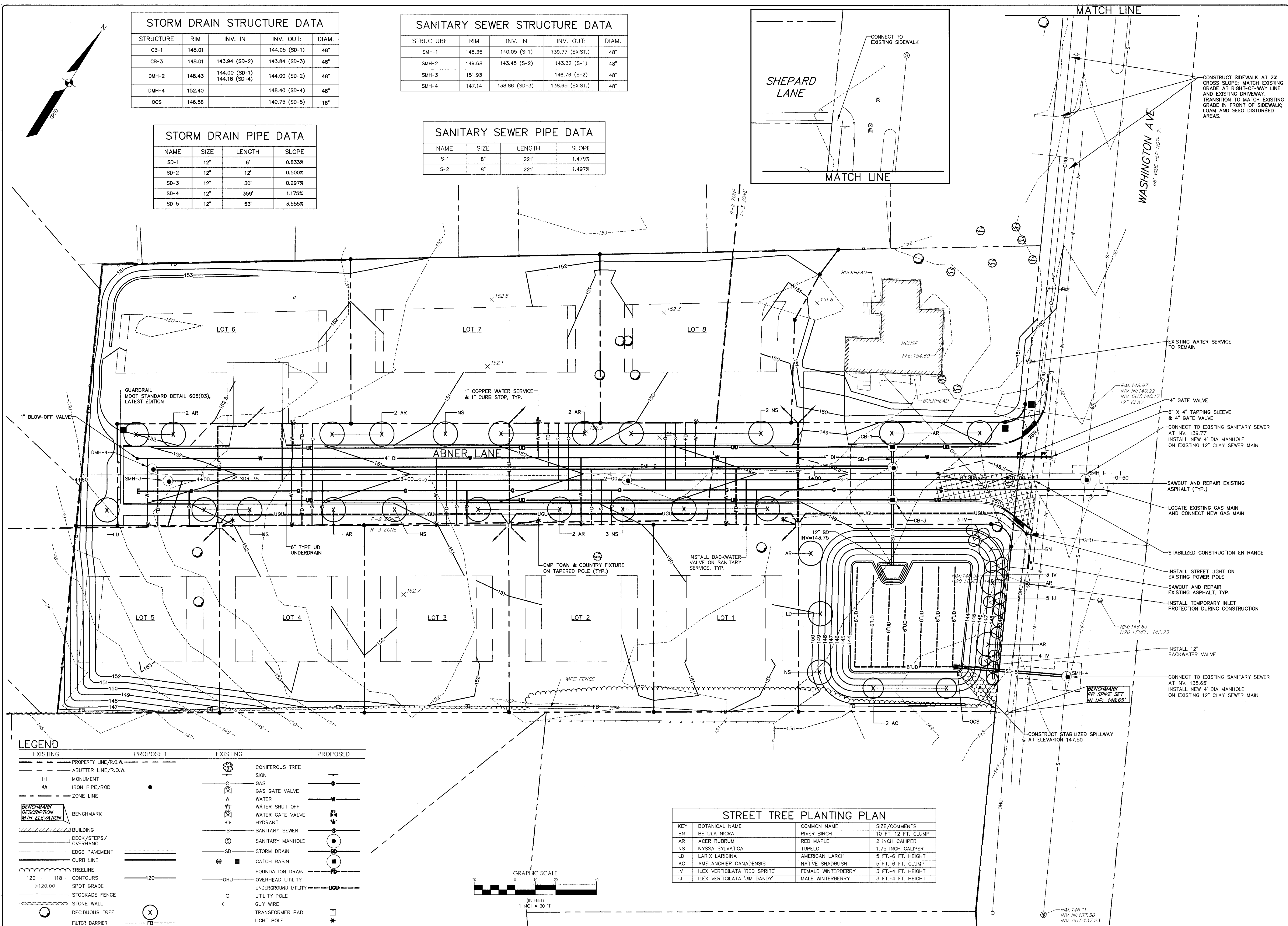
SHEET 3 OF 8

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT	DIAM.
CB-1	148.01		144.05 (SD-1)	48"
CB-3	148.01	143.94 (SD-2)	143.84 (SD-3)	48"
DMH-2	148.43	144.00 (SD-1) 144.18 (SD-4)	144.00 (SD-2)	48"
DMH-4	152.40		148.40 (SD-4)	48"
OCS	146.56		140.75 (SD-5)	18"

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-1	12"	6'	0.833%
SD-2	12"	12'	0.500%
SD-3	12"	30'	0.297%
SD-4	12"	359'	1.175%
SD-5	12"	53'	3.555%

SANITARY SEWER STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT	DIAM.
SMH-1	148.35	140.05 (S-1)	139.77 (EXIST.)	48"
SMH-2	149.68	143.45 (S-2)	143.32 (S-1)	48"
SMH-3	151.93		146.76 (S-2)	48"
SMH-4	147.14	138.86 (SD-3)	138.65 (EXIST.)	48"

SANITARY SEWER PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
S-1	8"	221'	1.479%
S-2	8"	221'	1.497%



STREET TREE PLANTING PLAN			
KEY	BOTANICAL NAME	COMMON NAME	SIZE/COMMENTS
BN	BETULA NIGRA	RIVER BIRCH	10 FT.-12 FT. CLUMP
AR	ACER RUBRUM	RED MAPLE	2 INCH CALIPER
NS	NYSSA SYLVATICA	TUPELO	1.75 INCH CALIPER
LD	LARIX LARICINA	AMERICAN LARCH	5 FT.-6 FT. HEIGHT
AC	AMELANCHIER CANADENSIS	NATIVE SHADBUSH	5 FT.-6 FT. CLUMP
IV	ILEX VERTICILATA 'RED SPRITE'	FEMALE WINTERBERRY	3 FT.-4 FT. HEIGHT
IJ	ILEX VERTICILATA 'JIM DANDY'	MALE WINTERBERRY	3 FT.-4 FT. HEIGHT

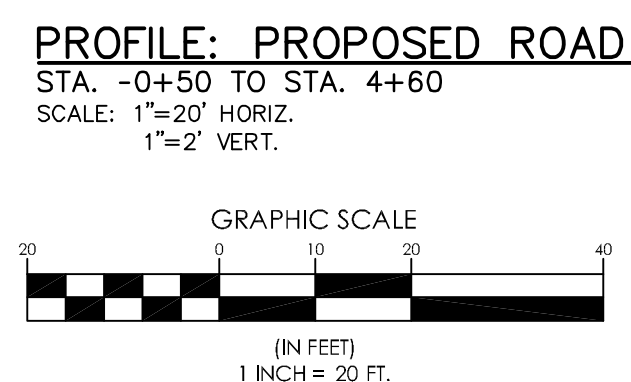
DESIGNED: GJH
CHECKED: RAM

C: RAM 8-21-17 REVISE LANDSCAPE PLANTINGS
B: RAM 7-14-17 PLANNING BOARD RESUBMISSION
A: GJH 3-14-17 PLANNING BOARD SUBMISSION
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.

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75 John Roberts Rd.
South Portland, ME 04106
Tel: 207-200-2100

GRADING AND UTILITY PLAN
OF:
KNIGHT FARM SUBDIVISION
1728 WASHINGTON AVE
PORTLAND, MAINE 04103
FOR:
GREENLIGHT ENTERPRISES, LLC
1728 WASHINGTON AVE.
PORTLAND, MAINE 04103

PROJECT NO. 16533
SCALE 1" = 20'
SHEET 4 OF 8



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

- 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.
- 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.
- 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

- 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.
- 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.
- 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 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 TOP-OF-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.
- 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 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 MAINTENANCE AND CONSTRUCTION CHAPTER 500 RULES, THE DEPARTMENT'S 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.

- POLLUTION PREVENTION:**
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE WITHIN 50 FEET OF ANY 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.
- 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.
- 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.
- 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.
- 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 (AS DESCRIBED IN PART 1 OF THIS SECTION) OR OTHER NON-ERODIBLE COVER. 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 COMBINATION A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 1 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 THE BARRIER.
- 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 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 THAN 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 MANUFACTURER'S RECOMMENDATIONS.

- 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.

- 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 SWEEPED OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. A STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.
- 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.
- 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. SEEDED 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.
- 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:

- OUR (A) LAYER 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.**
- 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.
- 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:

- 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 1 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.**
- 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.**
- 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 SURFACES 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.

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 -- BY SEPTEMBER 15 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.

- 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 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C) OF THIS STANDARD.**
- STABILIZE THE SOIL 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 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. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).**
- STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SLOPE 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 SLOPE.**
- STABILIZE THE SOIL WITH EROSION CONTROL MIX -- BY NOVEMBER 15, PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.**

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SLOPES ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SLOPES BY THIS DATE, THEN THE CONTRACTOR 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 CONTRACTOR WILL SEED THE DISTURBED SLOPE 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.**
- STABILIZE THE SOIL 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 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 SLOPE 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 SLOPE.**
- STABILIZE THE SOIL WITH EROSION CONTROL MIX -- 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 _____ DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

- | | 3 MONTHS |
|--|-------------------------------|
| 1. ESTIMATED CONSTRUCTION TIME: | WEEK 1 |
| 2. EROSION CONTROL MEASURES PLACED | WEEK 2 |
| 3. SITE CLEARING AND GRUBBING | WEEK 3 |
| 4. CONSTRUCTION OF ROAD SUBBASE FOR ACCESS | WEEK 4 - WEEK 9 |
| 5. STORMWATER MANAGEMENT AREA CONSTRUCTION | WEEK 5 - WEEK 9 |
| 6. UTILITY IMPROVEMENTS AND ROADWAY CONSTRUCTION | WEEK 10 - WEEK 11 |
| 7. ROAD BASE AND BINDER COARSE | WEEK 12 |
| 8. SIDEWALKS | WEEK 12 |
| 9. START FINAL SEEDING ON PREPARED AREAS (DURING GROWING SEASON) | WEEK 10 |
| 10. BIWEEKLY MONITORING OF VEGETATIVE GROWTH | WEEK 12 |
| 11. RE-SEEDING OF AREAS, IF NEEDED | WEEK 12 |
| 12. REMOVAL OF EROSION CONTROL DEVICES | UPON FINAL PROJECT COMPLETION |

* HOME CONSTRUCTION ON INDIVIDUAL LOTS MAY BEGIN ONCE THE ROADWAY BASE HAS BEEN SUFFICIENTLY CONSTRUCTED TO ALLOW VEHICLE ACCESS TO THE LOT(S). HOME CONSTRUCTION MAY CONTINUE BEYOND ESTIMATED COMPLETION DATE FOR ROADWAY CONSTRUCTION. DISTURBED AREAS ON INDIVIDUAL LOTS SHALL ALSO BE SUBJECT TO THE EROSION AND SEDIMENTATION CONTROL PROVISIONS CONTAINED HEREIN.

** 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.

- 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.
- 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, SLUMPS, 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.
- FUGITIVE SEDIMENT AND DUST:**
MEASURES 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 SWEEPED 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.
- 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.
- 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 RETAINS 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.
- 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 WASH-DOWN, 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 HAS 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 WASHLINE FLUSHINGS;
LANDSCAPE IRRIGATION;

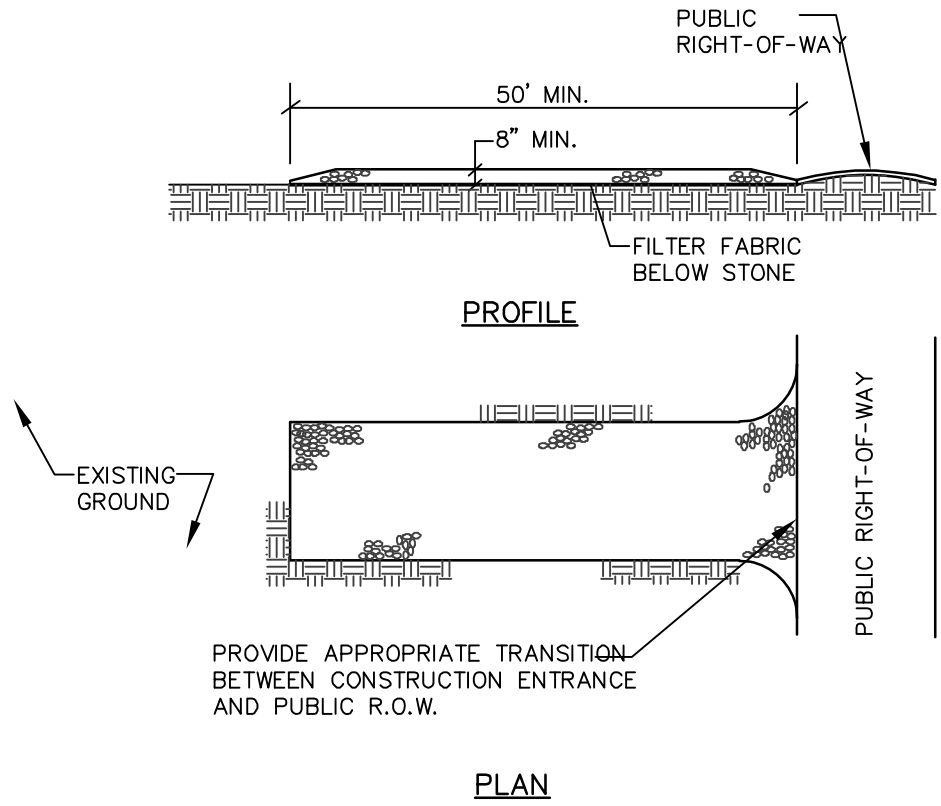
- UNAUTHORIZED NON-STORMWATER DISCHARGES:**
THE DEP DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
WASTEWATER FROM THE WASH-OUT OR CLEAN-OUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE 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

NOTES:

- 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.
- FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
- LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
- STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
- WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
- USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUIV.

EROSION CONTROL BLANKET

NOT TO SCALE

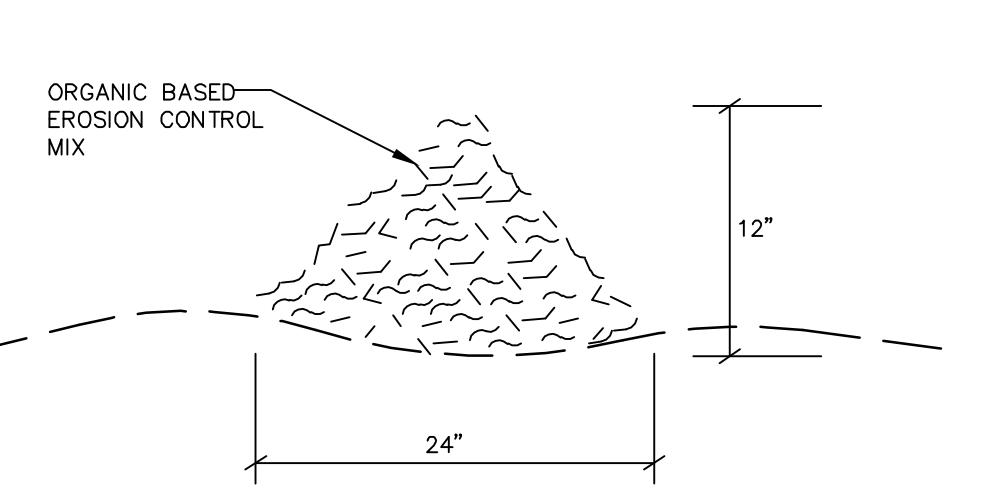


NOTES:

- STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
- LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
- THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
- WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
- 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



COMPOSITION

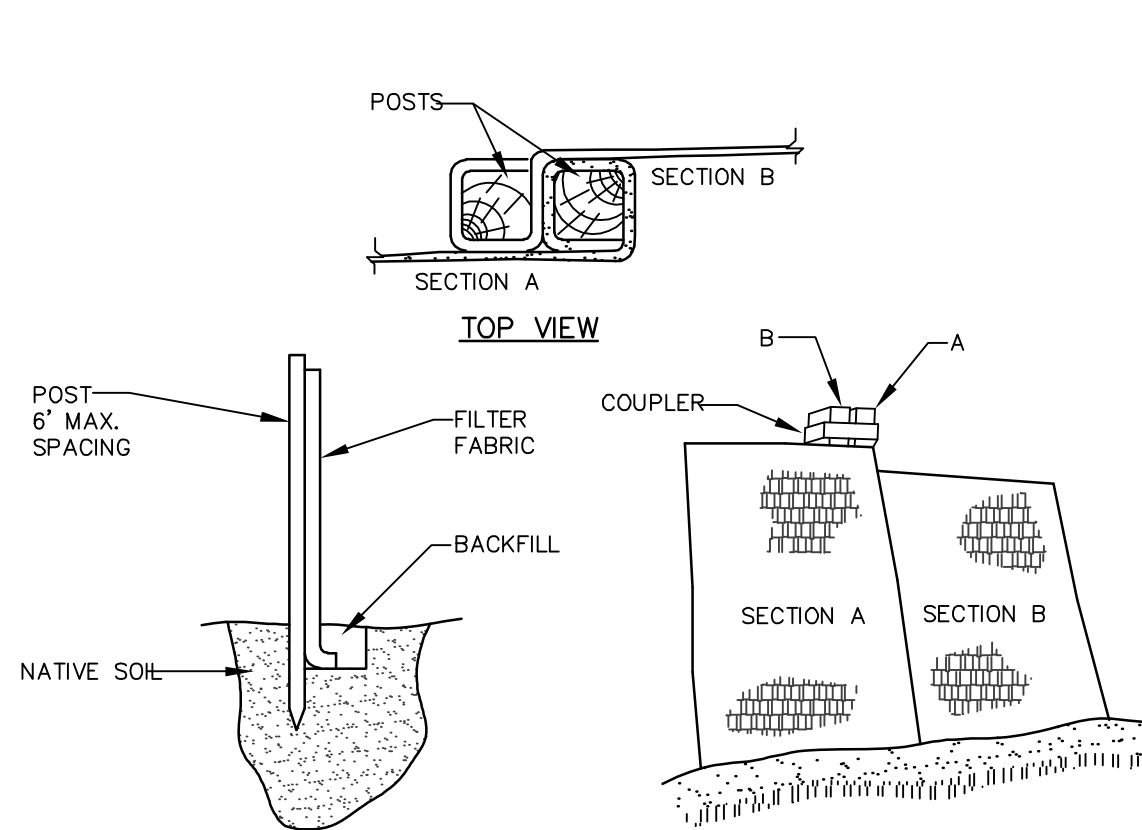
EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE SHREDDED BARK, CHIPS, OR OTHER NON-ERODIBLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

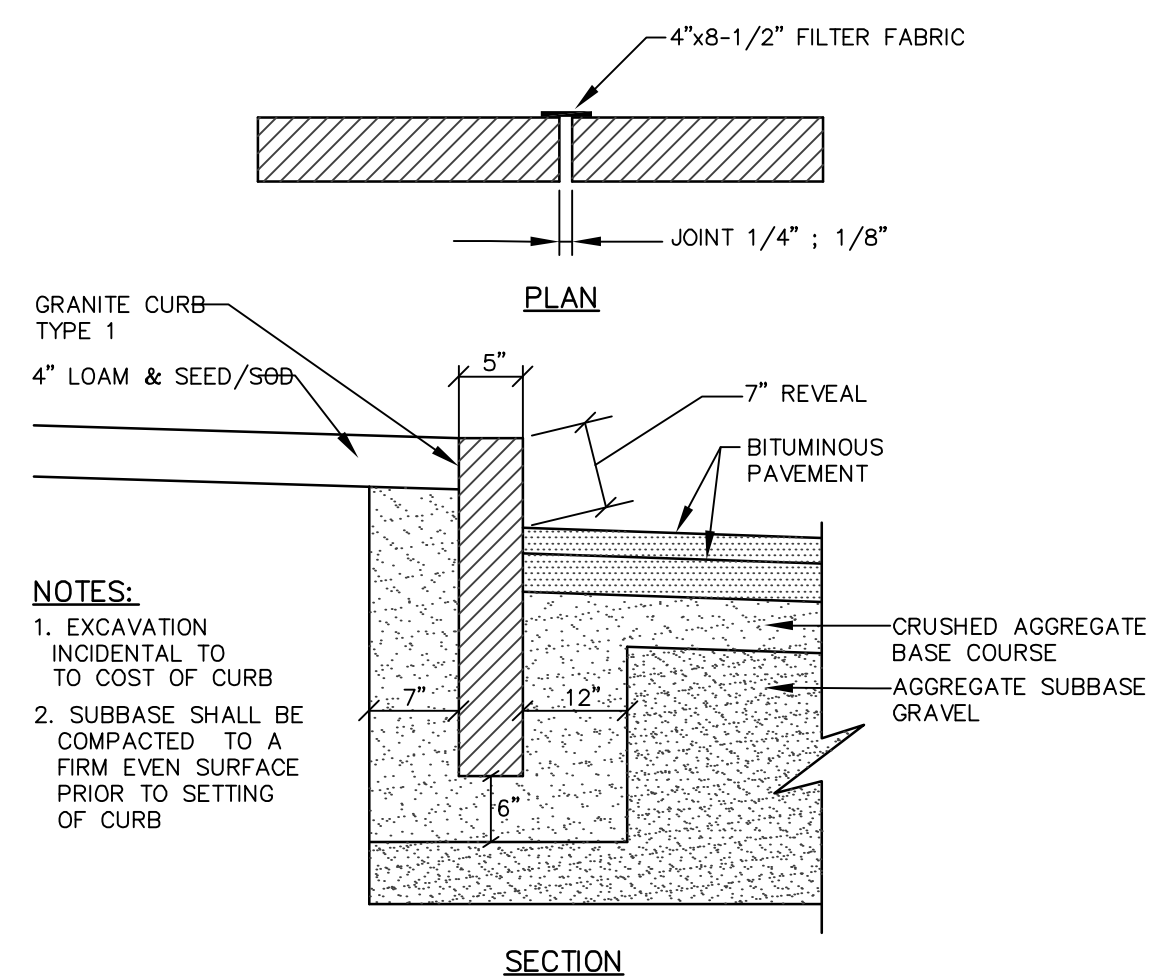
INSTALLATION:

- THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.
- 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.
- 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.
- EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS. 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

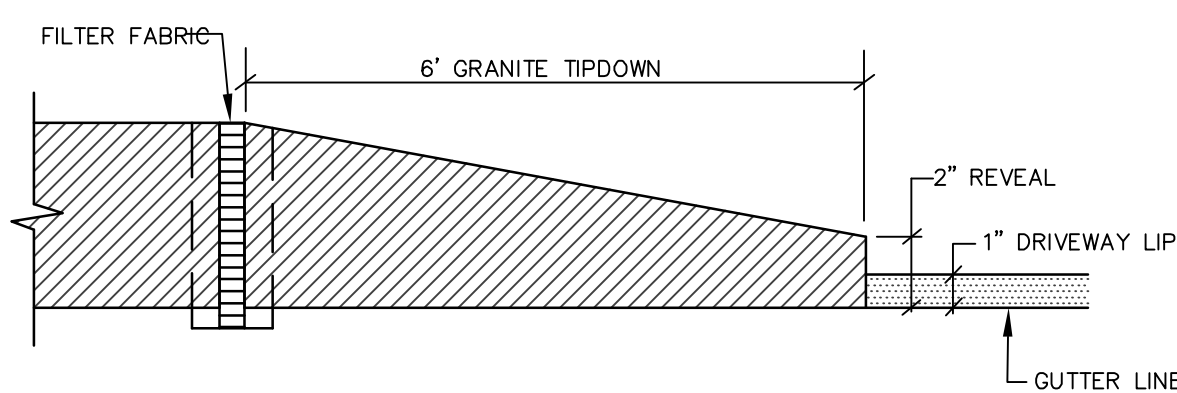
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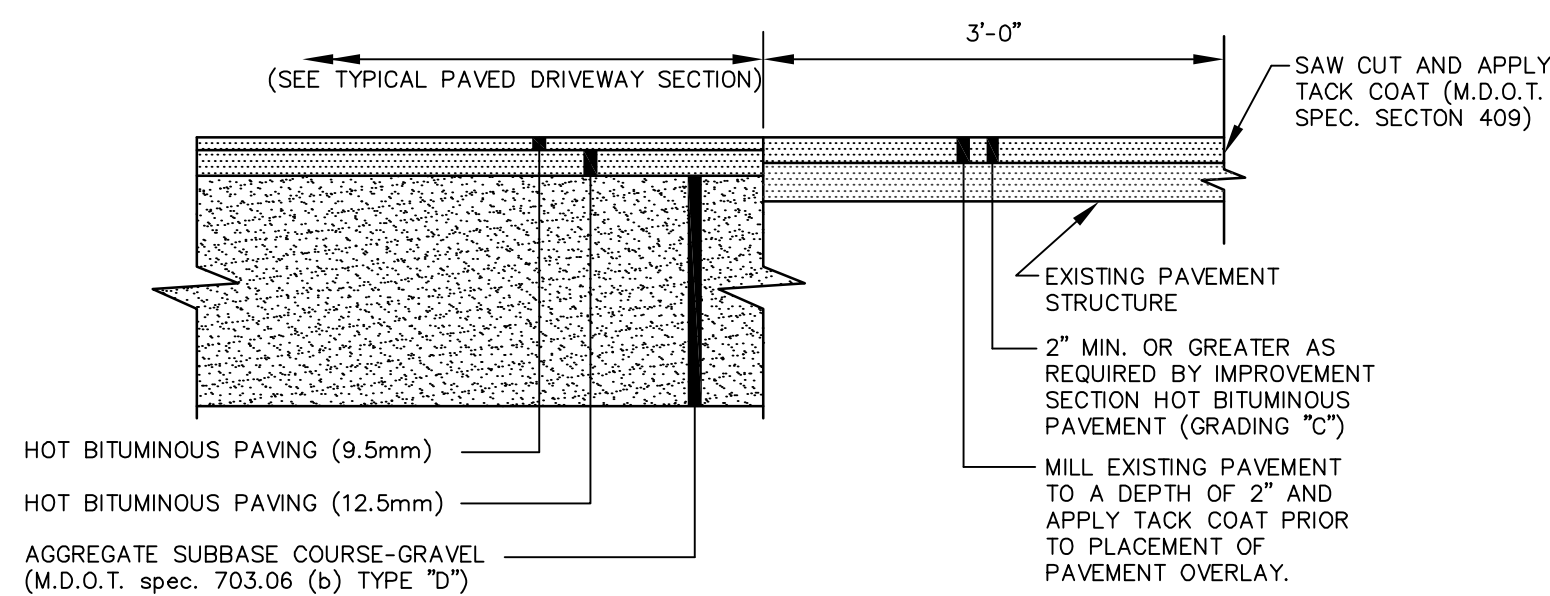
VERTICAL GRANITE CURB

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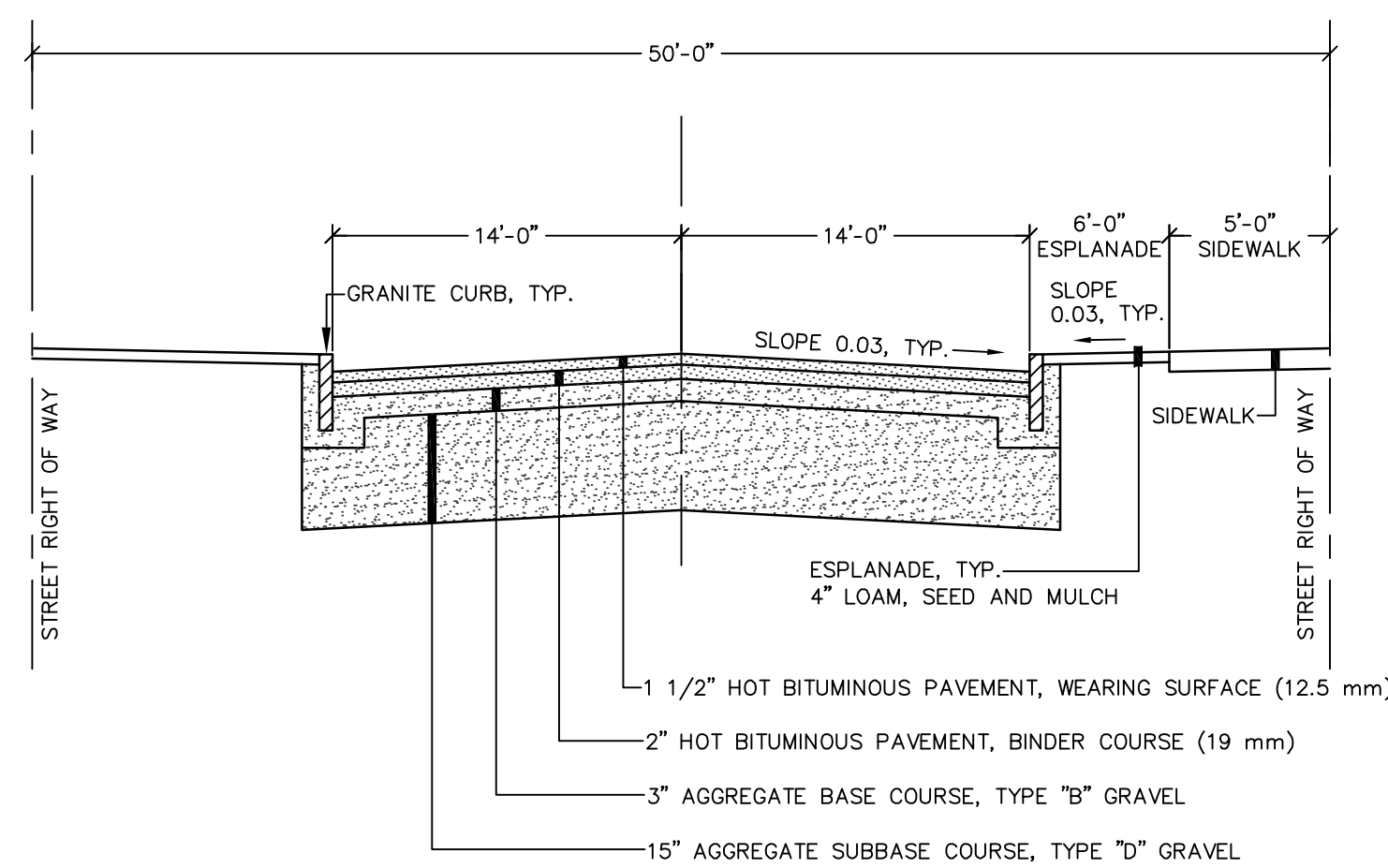
TYPICAL TIPDOWN CURB INSTALLATION

NOT TO SCALE



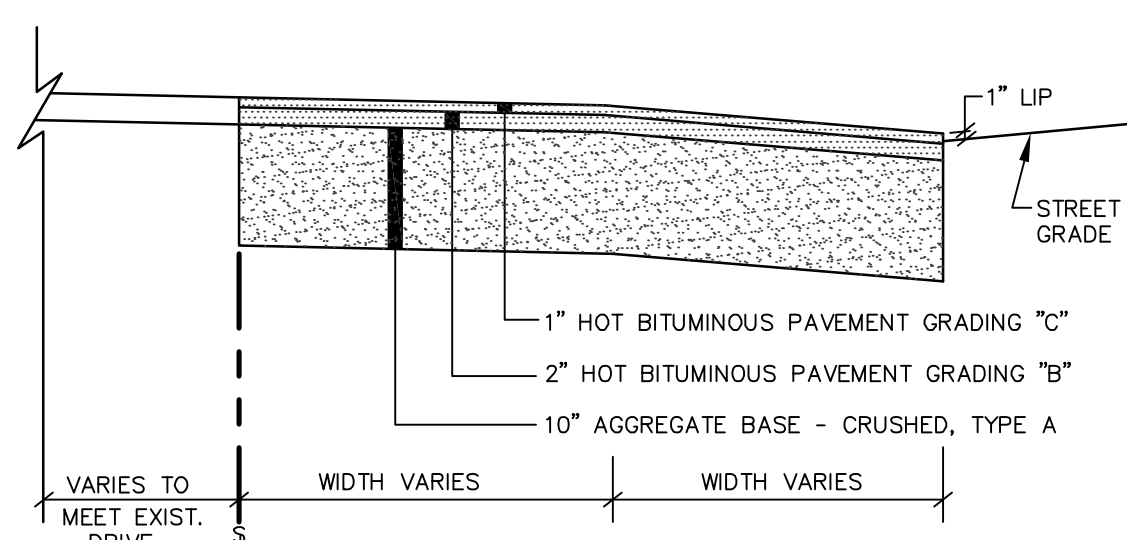
PAVEMENT SAW CUT DETAIL

NOT TO SCALE



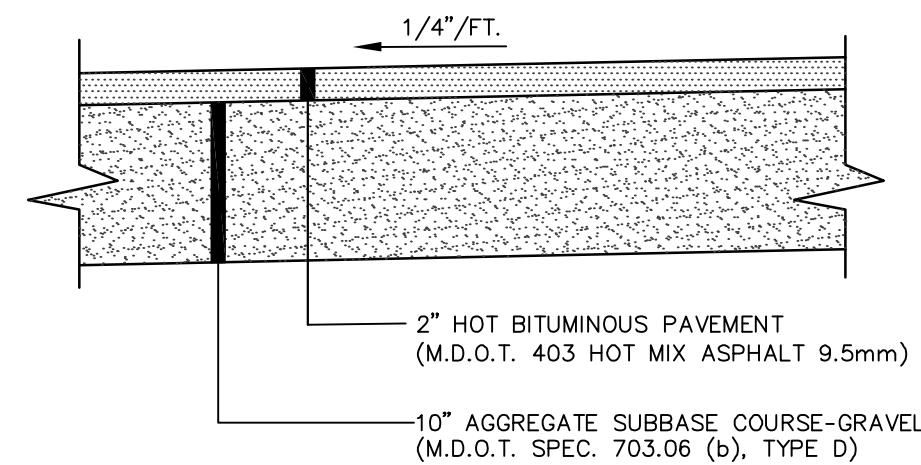
MINOR LOCAL STREET SECTION

NOT TO SCALE



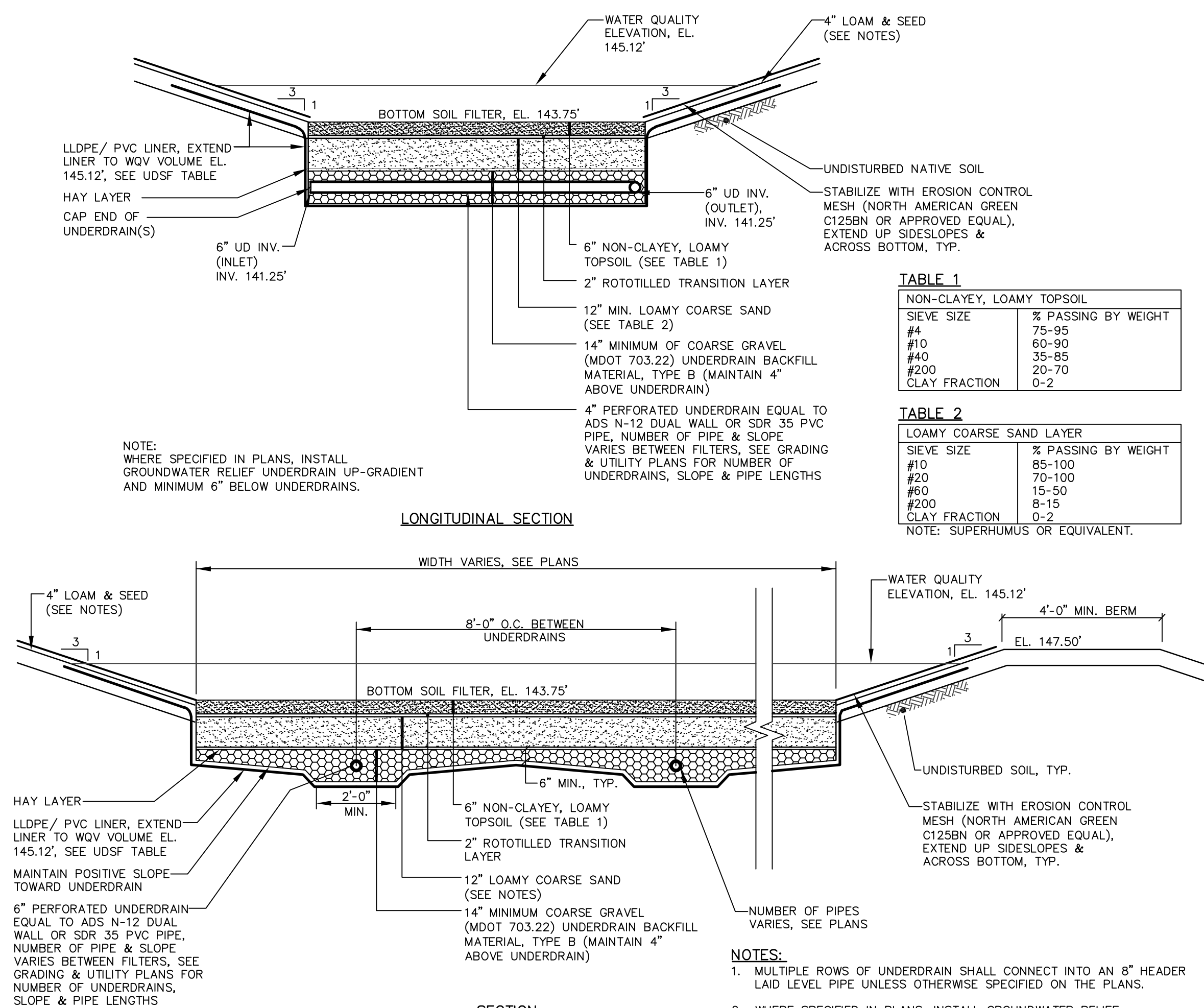
BITUMINOUS DRIVEWAY CONSTRUCTION

NOT TO SCALE



BITUMINOUS SIDEWALK

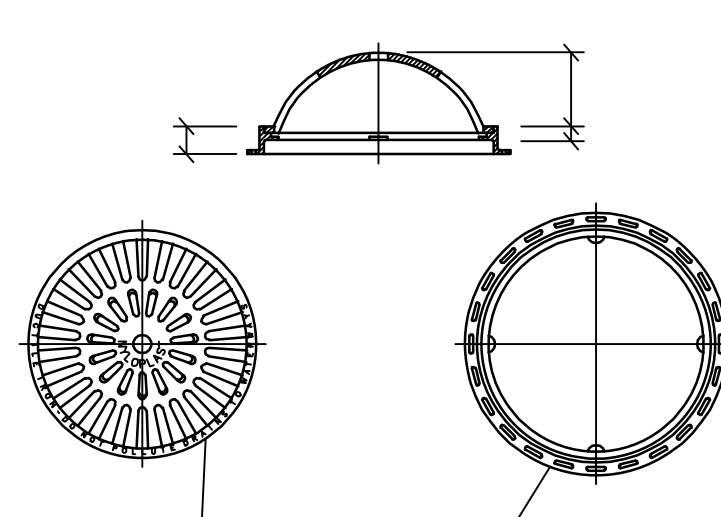
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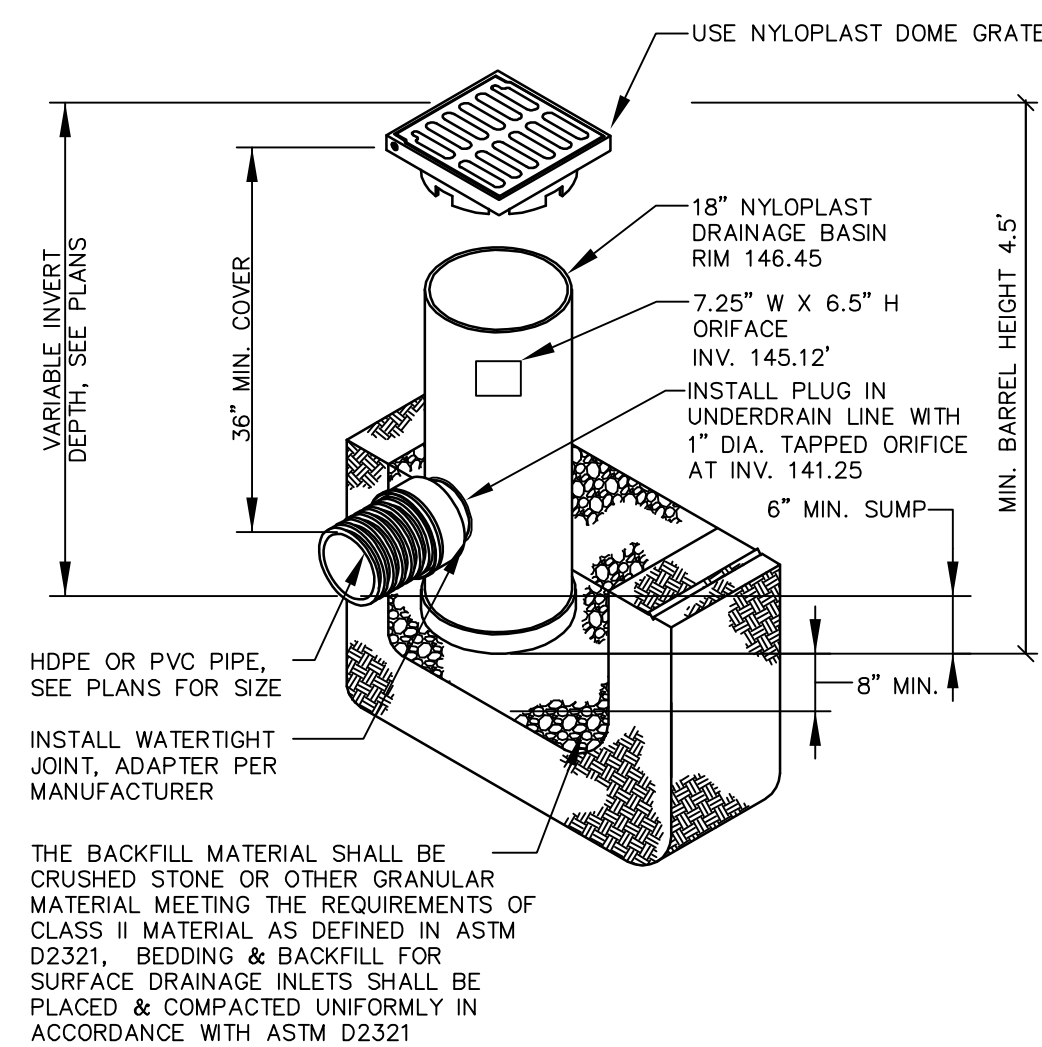
SECTION

UNDERDRAINED SOIL FILTER DETAIL

NOT TO SCALE

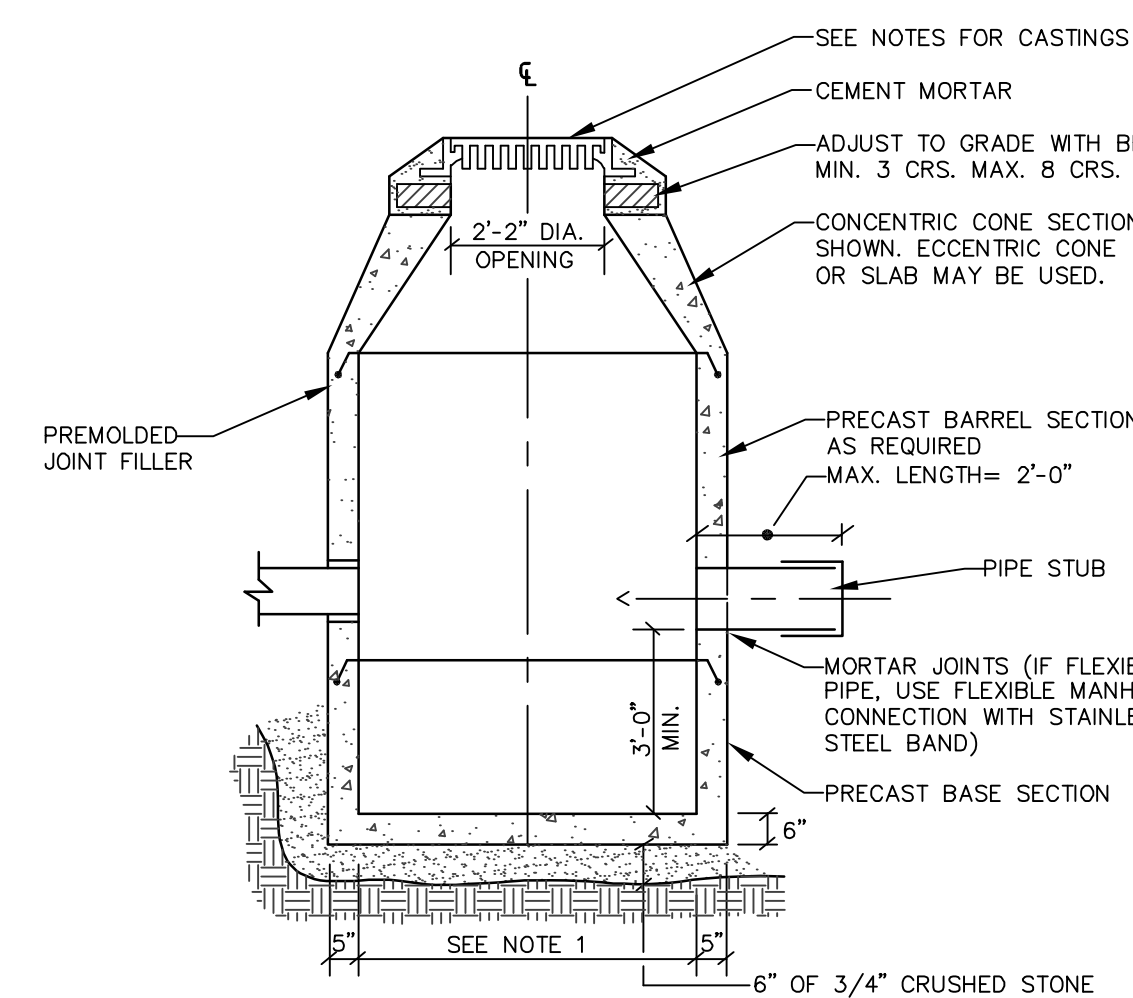


NYLOPLAST DOME GRATE



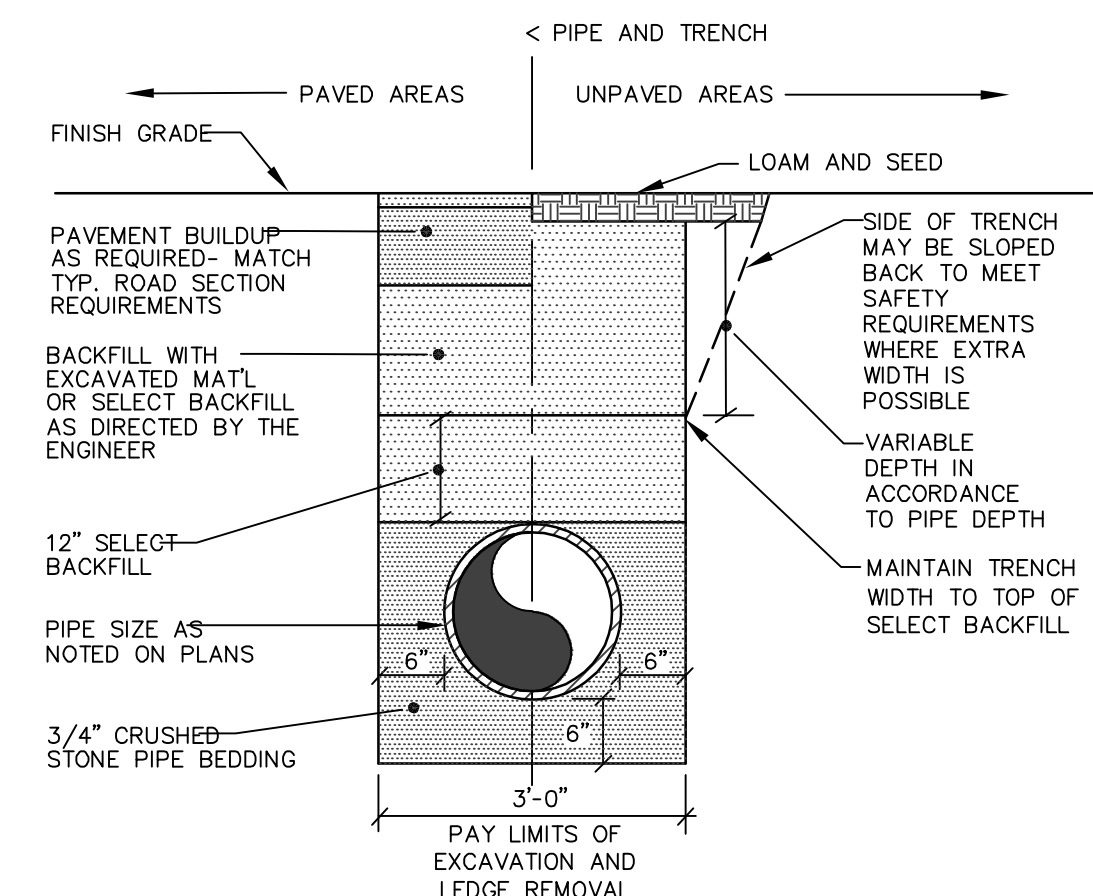
TYP. NYLOPLAST FIELD INLET

NOT TO SCALE



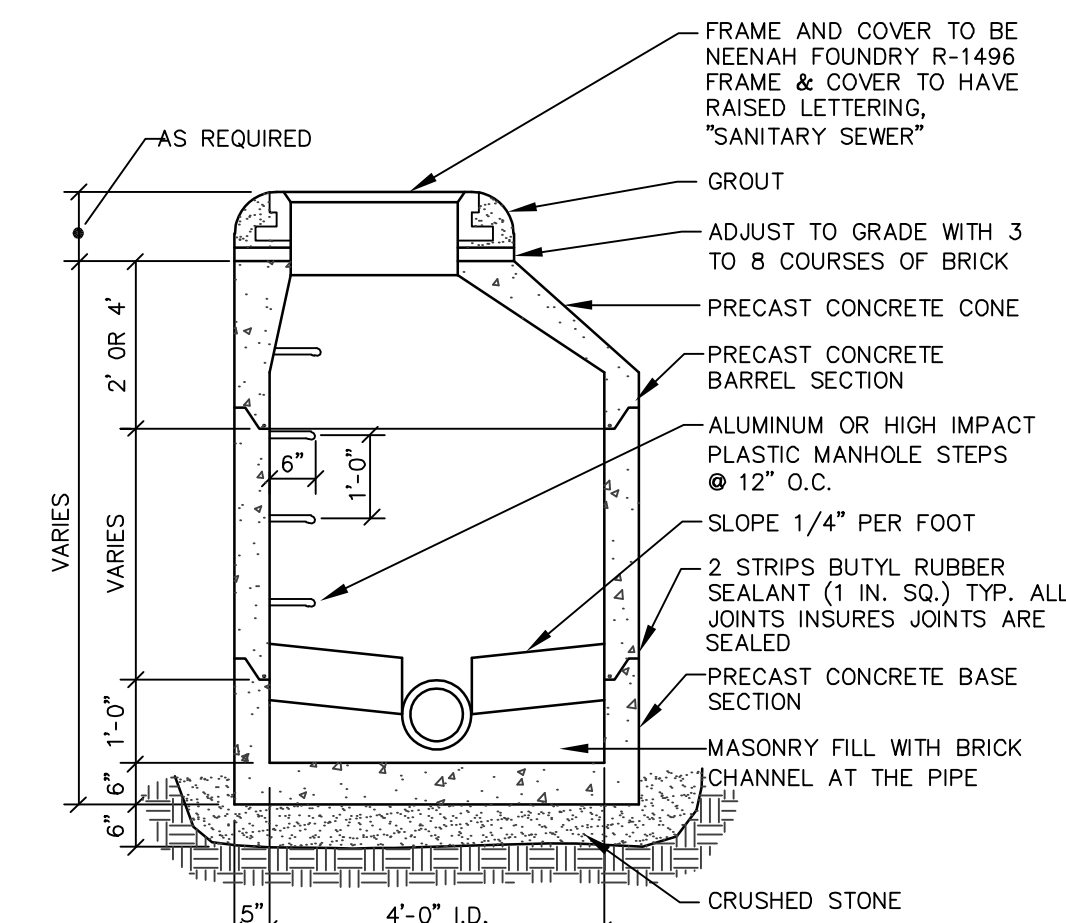
TYPICAL CATCH BASIN

NOT TO SCALE



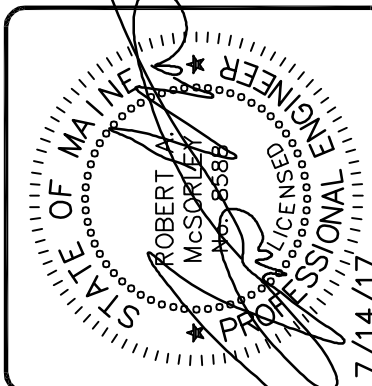
TYP. TRENCH SECTION WITHIN CITY R.O.W.

NOT TO SCALE



PRECAST MANHOLE

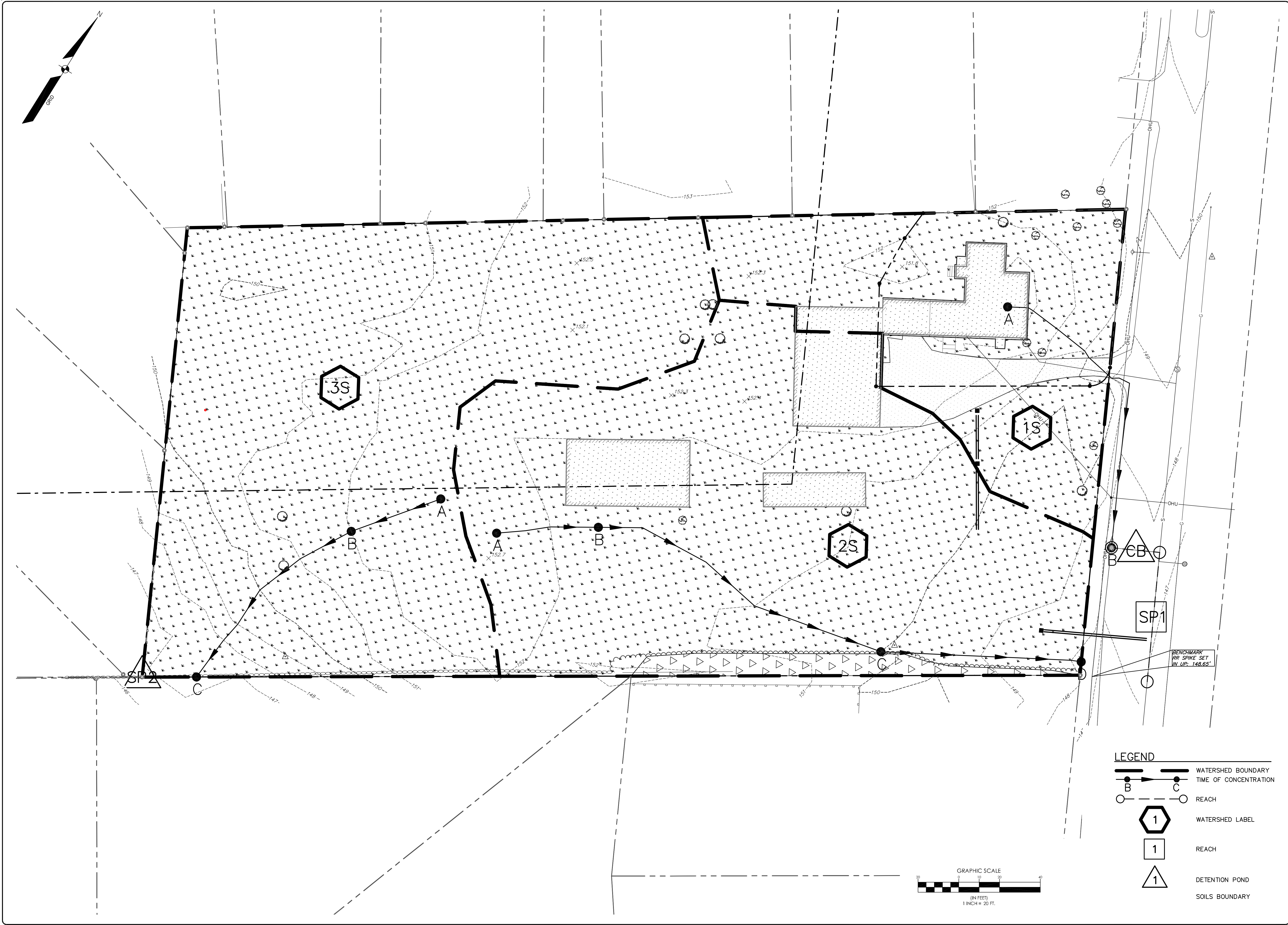
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DETAILS
OF: KNIGHT FARM SUBDIVISION
1728 WASHINGTON AVE.
PORTLAND, MAINE 04103
FOR: GREENLIGHT ENTERPRISES, LLC
1728 WASHINGTON AVE.
PORTLAND, MAINE 04103

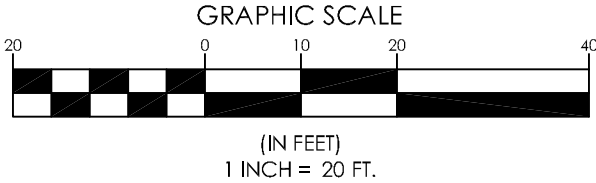
PROJECT NO.	SCALE
16533	NTS

SHEET 7 OF 8



LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH
- WATERSHED LABEL
- REACH
- DETENTION POND
- SOILS BOUNDARY



PRE DEVELOPMENT WATERSHED PLAN
OF:
KNIGHT FARM SUBDIVISION
1728 WASHINGTON AVE
PORTLAND, MAINE 04103
FOR:
GREENLIGHT ENTERPRISES, LLC
1728 WASHINGTON AVE
PORTLAND, MAINE 04103

PROJECT NO. 16533 SCALE 1" = 20'

SHEET 1 OF 2

16533SWP.dwg TAG:PRE

SEBAGO TECHNICS
WWW.SEAGOTECHNICS.COM
75 John Roberts Rd. Suite B
South Portland, ME 04106
Tel: 207-200-2100 Tel: 207-783-5656

DESIGNED GJH CHECKED RAM
A GJH 3-14-17 PLANNING BOARD SUBMISSION
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.

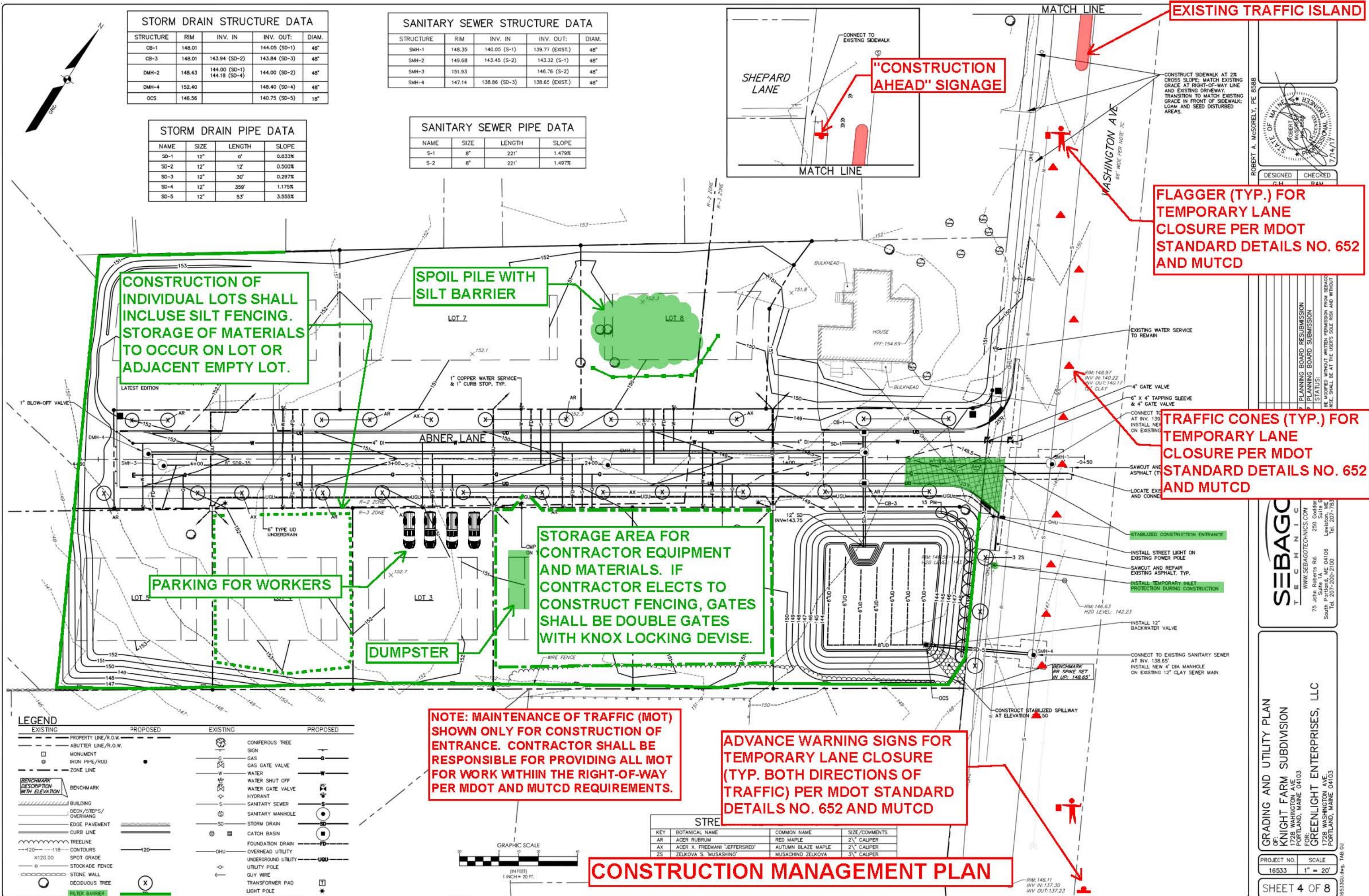
ROBERT A. MCSORELY, PE 8568
STATE OF MAINE
PROFESSIONAL ENGINEER
3/14/17

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT	DIAM.
CB-1	148.01		144.05 (SD-1)	48"
CB-3	148.01	143.94 (SD-2)	143.84 (SD-3)	48"
DMH-2	148.43	144.00 (SD-1)	144.00 (SD-2)	48"
DMH-4	152.40		148.40 (SD-4)	48"
OCS	146.56		140.75 (SD-5)	18"

SANITARY SEWER STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT	DIAM.
SMH-1	148.35	140.05 (S-1)	139.77 (EXIST.)	48"
SMH-2	149.68	143.45 (S-2)	143.32 (S-1)	48"
SMH-3	151.93		146.76 (S-2)	48"
SMH-4	147.14	138.86 (SD-3)	138.65 (EXIST.)	48"

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-1	12"	8'	0.033%
SD-2	12"	12'	0.500%
SD-3	12"	30'	0.297%
SD-4	12"	359'	1.175%
SD-5	12"	53'	3.555%

SANITARY SEWER PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
S-1	8"	221'	1.479%
S-2	8"	221'	1.497%



5/03/2017

Sean M. Fitzpatrick, LMSW-cc

1719 Washington Ave

Portland, ME 04103

(802)922-5610

RE: Level III Subdivision Application # 2017-058

City of Portland

Planning Division

389 Congress Street

Portland, ME 04101

To whom it may concern;

I am writing in reference to the proposed 8-lot "Knight Farm" subdivision located at 1728 Washington Ave. Our family home is directly across the street from the proposed site of this development and what follows are our concerns regarding this project.

First, this development will destroy vital natural habitat from our North Deering neighborhood. This site has been used for decades by neighborhood children playing baseball and by wild birds, bats, owls and other wildlife. Simply developing the field will displace children and wildlife alike, while increasing urban density. Open spaces are crucial to the health of a community, both fostering human connection and supporting mental and physical well-being. Additionally, this new development will decrease stormwater retention and increase urban runoff, which is already a problem. North Deering is being rapidly developed and the City has a responsibility to maintain green spaces and develop recreational and natural resources for the residents of the North Deering neighborhood.

Secondly, I object to the creation of any new street off of Washington Ave. The corridor already experiences a tremendous amount of traffic and an enduring problem with speeding. This is an issue I have brought up with city council and our neighborhood association. It is outrageous to imagine another road servicing 9 new homes, with potentially 2-3 cars at each house. That's at least an additional 20-odd cars coming and going daily, adding to an already overcrowded roadway.

I understand that there is a need to develop new housing stock in the city and that this spot of land will likely be developed in some form. I respectfully urge the City Planning Division to please consider the natural environment, and community impact before moving forward with this project.

I can be reached at (802) 922- 5610, or seanmfitzpatrick@hotmail.com for follow up questions.

Sincerely,



Sean M. Fitzpatrick

Google Groups

1728 Washington Ave

Kevin Winship <coachwinship.fhs@gmail.com>

Jun 5, 2017 9:34 PM

Posted in group: **Planning Board**

We are writing to express our concerns over the planned subdivision at 1728 Washington Ave. We live at 32 Shepherd Ln, our backyard will board the new subdivision. I feel that the proposed development has too many lots for the amount of land that is there with no planned green space. The area to be developed has been a beautiful piece of land for as long as we can remember. To put 8 houses in that area would destroy a beautiful piece of green space that this area desperately needs and has been greatly appreciated by the neighborhood. We are very concerned that this big of a development will cause major inconveniences in the neighborhood due to of all the construction, including putting in a new road, sewer water and the houses being built. We are also concerned about increasing traffic on Washington Ave due to the possible new subdivision. Our biggest fear is that this development will effect the value of my house and the other houses on my street in a negative way.

I am hoping that the planning board denies this subdivision.

Thank you for hearing our concerns.

Kevin and Liz Winship
32 Shepherd Ln